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ANALYSIS OF STUDY CHOICE AND MOTIVATION OF INTERNATIONAL STUDENTS FROM SOUTH ASIA IN THE LITHUANIAN HIGHER EDUCATION SECTOR

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Keywords: International student mobility; South Asian students; Lithuania; higher education; push–pull theory; migration; study abroad; student experience.

Abstract

With the internationalization of higher education, the pattern of global student mobility has drastically changed, creating destinations; such as Lithuania, that are attracting more South Asian students. This research explores South Asian students' motivations, decisions, and challenges as they make migration to Lithuania as a study destination predominantly from India, Pakistan, Bangladesh, Nepal, and Sri Lanka. The economic, academic and socio-cultural factors affect students' decisions; push-pull theory, human capital theory, migration systems theory are among the techniques employed in the article and are discussed. Secondary statistical data and survey findings are the basis of information presented in the study. Education affordability, EU mobility opportunities and migration prospects are notable drivers, with language barriers and integration in the labor market to present significant barriers. It highlights the strategic position of Lithuania in the international framework of higher education and provides policy recommendations for sustainable internationalisation.

Introduction

With the increasing internationalization of higher education, there has been a significant increase in the number of international students. This development mirrors a general global trend towards increasing global economic integration, technological advances, and the increasing significance of higher education as a catalyst for personal and national development. Although countries such as the United States, the United Kingdom, and Australia remain leading destinations in the world for decades, smaller European countries like Lithuania are becoming increasingly competitive choices for international students. Being part of the European Union and the European Higher Education Area, Lithuania offers recognized academic qualifications, relatively affordable tuition fees, and an increasing number of studies which are presented in English – making it especially attractive for students from the developing world.

South Asia is one of the world's biggest sources of foreign students due to demographic constraints, lack of access to quality higher education, and intense upward social mobility aspirations. Many students from this region go abroad not just to receive high-quality education but also to improve their employability prospects and gain entry to international migration routes. So, there is an increasing importance to Lithuania as an attractive destination for students, particularly students who want an affordable European education, not to mention a possible entrance to EU labor markets.

Relevance of the Article. Studies of student global mobility have gained wide attention given the nature of international student mobility in the framework of globalization and of expanding higher education. It is important for policymakers, universities and governments to identify the determinants of decision-making behind studying destinations to enhance education, improve international competition and facilitate student integration. For Lithuania, which is emerging as a key destination for South Asian students, such analyses are indispensable to institutional internationalization to promote students' internationalization, appeal to high-quality students and add to cultural diversity. Furthermore, this research exposes economic, social and academic consequences for improving student perks in the host country such that they have the opportunity to retain and find employment.

Problem of the Article. There is limited research on the motivations and experiences of South Asian students in Lithuania. Most studies focus on traditional destinations, leaving smaller European countries underexplored. This creates a gap in understanding student decision-making and integration in the Lithuanian context.

The object of the article is on the decision makers' decision when choosing Lithuania as their destination of study and the subsequent experience of the Lithuanian higher education system of South Asian students.

The goal of the article is to provide a comprehensive analysis of the determinants influencing study choices among South Asian students in Lithuania, focusing on motivations, expectations, challenges, and the overall adaptation to academic and social environments.

Objectives of the Article:

1. Understanding the relevant factors for selection of Lithuania as a study destination by South Asian students, such as economic, academic, and social factors.
2. To explore the key motivations and expectations of South Asian students studying in Lithuanian universities.
3. To investigate in depth the problems found by students of South Asian origin in Lithuania in assimilation to school culture and the surrounding community.
4. In the field of Lithuanian higher education, we try and judge the consequences of such mobility of international students and generate recommendations on how to improve the experience of students and institutional strategies.

Methods of research. The approach to the research includes a mix of qualitative and quantitative:

1. Survey / questionnaire: Collecting primary data of South Asian students in Lithuania.
2. Interviews: Open-ended interviews with targeted cohort students on their motivations or impediments.
3. Document analysis: University reports, academic literature and government data on international student mobility.
4. Statistical analysis: Evaluating survey responses to identify patterns, trends, and correlations among variables influencing study destination choice.

This approach helps in the evaluation of data at qualitative level where a number of possible characteristics such as level of education, occupation, income level, gender, social culture, political party affiliation/organization are discussed.

Literature Review

The literature on international student mobility points out that student migration is characterised by a range of global, economic and institutional processes. For example, Altbach and Knight (2007) argue that internationalization is not only about the movement of people, but also about the transfer of knowledge, culture and potential economic value across borders. Research evidence indicates that students are most driven by the desire to expand their career (and international exposure) prospects when they come from developing countries such as South Asia. At the same time, as competition for university admissions heats up, coupled with a dearth of high-quality education institutions in home countries, there is a push for students to explore these opportunities abroad. This explains why newly established study institutions such as Lithuania are becoming sought after: lower tuition rates coupled with English-language training and opening to the European education system are good enough for many students. Conversely, the literature suggests that the situation of foreign students in smaller host countries is not without concern in terms of cultural adaptation, language and workforce. Notwithstanding these challenges, these nations still have students looking for affordability and accessibility advantages compared to more established destinations.

Theoretical Framework

The learning motivation of international students has a strong influence on their mobility because it is a critical determinant of the choice to study abroad. Literature suggests that the motivation of students can be divided into intrinsic and extrinsic motivation. Intrinsic motivation is a term that refers to a person's automatic drive or desire to learn and grow. Intrinsically motivated students are motivated by interest in the ideas in their own fields of study, intellectual activity, curiosity, and genuine interest in the actual content of the subject matters. And people from this background, on the other hand, regard gaining knowledge, self-intellectual development and enhancement as the main results of their educational journey. Extrinsic motivation is, in contrast to intrinsic motivation, driven by external rewards and outcomes. These can be job opportunities, higher pay, greater personal reputation, and a more international route into migration. For international students, notably for those from developing areas like South Asia, extrinsic motivation frequently determines the educational decisions taken. In terms of a study abroad, student motivation is seldom intrinsically or extrinsically derived but is a mixture of both. The incentive is not just academic and international exposure, but also the potential for better career prospects and long-term economic opportunities. Hence, studying abroad is viewed as an investment in personal and professional development in a global labour market. Student motivation has very strong extrinsic forces in which the motivation is based on economic motivations, career plans and migration prospects, for South Asian students picking Lithuania as a university destination. Moreover, academic, international and personal reasons prove that intrinsic motivation continues to be

significant. This dual mode of motivation reflects a complex context underpinning international student choice-making.

The current study was formulated from the push-pull theory, which is an integrated perspective on international student flows. Push factors are the ones in the home country that cause them to look abroad for studying (e.g., low access to quality higher education, fierce competition in education, economic pressure). Pull factors, in contrast, cover the attractive characteristics of the host country such as low tuition fee, availability of English-taught programmes, recognized credentials of the student and opportunities for employment or migration. As far as South Asian students who select Lithuania, push factors generally consist of the saturation of a higher education system and limited labor market possibilities from their home country. In contrast, pull factors refer to Lithuania's affordability, accessibility, and access to the broader European Union that offers access to a much larger labor market and mobility opportunities. The human capital theory is also very important in explaining student motivation.

All these perspectives collectively describe how migrant students are moving between destinations and what the challenges at the time of such mobility can be, allowing for the synthesis of learning motivation theories and migration-related frameworks. This suggests that the determinants of students' decisions cannot be distilled to a single factor – rather a myriad of internal motivations in conjunction with structural contextual realities plays a significant role in students' decision-making processes.

Methodology of the Study

This research used a mixed-method research design, combining quantitative and qualitative methods to explore the motivations and decision-making processes of international students. Data were obtained with the aid of a structured questionnaire which was administered to South Asian students in Lithuania during their present study. Based on the theoretical framework of the research, a questionnaire was crafted which encompasses aspects from push-pull theory, human capital theory, and learning motivation (intrinsic and extrinsic).

The survey had closed-ended questions (Likert scales and multiple-choice formats) and a small number of open-ended questions to capture more context-rich responses. 30 respondents took part in the survey. The respondents were enrolled in different academic programs and originated from South Asian countries including India, Pakistan, Bangladesh, Nepal and Sri Lanka.

Besides the survey, interviews with 10 students were carried out throughout the course in order to obtain qualitative information relating to students' experiences, motivations, and challenges. Interviews were employed to get people to tell their individual stories in order to shed some light on the dynamics of student decision making.

Research sample. The survey sample of this study consists of international students from South Asian countries currently studying in Lithuania. According to data from the Migration Department under the Ministry of the Interior of the Republic of Lithuania, as of the beginning of September 2025, there were more than 9,000 foreign nationals (approximately $N = 9,009$) holding temporary residence permits for the purpose of studies in Lithuania. This figure provides a general overview of the scale of international students in Lithuania and helps contextualize the study.

Due to practical limitations such as time constraints and accessibility of respondents, a non-probability sampling method (convenience sampling) was applied. The quantitative part of the study includes 30 respondents, all of whom are South Asian students studying in Lithuania. Although the sample size is relatively small, it provides valuable initial insights into students' motivations, decision-making processes, and challenges.

Survey Data Collection. Data collection was carried out using a structured online questionnaire, which was developed based on the theoretical framework of the study, including push-pull theory, human capital theory, and learning motivation (intrinsic and extrinsic). The questionnaire consisted of closed-ended questions (Likert scale and multiple-choice) as well as a limited number of open-ended questions to capture more detailed responses.

Interview Data Collection. In addition to the survey, the study also includes a qualitative component based on semi-structured interviews with 10 international students. These interviews were conducted to gain deeper insights into students' personal experiences, motivations, expectations, and challenges while studying in Lithuania. The interview format allowed flexibility for respondents to elaborate on their views, providing richer and more contextualized data. The qualitative findings complement and support the quantitative results.

Data Collection Procedure. The questionnaire was distributed through multiple online channels to ensure accessibility and diversity of responses. These included:

- Social media groups of international students in Lithuania
- University networks and student communities
- Peer contacts among South Asian students.

There was no strict time limit for completing the questionnaire, allowing respondents to participate flexibly and increasing response diversity.

Ethical Considerations. The data collection process was conducted over a defined period (March–April 2026). Participation in both the survey and interviews was voluntary, and all respondents were informed about the purpose of the research prior to participation. The study ensured anonymity, and no personally identifiable information was collected.

Research Limitations. Given the relatively small sample size, the findings of this research should be interpreted as exploratory rather than fully generalizable. However, the combination of survey data and interview insights provides a more comprehensive understanding of the motivations and experiences of South Asian students in Lithuania.

Overview of Lithuanian Higher Education System

Lithuania's higher education system adopts a Bologna Process format, so that it does not differ greatly from other European systems. It has various public and private schools for undergraduate, graduate, and doctoral training. Lithuania has stepped forward in recent years in the field of internationalization, growing the number of English-taught programs and marketing itself as an academic institution for those studying abroad. Consequently, international students now make up a substantial portion of the student population, as the country's presence in the global education market has grown. There are more than 300 English-medium programs throughout the country, and it has been very successful at drawing students from various non-European countries, including South Asia.

South Asian Student Demographics and Trends

South Asian students are an increasing proportion of the international students in Lithuania. While the sample size for this study is relatively small, it does mirror general trends in the higher education system in Lithuania.

Country of Origin. This study's respondents are from some of the key South Asian countries, including India, Pakistan, Bangladesh, Sri Lanka and Nepal. The diversity of respondents highlights South Asia's role in attracting international students for several reasons.

Study Level and Patterns. Most of the respondents are undergraduate students, consistent with the trend of international enrollment in Lithuania. There is also more male among students in the sample, but female participation is slowly rising.

Motivational Trends. There is evidence that South Asian students are motivated predominantly by extrinsic factors like work and options for migration. On the other hand, it is clear among respondents that there is also an intrinsic motivation (e.g., academic interest, and personal growth).

Overall, the results demonstrate that Lithuania is perceived as an accessible and strategic place for South Asian students.

Factors Influencing Study Choice

Economic, academic, migration-related, and socio-cultural reasons give South Asian students consideration to study in Lithuania. These are connected to both intrinsic and extrinsic learning motivations.

Economic Factors. The analysis also showed the most importance on the economic aspect was given in the analysis to students' decision-making. A lot of them noted that they could afford to study in Lithuania better than in other countries in Europe. Key economic factors include:

Lower tuition fees. Affordable cost of living. Opportunity to work part-time. The implication of these results is that extrinsic motivation heavily influences students in realizing a desire to receive a quality education along with the necessity of budgeting.

Academic Factors. Another factor that is important in student decision making is academic factors.

Respondents emphasized: English-taught programs. Recognized European degrees. Supportive learning environment.

These factors reflect both: Intrinsic motivation (interest in learning and development). Extrinsic motivation (to obtain a meaningful qualification).

Migration and Career Factors. Migration-related motivations were especially marked among respondents. For students in Lithuania, this kind of study can also lead to future employment opportunities in the European Union. Key factors include:

Access to EU labor markets. Career development opportunities. Possibility of long-term residence. The results show that extrinsic motive is the dominating driver (and even more so), particularly with regard to an individual's long-term career goals.

Social and Cultural Factors. Study selections are also affected by social and cultural considerations. Respondents noted:

A safe environment. Opportunity to experience European culture. International exposure. These factors are associated with intrinsic motivation, especially personal development and global experience.

Decision Influencers. The findings suggest that student decisions are shaped by multiple external influences: Education agents; Family and friends; Online research. These are the key decision-making actors who help students navigate the process.

Results (Survey Data)

Economic indicators of South Asian students studying in Lithuania. According to the survey data analysis the economic basis is the main reason for South Asian students to study in Lithuania. It was common knowledge among respondents that participation as well as the cost of tuition and the cost of living were reasons for students choosing to attend the study period. In addition, the EU career opportunities, indicating a positive outlook on long-term career and migration plans, was also incentive.

The results further demonstrate how education agents and their social networks may have greater influence over students depending on where they are in the world and what their family, friends, or professional agents tell them about academic decisions.

However, students reported that language barriers, difficulty finding work and adjusting to the country's culture were three of them. Students are struggling to carve out a place where they can share with these friends and the academic team. Regarding their future, research has revealed a split attitude toward them, with some students staying in Europe after they graduate, some going back to their home countries and some even not being certain. This is characteristic of international student mobility and migration intentions as a dynamic and indeterminate domain.

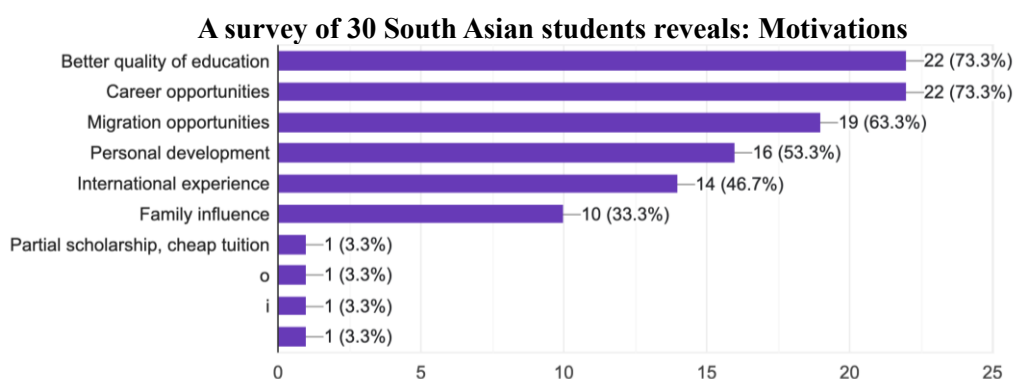


Fig. 1. Key Motivations of South Asian Students in Lithuania

**Source: compiled by the author*

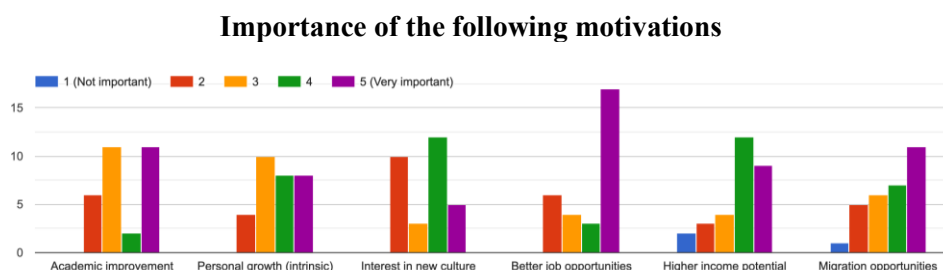


Fig. 2. Importance of the following motivations

**Source: compiled by the author*

The findings indicate that education quality and career opportunities (both 73.3%) are the strongest motivating factors. This indicates that South Asian students prioritize both academic quality and long-term employability outcomes, reflecting a strategic approach to international education. Migration goals (63.3%) further reinforce the importance of extrinsic motivation, aligning with human capital theory.

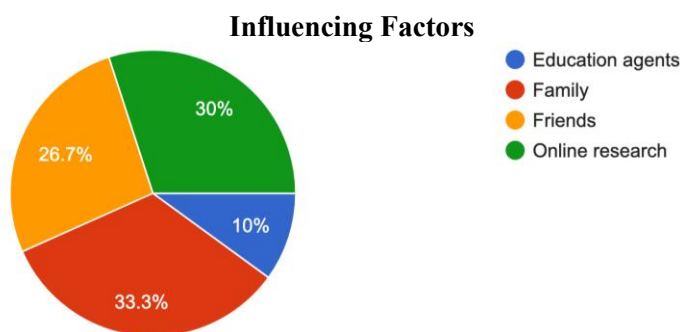


Fig. 3. Main Decision Influencers

**Source: compiled by the author*

The results show that family (33.3%) and online research (30%) play a major role in decision-making. This reflects the importance of social networks and informal information channels, supporting migration systems theory.

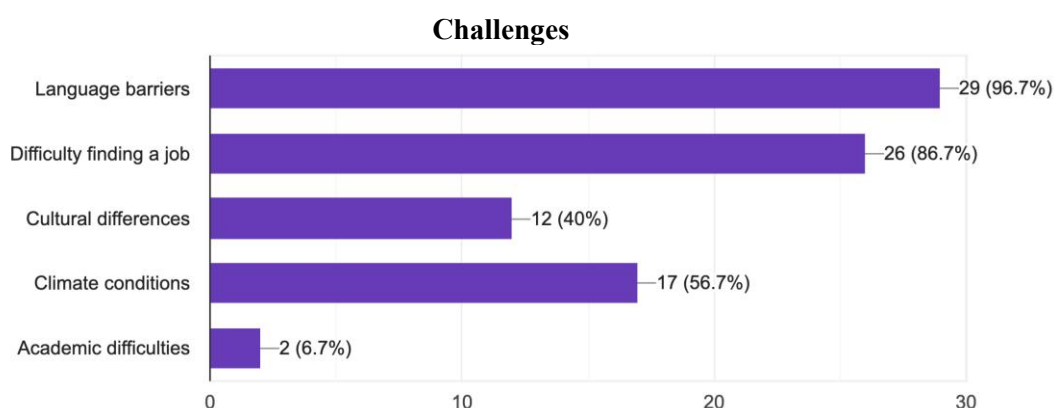


Fig. 4. Challenges Experienced by International Students

**Source: compiled by the author*

The extremely high percentage of language barriers (96.7%) highlights a significant structural barrier to student integration. Similarly, employment difficulties (86.7%) indicate a gap between students' expectations and the realities of the Lithuanian labor market.

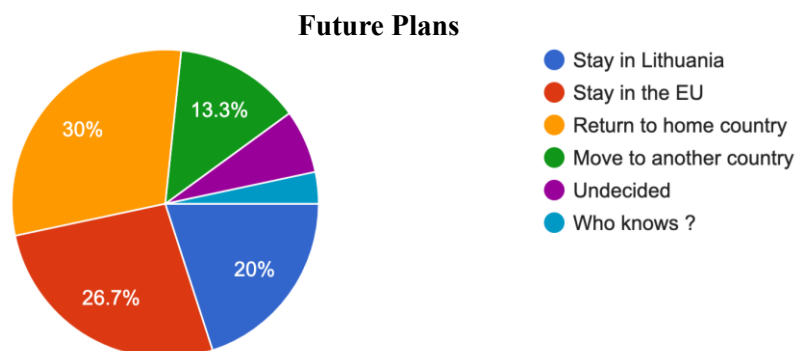


Fig. 5. Future Intentions of Students.

**Source: compiled by the author*

The diversity in future intentions reflects uncertainty among students. While some aim to stay in the EU (26.7%), a significant portion plans to return home (30%), indicating that Lithuania is often seen as a transitional destination rather than a permanent one. This pattern suggests that Lithuania is often perceived as a stepping-stone rather than a destination.

Interview Insights. The interview findings provide valuable insights into students' perspectives and experiences. Many respondents perceived Lithuania as a gateway to broader opportunities within the European Union. Financial affordability was frequently identified as a key advantage, particularly in comparison to other European study destinations.

However, several challenges were consistently highlighted. Language barriers and limited employment opportunities emerged as the most significant difficulties faced by students. These challenges often created a gap between students' expectations prior to arrival and their actual experiences in Lithuania.

Illustrative responses from participants include: *"Lithuania is affordable for me, but my main goal is to work in another EU country after graduation,"* and *"I like the study environment, but finding a job is difficult because I don't speak Lithuanian."* These statements reflect both the opportunities and constraints experienced by international students.

Overall, the qualitative findings complement and reinforce the quantitative results by providing deeper, more nuanced insights into student motivations and challenges. A recurring theme among interviewees was the perception of Lithuania as a transitional or entry point to the broader European labor market rather than a destination. This highlights the complexity of international student mobility and the importance of aligning student expectations with local realities.

General Discussion

The results of this study reveal that the choices of South Asian students in Lithuania as a destination for study are influenced by the interplay of structural constraints, individual aspirations and institutional variables and can be examined with respect to the Push–Pull theory (Lee, 1966) and Human Capital Theory (Becker, 1993).

On a push-side perspective, students are driven by systemic constraints in their home nations, such as low access to top-notch institutions of higher education, stiff academic competition, and scarce employment opportunity, which create powerful pressure to study in a foreign country as an efficient means for social climbing.

On the other hand Lithuania serves as a very attractive draw nation thanks to the relatively low cost of tuition, lower living cost compared to Western Europe, increasing number of programs which cater to English users and most important of all, it is a member of the European Union (EU), a significant symbolic and practical link to wider transnational space of education and work. It seems the results indicate that Lithuania is not one final destination, but a gateway or entrance strategy to the European labor market, making it important to recognize that student mobility is a process, and not a stable phase of progression. In addition, research indicates that extrinsic incentives – specifically career path, labor migration, and long-term economic incentive – are the primary influences which affect student actions and are consistent with the proposition promoted by human capital theory that people view education as an investment to maximise the reward of the future.

A sizable percentage were highly motivated by career and mobility opportunities, indicative of an approach to education that is pragmatic and views achieving a degree as closely related to promoting

employability and increasing access to global labor markets. However, intrinsic motivations like personal growth, intellectual challenge, and striving for international experience also matter deeply; implying that students are not solely instrumental decision-makers, but that there is indeed a hybrid motivational structure that combines personal and professional goals in their decision-making processes. It underscores understanding of international students as both economic creators and seekers of transformative educational and life experiences.

The research also points out an incongruity in students' expectations before arrival, along with the students lived experiences in Lithuania, which forms one of the main obstacles to internationalization. Although students see European opportunities with optimism, they face structural barriers upon arrival such as poor language ability, restricted labor market opportunities, and difficulty accessing their social circles. The high prevalence of language barriers reflects an inconsistency between the globalization of higher education (in Lithuania it takes place in a major percentage of higher education, mostly made in English) and the labor market (which need to speak Lithuanian in order to be productive in the local economy).

This results in many people excelling in college without realizing their professional potential and thus, not realizing their internationalization and career aspirations. This lack of employment opportunities during or after study only exacerbates uncertainty and disappointment, so that students' perception of Lithuania is that it is a short-term destination, not a long-term one. Finally, the influence of social networks, the role of family and family networks, and networks of informal sources of information comes out as key predictors of the ways in which students decide to engage, capturing the wider logic of migration systems theory. Dependence on these networks shows the crucial role of trust and shared experiences in facilitating mobility decisions, especially in the South Asian context, but also raises an issue regarding truthfulness of information with users creating unrealistic assumptions regarding information provided to them, from partial or biased stories. This is one of the reasons why the relationship between what we imagine and what we experience has been so lacking and more transparent and institutionalized communication has been needed.

Impact on Lithuanian Higher Education

The increasing number of international students from South Asia has had a significant impact on the Lithuanian higher education system, bringing both positive and negative outcomes.

Positive Impacts. The growth of international student mobility has contributed to the internationalization of Lithuanian higher education institutions. Universities are becoming more globally oriented by offering English-taught programs and engaging in cross-cultural academic environments.

In addition, international students generate financial benefits for universities, particularly through tuition fees and related economic contributions. This supports institutional development and enhances the sustainability of higher education institutions.

Furthermore, the presence of students from diverse cultural backgrounds promotes cultural diversity, enriching the academic environment and fostering intercultural understanding among both local and international students.

Negative Impacts. Despite these advantages, several challenges have emerged. The increasing number of international students places pressure on migration systems, including administrative processes related to visas and residence permits.

There are also concerns regarding potential exploitation risks, particularly in relation to recruitment practices and misleading information provided by intermediaries.

Finally, integration challenges remain a significant issue. Language barriers, limited employment opportunities, and difficulties in social adaptation can hinder students overall experience and reduce the long-term benefits of internationalization.

Conclusions

This study demonstrates that South Asian students choose Lithuania as a study destination due to a combination of economic, academic, and migration-related factors. Affordability, availability of English-taught programs, and access to the European Union labor market emerge as the most influential determinants of student decision-making. These findings strongly support the relevance of push-pull theory and human capital theory, as students are motivated both by constraints in their home countries and by the perceived long-term benefits of international education.

At the same time, the study highlights several challenges faced by international students, including language barriers, limited employment opportunities, and difficulties in social and cultural integration. These issues indicate that, despite its growing attractiveness, the Lithuanian higher education system still requires targeted improvements to ensure a more supportive and inclusive environment for international students.

Furthermore, the increasing mobility of South Asian students to Lithuania reflects broader global trends in higher education internationalization, where emerging destinations are gaining importance alongside traditional host countries. Lithuania's case illustrates how smaller European nations can successfully position themselves in the global education market by offering affordable and accessible study opportunities.

However, the long-term sustainability of this growth will depend on the alignment between student expectations, institutional capacity, and national policy frameworks. Strengthening migration systems, improving academic quality assurance, and enhancing student integration measures will be essential for maintaining competitiveness and ensuring a positive student experience. Overall, Lithuania has significant potential to further develop as a dynamic and attractive destination within the global higher education landscape.

Recommendations

To promote international student mobility and improve the overall quality of life for the South Asian community in Lithuania, comprehensive policies need to be developed at national, institutional, and international political levels. These recommendations are based on the evidence mentioned in this paper and are part of a longer trend of higher education internationalization.

Fostering Migration and Administrative Institutions. The migration process needs to be fast and transparent, making it a priority for Lithuania to attract migrants. Despite the significant progress made in migration administration under MIGRIS, students still face time overruns, procedural issues, and administrative costs. Policymakers would offer the following alternatives:

- a) Expedited Process Time Management of Administrative Process via Efficient Digitization
- b) Enhanced alignment between migration and university employees.

Enhancement in quality and institutional abilities. Lithuania needs to have much higher academic standards if the country is to become more appealing to international students. High levels of rapid growth with little support for the growing, minimal oversight can be harmful to the quality of perceived education. Hence, regular assessment of the quality of English language teaching and outcomes in English-language program evaluations should be conducted for quality and consequences related to English-language schools. To maintain the efficiency of over corporatization, such as for the monitoring of excessive corporatism in international programs and the academic integrity of international programs. Increasing accreditation and quality control protocols to meet a European Higher Education Area standard. Internationalization of university accreditation with joint degrees, exchange programs, and research collaborations. Improved academic quality will boost the long-term competitiveness of Lithuania and create credibility from international students.

Regulation and Monitoring of Recruitment Agents. Regulation and supervision of recruitment agencies. Recruitment agencies in South Asia, on the other hand, are essential players in shaping what students expect and decide on. But confusion, unrealistic assumptions, and bad behavior remain and misinformation remains rampant. Laws and monitoring tools have to be developed that regulate recruitment agencies serving Lithuanian institutions.

Setting high standards for responsible recruitment, as well as penalties if those standards are violated. Encouraging direct student-university links, without middlemen. Establishing official, centralized information channels to combat misinformation and support students on the education journey. Good regulation will protect students from exploitation and enhance respect for Lithuania as a leading educational model.

National Branding and Promotion on an International Level. Although Lithuania is beneficial, it has not been far enough from the global market for education as a country. In order to attract high quality and diverse students, the national brand image needs to be improved. Key strategies involve: Scaling up targeted digital marketing campaigns in South Asian nations through social media, webinars, and digital platforms. Creating relationships of trust and positive networks with foreign graduates as cases in point. Involvement in global educational fairs and recruitment of qualifications abroad. Positioning Lithuania as a safe and affordable EU destination. A well-knit and powerful national brand can boost Lithuania's visibility and competitiveness in the global higher education arena.

Boost Jobs, Employability, Access to Jobs, and Integration via Unemployment. This study also highlights big obstacles to accessing the Lithuanian job market. In turn, policymakers and institutions should:

Provide part-time jobs and streamline students' work regulations. Combine internships with academic programs. Improve cooperation of academic-employer partnerships so that international students have work sources. Reduce work granting restrictions after graduation to allow graduates to transition into the workforce. Connecting academic programs with the skills and expertise needed for the labor market – especially those in high-demand fields like IT, engineering, and business. Language barriers are one of South Asian students' biggest problems, that may thwart academic achievement and social acceptance. The solution to this problem is that institutions can do the following: Offer free or subsidized Lithuanian beginner language courses. Build all-inclusive integration programs like orientation camps, mentorship, and peer help programmes. Encourage global exchanges between natives and foreigners. Provide psychological and social support services (support services for adaptation difficulties). Better integration support will elevate students lives in ways that have a positive effect on how their lives unfold, and on where they may go to educational and business success in the future.

Supporting Career and Family Guidance and Support Services in School. Most international students are ignorant of and lack support for job opportunities during and after university. Hence, universities and colleges must:

- Establish special training centers for International Students.
- Provide a base of skills in CV writing, interview aids and job-seeking strategies.
- Organize fairs for employers locally and internationally.
- Give out and run alumni networks of alumni outreach programs and contacts for graduates.
- Offer tailoring career guidance/career counseling services.

It is doing this that is guiding the students to make good decisions, which ultimately leads to a job.

Regional Development Promotion in Fair Manner. Since the present time, when most of the students of the Republic are from abroad, they are from Vilnius or Kaunas, generating local differences. Policymakers need to support distribution in a more equitable manner to: Support community colleges in areas with struggling infrastructure; Provide people with cash incentives: scholarships or lower fees. Build regional infrastructure and student services clusters to attract investment in regions. Provide more local job opportunities for students to keep them. Some balanced regional development will also help the national economy and relieve the pressure on large urban areas, reducing pressure on them.

Ethical and Sustainable Internationalisation. Internationalization brings opportunities from an economic and cultural perspective but also threats from an economic over-commercialization and student exploitation perspective. Lithuania must do the following to maintain ethics:

Financiality and quality education: keep balance. Put students welfare and wellbeing first. Look out for private companies and institutions offering international education. Make responsible and inclusive international development policies. Through adopting this approach, Lithuania's reputation will be upheld in the long-term and perhaps outdo it. For decision-making and continuous improvement practice in tertiary science organizations, the ability to collect reliable data is essential.

It is suggested that we: Strengthen international student data collecting processes (eg: migration, employment and academic performance statistics); Survey students satisfaction on a regular basis. Encourage scholarly research on international student mobility. Establish the transparency of information flow between institutional bodies and policymakers. Better-quality data will result in evidence-based decision making and more focused on policy interventions.

References

1. Altbach, P.G., & Knight, J. (2007). The internationalization of higher education: Motivations and realities. *Journal of Studies in International Education*, 11(3-4), 290-305.
2. Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis, with special reference to education* (3rd ed.). University of Chicago Press.
3. British Council. (2023). *Global student mobility and recruitment trends*.
4. De Wit, H. (2020). *Internationalization of higher education: A critical review*.
5. DreamApply. (2024). *International student application trends and mobility data*.
6. European Commission. (2023). *European Education Area and student mobility reports*.
7. Eurostat. (2023). *International student mobility statistics in Europe*.
8. ICEF Monitor. (2023). *Trends in international student mobility*.
9. LAMA BPO. (2023). *Admission system and higher education access reports*.
10. Lee, E. S. (1966). A theory of migration. *Demography*, 3(1), 47-57.
11. Marginson, S. (2018). Global trends in higher education financing and student mobility.

12. Mazzarol, T., & Soutar, G. N. (2002). "Push-pull" factors influencing international student destination choice. *International Journal of Educational Management*, 16(2), 82-90.
13. McMahon, M. E. (1992). Higher education in a world market: An historical look at the global context of international study. *Higher Education*, 24(4), 465-482.
14. Migration Department under the Ministry of the Interior of the Republic of Lithuania. (MIGRIS). (2025). *Migration statistics and residence permit data for international students*.
15. Ministry of Education, Science and Sport of the Republic of Lithuania. (2023). *Internationalization strategy in higher education*.
16. OECD. (2022). *Education at a glance 2022: OECD indicators*. OECD Publishing.
17. QS. (2023). *International student survey report*.
18. SKVC (Centre for Quality Assessment in Higher Education). (2023). *Quality assurance in higher education and internationalization reports*.
19. Statistics Lithuania. (2023). *Education, migration and population statistics*.
20. Study in Lithuania. (2024). *Higher education in Lithuania: International student statistics and study opportunities*.
21. UNESCO. (2022). *Global flow of tertiary-level students*.
22. World Bank. (2023). *Migration and development brief 39*.

THE NECESSITY AND POSSIBILITIES OF DIGITALIZING HUMAN RESOURCE MANAGEMENT AND HUMAN RESOURCE ADMINISTRATION AT “PRO VAPE” LTD.

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Keywords: Human resource management, HR digitalization, HR administration, process digitalization, benefits of digitalization.

Abstract

The article examines the possibilities for digitalizing human resource (HR) management processes and HR administration in the company “Pro Vape” Ltd. The aim of the study is to investigate the necessity and opportunities for such digitalization. The results of the study indicate that HR management and HR administration processes in the company are currently carried out predominantly manually, using several mutually unintegrated digital tools, which reduces process efficiency and transparency. Survey and interview data confirm that employees recognize the need for digitalization, particularly in the areas of internal communication, employee performance evaluation, as well as leave and working time accounting. It is concluded that these processes can be digitalized in the company if implemented gradually, ensuring employee involvement and training, and as a result of the comparative analysis, *Panorama 365* has been identified as the most suitable solution.

Introduction

Nowadays, digitalization is one of the main directions of development in business. It is not only a technological innovation, but also an essential prerequisite for companies' competitiveness. The digitalization of HR management processes helps companies reduce the administrative burden, increase work efficiency, and ensure more accurate and secure data (Saifullina & Puce, 2019). Digital solutions in HR management help optimize daily tasks by reducing the risk of errors and improving employees' daily work at the workplace (Bhat & Sheikh, 2024). A large proportion of companies in Latvia have not yet utilized the advantages provided by digitalization, such as the management of employment contracts and the automation of remuneration and working time accounting, and all of this is carried out manually, significantly burdening employees. This is further supported by a study conducted by Visma, which found that only 7% of companies in Latvia have fully digitalized personnel administration processes (LabsofLatvia, 2022). Therefore, this topic is relevant not only for large companies, but also for small and medium-sized enterprises, as they ensure employee efficiency and their psycho-emotional condition.

Relevance of the Article. In the era of digitalization, the modernization of HR management and HR administration processes becomes particularly important. Automated systems, data processing, remote training platforms, and digital communication, intranet significantly facilitate daily processes, improve transparency, and ensure more accurate and timely decision-making. This allows HR managers to focus on what is essential in their work – people, rather than document circulation

Problem of the Article. “Pro Vape” Ltd. is an international company specializing in the production, development, and distribution of tobacco-free nicotine products. The relevance of the study was determined by the author's observations during a human resource psychology internship, where it was observed that the majority of document circulation in the company is carried out manually: employment contracts are prepared in paper format, employee personal files are stored in physical folders, while working time accounting and bonus calculations are performed using Microsoft Excel spreadsheets. Such work organization requires a significant time investment and creates a risk of errors; additionally, it places a substantial burden of responsibility on the employees involved. The management of “Pro Vape” Ltd. expressed interest in exploring possible digitalization solutions in order to ensure faster and more accurate data processing, as well as more efficient document circulation. In this context, an important question is what solutions could be implemented to optimize human resource management processes and HR administration.

Object of the Article. Digitalization of HR Management and HR Administration Processes in “Pro Vape” Ltd.

Goal of the Article. To study the digitalization opportunities of HR management processes and HR administration in “Pro Vape” Ltd. and to develop proposals for the company's management for the digitalization of these processes.

Objectives of the Article:

1. To study which HR management and HR administration processes in “Pro Vape” Ltd. need to be digitalized.
2. To identify the potential challenges associated with the digitalization of HR management and HR administration processes in the company.
3. To analyze what the digitalization opportunities are for HR management and HR administration processes in “Pro Vape” Ltd.

Methods of research: survey of managers (n=9), semi-structured interview with chief accountant and records manager (n=2), and comparative analysis of digital tools for HR management and administrative processes.

Theoretical aspects of the digitalization of human resource management processes and personnel administration

The theoretical basis of this study is grounded in the insights of several authors who explain the significance of the digitalization of HR management and HR administration processes in modern companies. Human resource management has become an essential strategic resource, and digitalization helps to develop it by ensuring more transparent and efficient processes (Bole, 2024). The implementation of digitalization is not only the installation of systems; it requires thoughtful planning, analysis of existing processes, and employee involvement so that technologies truly facilitate the company's daily operations rather than become a burden (Ketolainen, 2018). Digital solutions significantly reduce manual work and administrative burden, make document circulation more secure, and reduce the likelihood of human error. The need to digitalize HR management processes is influenced both by changes in the work environment and by technological development and the changing needs of employees, which affect the strategy of HR management processes and the approach to their implementation (Saifullina & Puce, 2019). The digitalization of HR management processes is no longer a luxury or an innovation in companies, but rather an essential component of ensuring business operations. Samson and Agrawal (Samson & Agrawal, 2020), in their study, highlighted the positive impact of digital tools on employee engagement and transparency in internal company communication, which functions well as a motivating factor for employees. Meanwhile, Bhat and Sheikh (Bhat & Sheikh, 2024) emphasized the importance of the human factor, as in their view, successful digitalization is based on employees' attitudes and psychological readiness for change; therefore, open and clear communication and support during the implementation of digitalization are essential. These insights overall demonstrate that the digitalization of HR management and HR administration processes is not only the implementation of modern technological tools, but also an issue of change management and organizational development.

The digitalization of HR management and HR administration processes means the transformation of traditional HR tasks and processes using digital technologies and automated solutions. It allows organizations to optimize administrative processes, reduce the volume of manual work, and focus resources on strategic activities that provide added value to the company's development (Ketolainen, 2018). On the one hand, the digitalization of HR administration covers administrative, repetitive processes, such as the preparation and electronic signing of employee contracts, the digitalization of working time accounting, the automation of payroll calculation and reporting, the management of employee personal data in digital format, and the automated processing of requests and applications. When digitalized, these processes become more transparent, faster, and more secure, reducing the risk of human error (Saifullina & Puce, 2019). On the other hand, the digitalization of HR administration is related to strategic functions that ensure the long-term development of the company. It includes talent attraction and recruitment platforms that allow the automation of candidate selection, employee evaluation and motivation systems, e-learning platforms, employee engagement and internal communication tools, and analytical tools that provide data for management decision-making regarding employee development, retention, and career paths. Digitalization enables companies not only to automate document management but also to develop integrated solutions for employee development and engagement (Rostoka, 2022). The aim of digitalization in the HR field is to achieve a balance between efficient management of administrative processes and higher value-added strategic activities. As a result, not only does work efficiency increase, but also the company's reputation as a modern, transparent, people-centered, and sustainable employer.

Nowadays, one of the most significant reasons for initiating the digitalization of HR management and HR administration processes is its close connection with organizational sustainability in both environmental and social aspects. By reducing paper-based document circulation and manual processes, the organization

promotes resource saving and environmental protection. The saved resources can be redirected to improving employee well-being, while the thoughtful digitalization of processes itself already strengthens employee well-being, helps prevent overload, and promotes an inclusive work environment that corresponds to modern principles of sustainable development. Digitalization does not simply mean the introduction of technologies; it is a change in mindset that requires the involvement of management and employees, change management, and clear communication. When properly implemented, it enables organizations to become more flexible, resilient, and competitive on a global scale.

Although digital HR management and HR administration systems provide organizations with broad opportunities to improve efficiency, transparency, and productivity, their implementation is not only a set of advantages. Any digitalization process involves a range of potential risks (see Table 1) that may affect technical, organizational, as well as human factor dimensions.

Table 1

Risks of Digital HR Management and Administration

Risks	Nature
Information security and data protection (Bhat & Sheikh, 2024)	Leakage of sensitive employee data or unauthorized access to such data by third parties.
Human factor and resistance to change (Saifullina & Puce, 2019)	Situations may arise where employees experience fear and insecurity regarding technologies that increase employee monitoring; employees may perceive that systems are introduced to replace them.
Technological dependence and system errors (ELVA, 2024)	Data loss, cyberattacks, internet or power outages may disrupt daily operations.
Automated decision-making (Bhat & Sheikh, 2024)	Technology algorithms do not take into account the human aspect, such as emotional and individual factors.
Employee monitoring and privacy (Saifullina & Puce, 2019)	Digital systems allow detailed tracking of employees, which may be perceived by employees as excessive control and create distrust toward the employer.
Legal and regulatory risks (LPVA, 2024)	It is necessary to ensure compliance with labor law and data protection regulations.
System maintenance and costs (Bhat & Sheikh, 2024)	Financial investments are required for system maintenance, updates, data security solutions, and employee training.

**Source: compiled by the author, based on Bhat & Sheikh (2024), Saifullina & Puce (2019), ELVA (2024), LPVA (2024)*

The digitalization of HR management and HR administration processes is associated with several significant risks. First, there is a data security risk, as sensitive employee information is stored in systems, and its leakage or unauthorized access may result in reputational and legal consequences, especially in the context of GDPR (Bhat & Sheikh, 2024).

Second, the human factor is significant, as employees may resist change due to fears of increased job complexity, enhanced control, or job loss, which hinders the effective implementation of digital solutions (Saifullina & Puce, 2019). Third, technological and ethical risks must be considered, including system failures, data loss, excessive reliance on algorithms and their potential bias, as well as unethical use of employee data (Bhat & Sheikh, 2024). Additionally, there is a risk of excessive monitoring, which may negatively affect employee motivation and the psychological climate of the organization (Samson & Agrawal, 2020), as well as legal risks related to compliance with data protection and labor law requirements (Parliament of the Republic of Latvia, 2024). Finally, financial and maintenance risks are also significant, as digitalization requires long-term investments in system maintenance, development, and employee training, rather than being a one-time project (Bhat & Sheikh, 2024).

The implementation of technology alone does not guarantee improved efficiency or employee satisfaction. For digitalization to be successful, the organization must find a balance between technological solutions and human factor needs, ensure an adequate level of data security, and comply with legal regulations. Otherwise, the benefits of digitalization may not be realized, and it may even create new problems that threaten the organization's development in the long term. Analyzing the risks associated with the digitalization of HR management and HR administration, ranging from technological disruptions and sensitive data protection

issues to employee psychological resistance and legal uncertainties, it becomes clear that the implementation of digitalization is a complex process that requires a well-considered strategy and responsible management. A critical evaluation of these risks shows that technology itself is not a solution—it becomes an effective tool only when the organization is able to simultaneously ensure security, transparency, and employee needs. Bondarouk et al. (2017) identify three key dimensions influencing digital HR management adoption in organisation: technological, organizational, and human factors, forming the so-called TOP framework. Furthermore, the outcomes of digital HR management are classified as operational, relational, and transformational, highlighting a shift from efficiency gains forwards strategic value creation and the transformation of HR functions.

For a digitalization project in HR management to be successful, it must be implemented according to a clear and logical sequence (see Fig. 1).

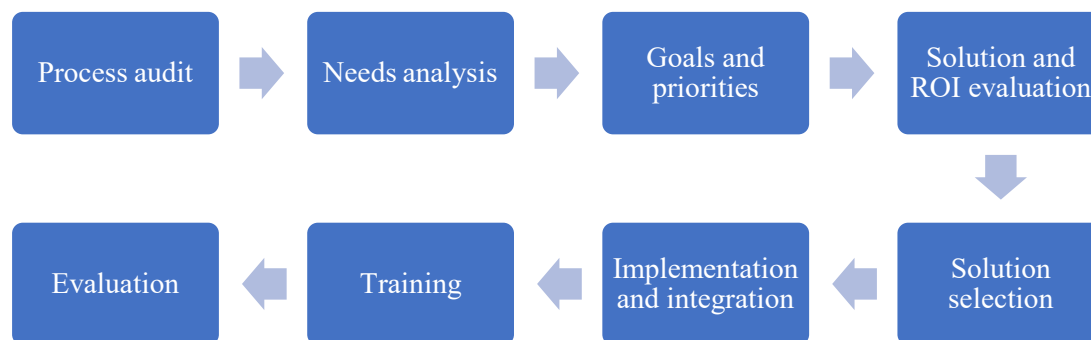


Fig. 1. Digitalization project implementation plan

**Source: compiled by the author*

As indicated in Figure 1, the initial step is to conduct an audit of existing processes, during which the organization's HR management and HR administration processes are identified, their strengths and weaknesses are evaluated, and the main challenges and shortcomings that hinder effective operations are determined. The second step is the involvement of employees and management, for example, by conducting surveys to identify needs and expectations regarding new solutions. This approach not only reduces employee resistance but also allows the development of solutions that practically correspond to daily needs (Ketolainen, 2018). The third step is the definition of objectives and the setting of priorities, where the organization determines which processes will be digitalized first, for example, working time accounting, document circulation, or employee self-service. At this stage, it is also essential to define success criteria and expected benefits, which later serve as a basis for ROI calculation (Bhat & Sheikh, 2024).

The digitalization of HR management and HR administration is not only a technological issue, but a strategic step that significantly affects the organization's sustainability and competitiveness. Its effectiveness is determined by several interrelated aspects, some of which include the calculation of return on investment (ROI), the available funding for the implementation of digitalization projects, as well as the selection of appropriate solutions from service providers available on the market. ROI, or return on investment, is a very important tool that allows the evaluation of how effectively a company uses resources in the implementation of digitalization projects (as well as any other activities where financial resources are invested). It is calculated using a simple formula, which is shown in Table 2.

Table 2

Return on Investment calculation formula

$\text{ROI} = \frac{\text{Benefits} - \text{Costs}}{\text{Costs}} \times 100\%$

**Source: compiled by the author, based on Botchkarev, 2015*

When calculating costs, it is necessary to take into account not only one-time expenses but also maintenance costs over a certain period of time. Likewise, when considering benefits, in order to calculate ROI as accurately as possible, it is necessary to take into account where the organization will no longer need

to spend resources. The success of digitalization is most often closely related to the ability to measure indirect benefits, such as reduced employee turnover or more effective managerial decision-making (Bhat & Sheikh, 2024). ROI calculation helps an organization determine which digitalization projects are strategically the most beneficial and in what order to implement them. Without this tool, companies risk investing in solutions whose returns are not proportional to the costs, thereby reducing the sustainability of the project.

In Latvia, companies have access to several state and European Union-funded support programs that help finance the digitalization of HR management and HR administration and reduce the initial investment from the company's working capital. The program "Support for Digitalization", administered by LIAA, provides co-financing for the implementation of technologies, employee training, and consultations, particularly promoting the competitiveness of small and medium-sized enterprises. Meanwhile, "Commercialization Support" is aimed at the development and introduction of new technological solutions to the market. In addition, the program "Support for Process Digitalization" offers significant funding for the digitalization of internal company processes, including HR management and document circulation. In addition to grant-type support, companies also have access to financial instruments such as ALTUM loans and guarantees, which provide flexible financing solutions for larger digitalization projects.

After evaluating the financial aspects, the next step is the selection and implementation of solutions. Particular importance is given to employee training and change management, as this helps to build a positive attitude and ensures the effective use of technologies (Samson & Agrawal, 2020). As emphasized by von Moltke and Verlinden (von Moltke & Verlinden, n.d.), the selection of digitalization service providers is an important step, as differences between platforms may exist both in functionality and in integration possibilities with existing company systems. It is necessary to carefully evaluate the market offering in order to ensure compliance with both technical requirements and the organization's strategic objectives. Nowadays, a wide range of digital solutions is available, covering both basic administrative functions and strategic areas of HR management.

At the final stage of the project, it is important not only to evaluate technical results, but also to analyze how employees interact with the implemented systems on a daily basis, how actively they use them, and how these systems have changed work processes. Such an evaluation makes it possible to determine whether the objectives of digitalization have been achieved and where further improvements are needed.

Empirical study on the digitalization of personnel management processes and personnel administration at "Pro Vape" Ltd.

"Pro Vape" Ltd. is an international company specializing in the production, development, and distribution of tobacco-free nicotine products. The company has been operating successfully for nearly 10 years, exporting its products to various European countries. "Pro Vape" Ltd. stands out for its high-quality and innovative approach to product development. The company employs 74 employees, and the workforce is characterized by significant diversity in terms of gender, age, and experience. In the company, 53% of employees are women and 47% are men, and gender balance is also maintained at the management level. The average age of employees is 38 years, and different generations are represented in the workforce, ranging from young specialists to experienced professionals with more than ten years of work experience. This combination of generations helps to promote knowledge transfer and an innovative work environment; however, it also creates challenges in the context of digitalization. Younger employees are generally more open to technologies and new processes, whereas more experienced and older employees tend to show caution and resistance to change, as established routines familiar to them are altered, which may create a sense of threat and fear that technologies will replace them (Saifullina & Puce, 2019).

To achieve the objectives of the study, the author conducted a survey of department level managers at "Pro Vape" Ltd. ($n = 9$), as well as interviews with the company's chief accountant and administrative clerk. Additionally, a comparative analysis of the functionality and interoperability of potentially applicable digital tools was carried out.

The survey included 21 questions, which are thematically presented in Table 3. In the survey, HR administration and HR management functions were distinguished separately; therefore, it was longer, but employees were highly responsive, and out of 10 employees to whom the survey was sent, 9 provided responses, representing key structural units essential for the company's operations: R&D, Accounting, Finance Department, Sales, production, warehouse, HR department, marketing, and sales department.

The developed survey questionnaire included questions whose answers allow for an understanding of "Pro Vape" Ltd., the respondents, and the readiness of the employees under their supervision for the digitalization

of HR management and HR administration processes. A large proportion of the questions in the survey were formulated in such a way as to enable the first step towards successful digitalization – the audit of existing processes – and to identify the current weak points in the processes.

Table 3

Overview of survey questions

Question	Content	Example
Questions 1 - 3	Respondent profile and the relation of job duties to HR management and HR administration	What position do you hold at “Pro Vape”?
Questions 4 – 5	Evaluation of existing processes and the use of digital tools	How do you evaluate the current document circulation in the company?
Questions 6 – 9	Identification of the most time-consuming processes and digitalization priorities	Which HR management processes, in your opinion, should be prioritized for digitalization?
Questions 10 – 11	Attitude towards digitalization and expected benefits	To what extent do you agree that the company should digitalize its processes?
Questions 12 – 13	Employee and team readiness for change	How would you evaluate your readiness to adapt to new digital tools?
Questions 14 – 15	Challenges and the need for support in the implementation of digitalization	What, in your opinion, could be the main challenges in implementing digitalization?
Questions 16 – 17	Impact of digitalization and evaluation of the company’s readiness	How do you evaluate the company’s readiness for the implementation of digitalization projects?
Questions 18 – 21	Proposals and desired solutions for process improvement	Which digital solution would you like to implement first?

** Source: compiled by the author*

In addition to the survey, within the framework of the study, the author conducted two semi-structured interviews with the chief accountant and the administrative clerk of “Pro Vape” Ltd. in order to gain an in-depth understanding of the existing HR management and HR administration processes in the company, as well as to determine opinions on digitalization opportunities and the related challenges (see Table 4).

Table 4

Overview of interview questions

Question	Content	Example
Questions 1 - 5	Evaluation of existing HR management and HR administration processes, document circulation, and the tools used	How are HR management and HR administration processes currently organized in the company?
Questions 6 – 8	Identification of digitalization needs, priorities, and expected benefits	Which processes do you see as priorities for digitalization?
Questions 9 – 10	Evaluation of technological readiness and available solutions	Is the company’s IT infrastructure sufficient for the implementation of new solutions?
Questions 11 - 13	Implementation challenges, employee attitudes, and change management	What difficulties do you foresee in the implementation of new digital systems?
Questions 14 - 18	Impact of digitalization, success factors, and future outlook	How could digitalization affect employee productivity?

**Source: compiled by the author*

Within the framework of the practical study, a comparative analysis was also conducted, the aim of which was to evaluate the suitability of different digital solutions for the digitalization of HR management and HR administration processes. The analysis compared the main functionalities of the systems, their compatibility with the information systems used in the company, as well as implementation and maintenance costs. The comparison criteria were determined based on the results of the survey and interviews, identifying the most important processes to be digitalized in the company.

Results

This section presents the results of the study by analyzing the responses provided by the respondents and identifying the most significant trends in the digitalization of HR management and HR administration processes. In the question regarding which HR management processes should be prioritized for digitalization, employees were allowed to select no more than three options; such a limitation required respondents to evaluate priorities and identify the most significant currently inefficiently managed processes, which are shown in Figure 2.

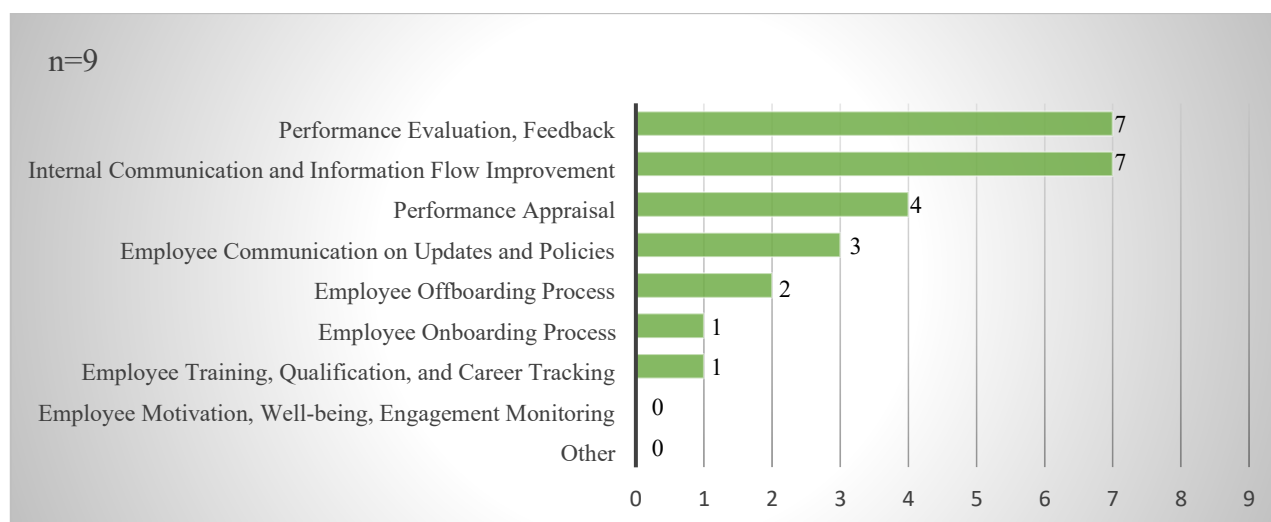


Fig. 2. HR Management Processes Prioritized for Digitalization at “Pro Vape” Ltd.

**Source: compiled by the author*

As shown in Figure 2, respondents identified employee performance evaluation and the feedback system as priority processes for digitalization, which are currently implemented in an unstructured manner. The need to improve internal communication and information flow between employees and management was also emphasized, as indicated by 7 out of 9 respondents. Four respondents believe that performance appraisal should also be digitalized, while three highlighted employee communication regarding company updates and internal events. These results indicate that the mentioned processes are currently not implemented effectively or are not implemented at all. Their digitalization could enhance employee motivation and trust in the company’s management.

Additionally, respondents evaluated HR administration processes that, in their opinion, should be prioritized for digitalization, selecting no more than three response options (see Fig. 3).

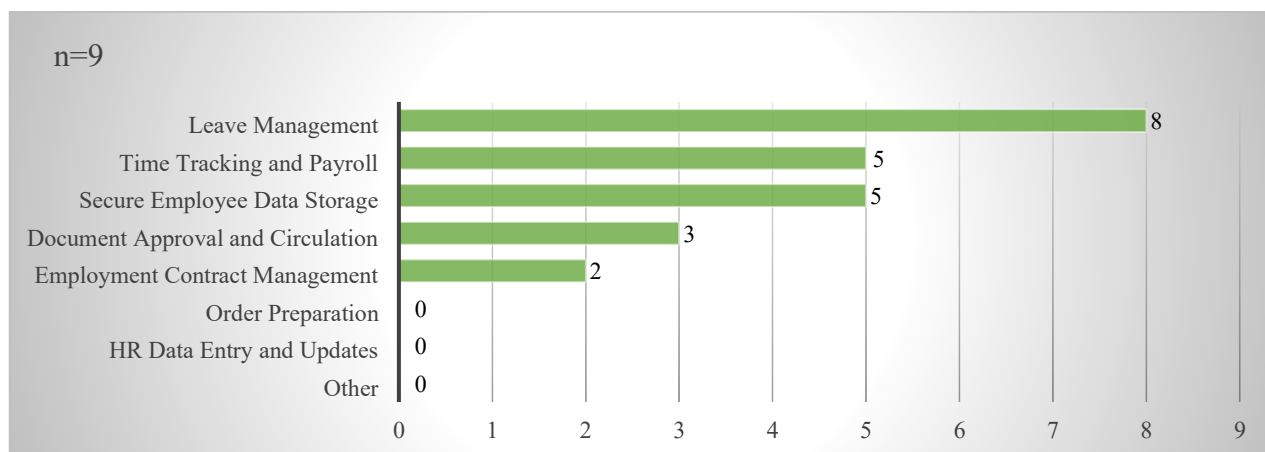


Fig. 3. HR Administration Processes Prioritized for Digitalization at “Pro Vape” Ltd.

**Source: compiled by the author*

Survey participants most frequently identified employee leave application, processing, and approval as priority processes for digitalization in the company (8 out of 9 respondents). Five respondents consider that working time accounting, payroll calculation processes, and the secure storage of employee data and personal information in a unified system should be digitalized. Three respondents pointed to the need for digitalizing document approval and circulation between departments, including submission to accounting, while two respondents highlighted the preparation, amendment, and termination of employment contracts as a priority. Additionally, several respondents emphasized the need for an employee self-service portal that would provide the ability to submit requests, track absence balances, and access personal documents.

Respondents' answers regarding team readiness to adapt and participate in the implementation of new digital tools indicate an overall positive but cautious attitude, with an average rating of 4.33 out of 5. In justifying their evaluation, surveyed employees often pointed to challenges related to changes in habits and differences in colleagues' levels of technological skills. Similar trends were also observed in the interviews, where it was emphasized that some employees still prefer paper documents, perceiving them as more reliable and familiar.

The respondents' assessment of the company's readiness for the implementation of digitalization projects is overall positive, as 4 out of 9 respondents consider the company to be fully ready, while 5 out of 9 consider it to be partially ready (see Fig. 4).

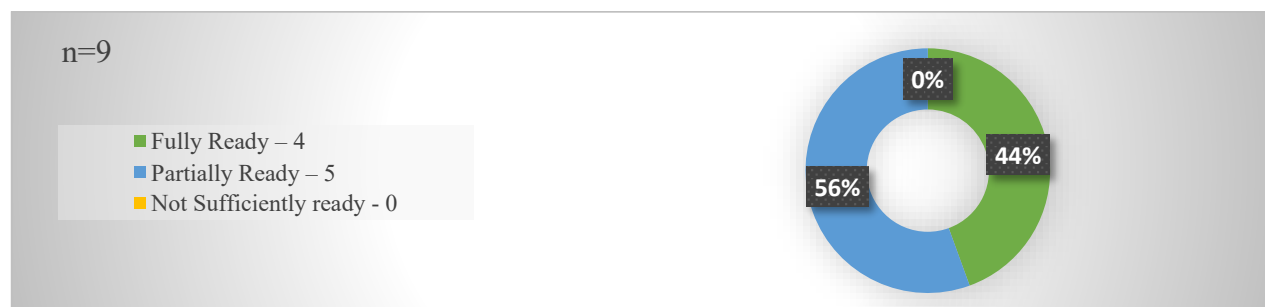


Fig. 4. “Pro Vape” Ltd. Readiness for Digitalization

**Source: compiled by the author*

The main positive supporting factors identified include management support, employee openness to change, and an understanding of the benefits of digitalization. At the same time, several significant challenges are highlighted, such as the limited range of existing digital tools, difficulties related to changing employee habits, as well as the additional workload and resource requirements during the implementation process. The financial aspect is also an important factor, as the company must finance digitalization independently. Despite this, it is emphasized that in the long term, the benefits outweigh the potential implementation challenges.

Respondents evaluated the potential benefits of introducing digital tools in human resource management and HR administration, selecting multiple response options (Fig. 5).

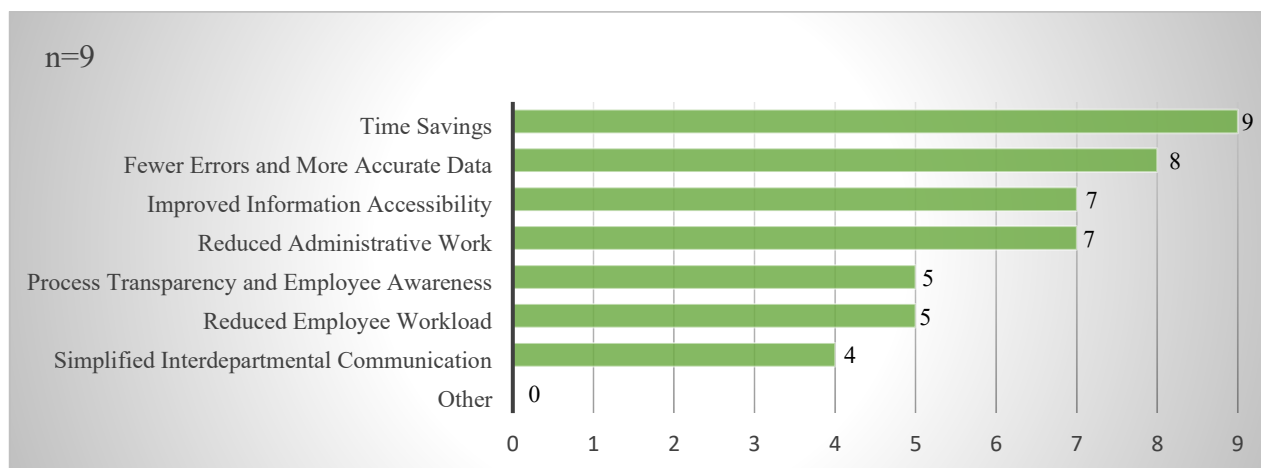


Fig. 5. Benefits of HR Digitalization

**Source: compiled by the author*

All respondents (9 out of 9) indicate that the most significant benefit of digitalizing HR management and HR administration processes is time savings. All respondents also believe that the digitalization of these processes would facilitate their work and improve work efficiency. Eight respondents identify a reduction in errors and more accurate data recording as important benefits, which would reduce the impact of the human factor. Five respondents indicate that the introduction of digital solutions could reduce employee workload while increasing awareness and process transparency.

Potential challenges of digitalization were also analyzed from the respondents' perspective (Fig. 6).

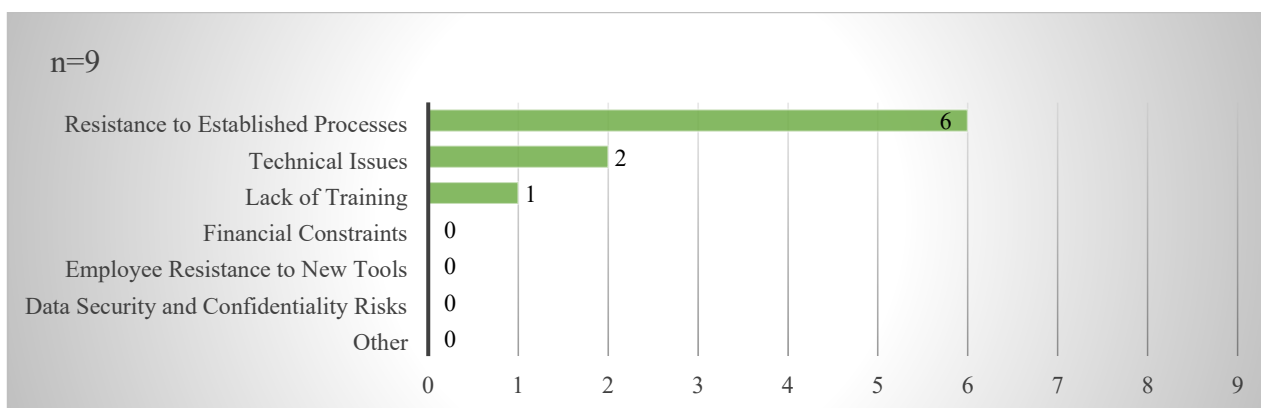


Fig. 6. Challenges in Digitalizing HR Management and Administrative processes

**Source: compiled by the author*

As shown in Figure 6, six employees' identify resistance to change due to established routines processes as the main challenge of digitalization. Two respondents mention technical issues, such as system compatibility and access rights, while one respondent highlights the lack of training as the most significant challenge.

The survey also included open-ended questions in which respondents were asked to indicate which digital solutions should be implemented and which processes they would like to digitalize in order to improve their work efficiency. Several respondents identified working time accounting and leave application digitalization as priorities. Employees were also given the opportunity to provide suggestions for improving document circulation and HR management processes in "Pro Vape" Ltd. One respondent suggested implementing *Namejs* or another equivalent document management system that would ensure centralized storage of contracts, orders, documents, and other process-related information.

In order to compare the opinions of the surveyed respondents with those of employees who carry out HR management and HR administration processes on a daily basis, additional interviews were conducted with the company's chief accountant and administrative clerk. The interview results indicated that the main challenges in the company are related to fragmented processes and manual work organization. HR management and HR administration processes are carried out using several mutually unintegrated systems, as well as *Excel* files, which makes data processing more time-consuming and increases the risk of errors. Document circulation and

approval, particularly leave management, largely take place manually, for example via email, which reduces transparency and slows down information flow.

To determine the most suitable solution for the company, the author conducted a comparative analysis of the functionality and interoperability of the mentioned digital tools. The survey results show that respondents identified several digital tools in their responses that could be used for the digitalization of HR management and HR administration processes. The most frequently mentioned systems were *Namejs*, *Personio*, and *HiBob*. At the same time, an important factor in selecting digital solutions is their compatibility with systems already used in the company. In the interview, the chief accountant indicated that *Microsoft Dynamics 365 Business Central* is used for payroll accounting; therefore, related solutions were also considered, including *Panorama 365* as an employee self-service portal. Additionally, the solution previously evaluated by the company, *Visma HoP*, was also considered. The results of the comparative analysis conducted by the author are summarized in Table 5, where the functionality of digital tools, their compatibility with the existing accounting system, and implementation costs are compared in order to identify the most suitable and sustainable solution for the company's needs.

Table 5

Comparison of Digital Systems for HR Management and HR Administration

	HiBob	Personio	Visma Hop (price offer recieved)	Namejs	Panorama 365 (price offer recieved)
Leave application and processing	Available	Available	Available	Available (request workflow section)	Available
Document approval, circulation, and submission to accounting	Available	Available	Available	Available	Available
Internal communication, document distribution	Available	Not available	Available	Available	Available
Employee performance evaluation, feedback system	Available	Available	Separate tool <i>Visma Talent Solutions</i>	Not available	Available
Employee onboarding	Available	Available	Separate tool <i>Visma Appical</i>	Not available	Available
Recording and transparency of sick leave, vacations, absences	Available	Available	Available	Not available	Available
Compatibility with <i>Dynamics 365 Business Central</i>	Available, but it is not known whether the solution complies with Latvian labor legislation	Possible, but requires testing for compliance with Latvian labor legislation	Possible, increases implementation costs	It is stated that the system can be integrated with other systems	Available
Implementation and maintenance costs (EUR)	-	-	Implementation 12000.00; maintenance 275.00/month	Implementation 9440.00	Implementation 9500.00; maintenance 320.00/month

In Table 5, the author evaluated the main functionalities that employees of “Pro Vape” Ltd. identified as priorities for the digitalization in the field of HR management and HR administration. An analysis of solutions available on the market indicates that the offering is broad and diverse, and systems differ significantly in terms of both functionality and cost. Considering the company's needs and existing technological environment, the author concludes that the most suitable solution is *Panorama 365* developed by ELVA. It ensures

compatibility with the currently used payroll accounting system *Microsoft Dynamics 365 Business Central*, complies with Latvian regulatory requirements, and includes the key functionalities identified by surveyed and interviewed employees as priorities for digitalization. Moreover, the implementation of this solution could be relatively faster and more efficient, given the possibilities for integration with existing systems, thereby reducing implementation risks and ensuring more unified and transparent management of HR processes.

Conclusions

The digitalization of HR management and HR administration processes in organizations is a strategic tool that promotes efficiency, transparency, and data accessibility. The data obtained in the practical part of the study indicate that the main shortcomings in HR management and HR administration processes have been identified in “Pro Vape” Ltd., and employees are aware of the need for digitalization, which indicates the company’s readiness to initiate change.

The study shows that HR management and HR administration processes are currently mostly carried out manually or using several separate, unintegrated systems, which reduces efficiency. At the same time, the priority areas for digitalization identified by employees include internal communication, employee performance evaluation, as well as leave and working time accounting. Considering employee attitudes and potential challenges, implementation should be organized gradually, ensuring communication and training.

After evaluating the available digital solutions, *Panorama 365* was identified as the most suitable tool. Therefore, it is recommended that the company evaluate available solutions, agree on implementation conditions, and implement a structured process that includes system customization, testing, employee training, and subsequent evaluation of results. Overall, the findings confirm that well-planned digitalization can significantly improve work processes, employee productivity, and the company’s competitiveness (Saifullina & Puce, 2019).

The study conducted by the author is considered significant for the development of “Pro Vape” Ltd., as it provides empirically grounded recommendations for the digitalization of HR management and HR administration processes, thereby promoting the successful implementation of digital transformation.

References

1. ALTUM. (2025). *Digitalizācijas programma* [Digitalization program]. ALTUM. <https://www.altum.lv/pakalpojumi/biznesam/digitalizacija>
2. Bhat, S. A., Sheikh, B. A. (2024). Impact of Digitalization on Human Resources: Challenges and Opportunities. *Journal of Production, Operations Management and Economics*, 4(2), 1-4. DOI: [10.55529/jpome.42.1.7](https://doi.org/10.55529/jpome.42.1.7)
3. Bole, D. (06.11.2024), *Personāla vadītājs kā vadības labā roka – stratēģis un starpnieks reizē* [HR Manager as Management’s Right Hand – Both Strategist and Intermediary], <https://ir.lv/rubrika/viedoklis/personala-vaditajs-ka-vadibas-laba-roka-strategis-un-starpnieks-reize.180368>
4. Bondarouk, T., Parry, E., & Furtmueller, E. (2017). Electronic HRM: four decades of research on adoption and consequences. *The International Journal of Human Resource Management*, 28(1), 98-131. <https://doi.org/10.1080/09585192.2016.1245672>
5. Botchkarev, A., (2015). Estimating the Accuracy of the Return on Investment (ROI) Performance Evaluations, *Interdisciplinary Journal of Information*, 10, 217-233. DOI: [10.28945/2338](https://doi.org/10.28945/2338)
6. ELVA. (2024). *Panorama 365 – personāla pašapkalpošanās rīks* [Panorama 365 – employee self-service tool]. ELVA. <https://www.elva.lv/risinajumi/panorama-365>
7. European Union. (07.04.2016). *Vispārīgā datu aizsardzības regula* [General Data Protection Regulation]. <https://eur-lex.europa.eu/legal-content/LV/TXT/?uri=CELEX%3A02016R0679-20160504#B-2>
8. Ketolainen, H. (29.05.2018). *Digitalization of Human Resources – the transformation journey into automated and data-driven service organization*, Haaga-Helia University of Applied Sciences, https://www.theseus.fi/bitstream/handle/10024/149759/Ketolainen_Niina.pdf
9. LabsofLatvia. (11.08.2022), *7% uzņēmumu personāla lietvedības procesi ir pilnībā digitalizēti* [7% of companies personnel administration processes are fully digitalized]. Preses relīze. <https://labsoflatvia.com/aktuali/visma-petijums-par-digitalizaciju>
10. Latvijas Republikas Saeima. (22.10.2024). *Darba likums* [Labour Law]. <https://likumi.lv/ta/id/26019-darba-likums>
11. LIAA. (2025). *Atbalsts procesu digitalizācijai turpināsies: uzņēmējiem būs pieejami līdz 200 tūkstošiem eiro projekta īstenošanai* [Support for process digitalization will continue: up to EUR 200,000 available for project implementation]. <https://www.liaa.gov.lv/lv/jaunums/atbalsts-procesu-digitalizacijai-turpinasies-uznemejiem-bus-pieejami-lidz-200-tukstosiem-eiro-projekta-istenosanai>

12. LPVA, (20.02.2024). *Digitālās sistēmas un personāla iesaiste* [Digital systems and employee engagement], <https://lpva.lv/articles/391/digitalas-sistemas-un-personala-iesaiste>
13. Rostoka, Z. (04.08.2022). *Digitālā personāla vadība (1. daļa)* [Digital Human Resource Management (Part 1)], Visma.lv. <https://www.visma.lv/blogs/digitala-personala-vadiba-i-dala>
14. Saifullina, E., & Puce, R. E. (2019). *Personālvadības problēmas Latvijas uzņēmumos* [Human resource management problems in Latvian companies]. Biznesa Augstskola Turība. <https://www.turiba.lv/storage/files/elina-saifullina-rebeka-elina-puce.pdf>
15. Samson, H., & Agrawal, V. (2020). Effectiveness of digitalization in HRM: An emerging trend. *Journal of Critical reviews*, 7(4), 4082-4088, DOI: [10.31838/jcr.07.04.454](https://doi.org/10.31838/jcr.07.04.454)
16. von Moltke, N., & Verlinden, N. (n.d.), *HR Digital Transformation: An HR Leader's guide*. AIHR, <https://www.aihr.com/blog/hr-digital-transformation/>

CULTURE OF EMPLOYEE COOPERATION IN THE ŠILALĖ DISTRICT MUNICIPALITY ADMINISTRATION

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Keywords: collaborative culture, organizational culture, public sector, municipality.

Abstract

The article analyses the issues of the formation and expression of a culture of employee cooperation in a public sector organization. The theoretical and practical research of Lithuanian and foreign authors is analyzed and systematized, revealing the concept of a culture of cooperation, its significance for the organization's activities, its determining factors and improvement opportunities. The main elements of a culture of cooperation, trust, communication, information sharing and the pursuit of common goals, which form the prerequisites for effective organizational activities, are discussed, and the significance of leadership in forming a culture of employee cooperation in an organization is also highlighted. The empirical part of the article presents the results of a quantitative study conducted in the Šilalė District Municipality Administration. The study analyzed the attitude of employees towards a culture of cooperation, its expression in the organization and improvement opportunities. The results of the study allow us to assess the characteristics of a culture of cooperation in an organization and identify the most important directions for its strengthening. Recommendations are provided for strengthening a culture of cooperation in a public sector organization.

Introduction

The culture of employee collaboration in organizations is considered an important factor influencing performance, employee engagement, and the quality of decision-making. Gražulis, et al. (2015) argue that people working in an organization are an essential part of the internal system that connects various elements of the organization into a coherent structure.

Research problem: In an organization, employee cooperation between different departments is not always smooth enough, therefore information exchange, decision-making and implementation of common goals may be less effective. Therefore, it is relevant to study the culture of employee cooperation and identify opportunities for its improvement in the organization.

Object of research: employee cooperation culture in the Šilalė district municipality administration.

The purpose of the study: to investigate the culture of employee collaboration in the organization.

Research objectives:

1. To analyze the culture of employee collaboration from a theoretical perspective.
2. To investigate the expression of the culture of employee cooperation and its determining factors in the Šilalė district municipality administration.

Research methods: the study used methods such as scientific literature analysis, online source analysis, quantitative research (survey), graphical representation, and data processing using Excel.

Theoretical aspects of employee collaboration culture

It is important to define the concept of employee collaboration culture and its main elements. Collaboration culture is most often associated with employee interaction, shared values and the pursuit of common goals in the organization, based on trust, communication and shared responsibility.

The concept of employee collaboration culture: Table 1 presents definitions of employee collaboration culture presented in the works of various Lithuanian and foreign authors.

Based on the definitions provided, it can be stated that the culture of employee collaboration in public sector organizations is associated with the organization's value system, mutual trust and collective interaction. The culture of collaboration is also associated with more flexible forms of management and employee interaction. D. Jesiūnienė (2025) emphasizes that collaborative management is considered a flexible form of decision-making that allows overcoming the boundaries of hierarchical management and coordinating actions between different departments of the organization. J. Bučaitė-Vilkė (2019) emphasizes the importance of employee interaction and horizontal decision-making processes, while L. Gomez-Ruiz et al. (2020) emphasize team identity and orientation towards common goals.

Recent research also emphasizes the importance of leadership in shaping a collaborative culture. T. Rumayantas, S. Sanusi, and S. Bani (2025) note that generational change in an organization leads to changes in communication and leadership practices. A. Arminienė (2024) emphasizes the role of the leader in promoting employee engagement and cooperation. R. Pakeltienė, A. Giedraitis, A. Ispiryan (2024) note that organizations that foster a strong collaborative culture more easily achieve strategic goals, because cooperation promotes innovative solutions and increases employee engagement and responsibility.

In summary, it can be stated that the culture of employee collaboration is formed through organizational values, communication, leadership, and employee interaction.

1

Definitions of a collaborative employee culture

AUTHOR	DEFINITION
V. Rieger, M. Klarmann (2022)	A collaborative employee culture is an environment that combines collaboration and individual work to achieve quality solutions.
J. Ding, G. Hong (2025)	A collaborative employee culture is an organizational culture that promotes interpersonal relationships, cooperation, and commitment.
L. Lidman, M. Gustavsson, (2022)	A culture of employee collaboration and the organizational conditions that support it are essential in the public sector, ensuring the smooth running of operations and the application of innovations.
V. Jakubauskytė-Andriulienė (2024)	A culture of employee collaboration through leadership and two-way communication creates a pursuit of common goals based on trust and engagement.
J. Budreikaitė (2025)	A collaborative employee culture is an organizational environment in which inclusive leadership strengthens employee engagement and collaboration.
D. Jesiūnienė (2025)	The essence of a collaborative culture is associated with norms that include a common goal, inclusion, representation, shared decision-making, and a culture of discussion.
O. Pavlova (2020)	A culture of employee collaboration is a phenomenon formed through daily employee interaction and shared identity.

**Source: compiled by the author, based on management and scientific literature*

After analyzing the theoretical aspects of the culture of employee collaboration, it was determined that it is understood in a public sector organization as an element of organizational culture based on trust, shared values, and employee interaction, focused on achieving common goals. It was determined that this culture has a significant impact on employee beliefs, communication, decision coordination, and the sustainability of the organization's operations. It is also noted that the culture of collaboration is dynamic and its strengthening is associated with leadership practices, employee involvement, competency development, and open communication in the organization.

The study conducted in the Šilalė District Municipality Administration aims to reveal the employees' attitude towards the culture of cooperation, identify the factors that strengthen it and foresee opportunities for improvement. It analyzes how cooperation, information exchange and decision-making take place between departments in the organization, as well as how employees evaluate mutual relations, communication and trust. The results of the study provide the prerequisites for assessing the state of the culture of cooperation and foreseeing directions for its strengthening.

Employee cooperation culture study of Šilalė District Municipality Administration

Organizational overview: Šilalė District Municipality Administration is a public sector institution that performs local self-government functions and implements decisions made by the municipal council and mayor. The administration provides administrative and public services, implements the municipality's strategic plans and programs. The administration structure is based on functional division: activities are coordinated by the director of the administration and the departments subordinate to him.

The purpose of the study: to investigate the culture of cooperation among employees of the Šilalė district municipality administration, to identify its characteristics and opportunities for improvement, based on the opinions and experience of employees.

Research methodology: the survey method used is a quantitative study, which allows for summarizing employee responses and identifying key opinion trends.

Place and time of the study: Šilalė District Municipality Administration. October 2025.

Survey type: anonymous questionnaire.

Survey structure: The questionnaire consisted of 20 closed-ended questions. The questions were divided into three main parts: introduction, demographic questions, and topic-related questions.

Sample size: the general population consisted of 68 administrative employees (excluding technical personnel – cleaners and drivers). The sample size was calculated using the Paniotto formula (Kardelis, 2016). With a 10% error rate and 95% probability, it was sufficient to interview 41 employees for the study;

41 employees participated in the study, therefore the sample should be considered sufficient for descriptive analysis and reasonable conclusions.

Sampling method: non-probability sampling was used – convenience sampling, interviewing employees who received the questionnaire and voluntarily agreed to participate.

Demographic insights: 85 % of the respondents were women (35) and 15% were men (6). By age, the largest number of respondents was 51 years and older, 39%, slightly less so in the 41-50 age group, 34%, followed by 31-40 year old respondents, 22%, and the smallest number was under 30 years old, 5%.

In terms of length of service, the largest proportion of respondents has been working for more than 10 years – 49%. Other groups are divided as follows: 34% of respondents have 1-5 years of service, 12% have 6-10 years, and 5% have the shortest work experience – up to 1 year. This indicates the renewal of the organization and emphasizes the need to strengthen its adaptability and motivation.

By position held, the majority of respondents were specialists (63%), managers/head of departments (20%), and administrative staff (15%). This distribution reveals that the survey is dominated by employees directly performing functions, whose involvement is a key factor in shaping daily cooperation practices in the organization.

It can be argued that the demographic structure of the respondents – older and more senior employees and the dominance of specialists – forms the basis for both a stable culture of cooperation and highlights the need to strengthen the integration of new employees and mutual knowledge sharing.

The study sought to determine how employees describe the nature of organizational collaboration, by asking respondents to select the statement that best reflects the characteristics of the organization. The data are presented in Figure 1.

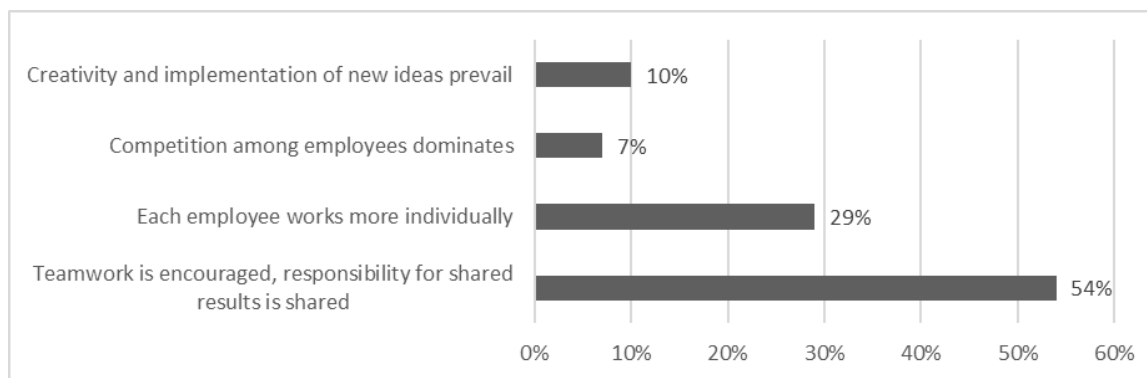


Fig 1. The nature of employee collaboration in an organization

**Source: compiled by the author*

It can be seen from the data presented in Figure 8 that the largest part of the respondents indicated that teamwork and responsibility for common results are encouraged in the organization (54%). Individual work was named as the prevailing practice by 29% of employees. And creativity and implementation of new ideas by 10%. Part of the respondents (7%) stated that competition between employees dominates.

It can be concluded that in an organization's collaborative culture, priority is given to shared results and shared responsibility, while competitive or innovative aspects are less prominent.

The study also sought to determine what factors, in the opinion of respondents, most determine the strength of the culture of cooperation in the Šilalė district municipality administration. The results are presented in Figure 2.

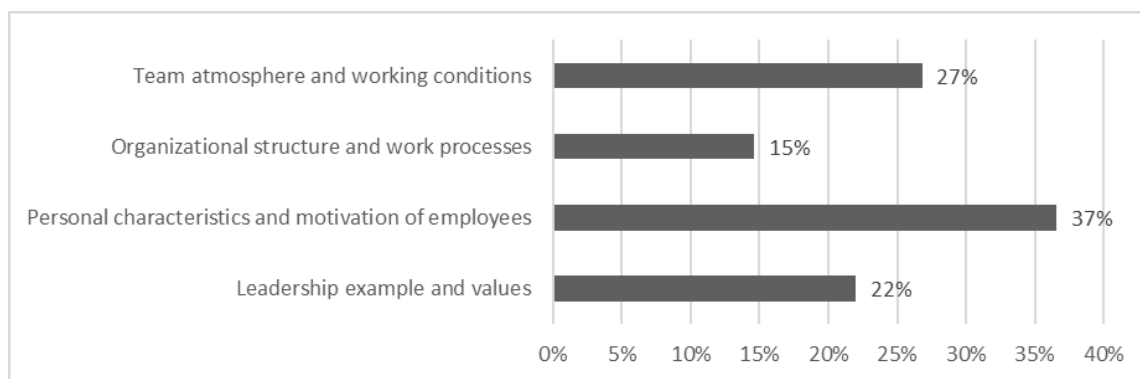


Fig 2. Respondents' opinions on the factors determining a collaborative culture

**Source: compiled by the author*

Analyzing the data presented in Figure 2, it can be seen that 37% of respondents associate the culture of collaboration most closely with the personal characteristics and motivation of employees. 27% distinguish the atmosphere of the team and working conditions, 22% the example of managers and the values of the organization, and 15% structural aspects.

It can be argued that a collaborative culture is mainly determined by human factors, and organizational structure is seen as less significant.

The study also sought to determine which of the listed elements in the organization's employee collaboration are most important for achieving a positive work environment. The results of the study are presented in Figure 3.

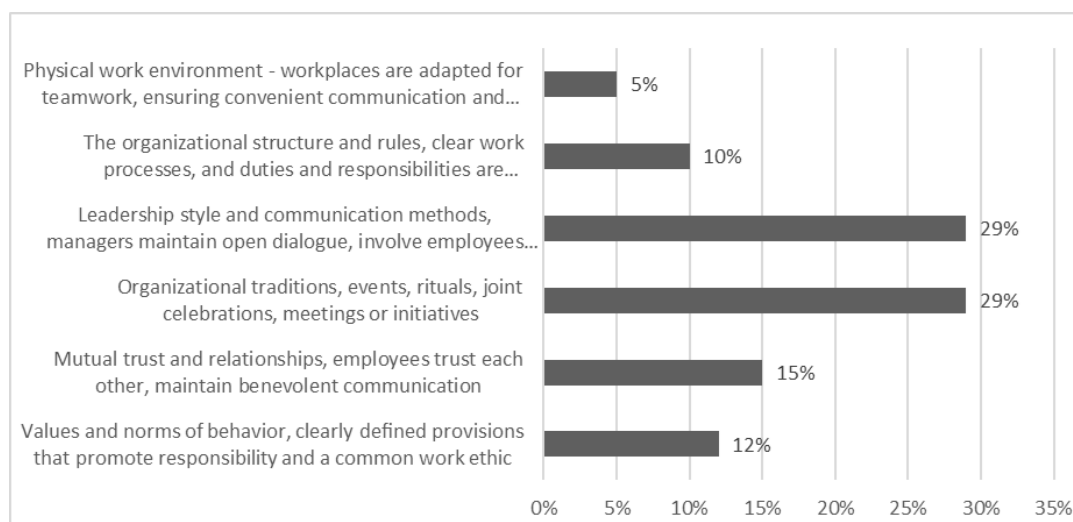


Fig 3. Elements of a culture of employee collaboration in an organization

**Source: compiled by the author*

It can be seen from the data presented in Figure 3 that 29% of respondents associate the culture of collaboration most closely with leadership style, communication and organizational traditions. 15% distinguish mutual trust, 12% values and norms, 10% structure and rules, and 5% the physical work environment.

It can be said that employees most often associate collaboration with communication and the role of managers, while physical and formal aspects are valued less.

The study also aims to analyze what measures respondents believe should be taken to strengthen employee cooperation in the Šilalė District Municipality Administration. The results are presented in Figure 4.

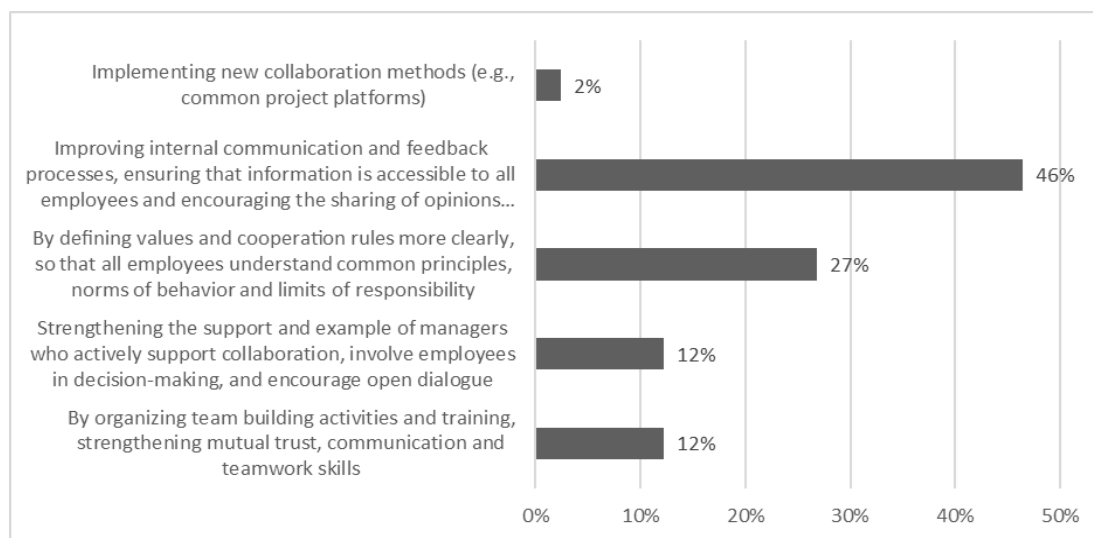


Fig 4. Respondents' opinions on measures that can strengthen cooperation in the organization

**Source: compiled by the author*

Analyzing the data presented in Figure 4, it can be stated that 46 % of respondents believe that employee cooperation would be strengthened most by improving internal communication and feedback. 27% emphasize the importance of clearer values and rules of cooperation, and 12% each highlight support from managers and team building activities. Only 2% of respondents associate strengthening cooperation with the implementation of new working methods. It can be stated that employees prioritize improving communication and clear principles of cooperation. This shows that the quality of cooperation in an organization is primarily associated with daily interaction, dissemination of information and mutual understanding, rather than with structural or technological changes.

The results obtained allow us to state that cooperation in an organization is closely related to organizational factors, such as leadership of managers, promotion of innovations and employee involvement. The research data revealed that cooperation processes in an organization are not equally developed in all departments, therefore, certain inequalities can be seen in the expression of cooperation. In order to strengthen the culture of cooperation, it is appropriate to pay more attention to improving internal communication, promoting employee involvement and consistent support from managers. It can be stated that strengthening these factors would create the prerequisites for more harmonious cooperation between departments and effective implementation of the organization's activities.

The results of the study also show that the organization has a fairly strong collaborative environment based on trust, teamwork and the pursuit of common goals. Collaboration is most shaped by human factors, employee motivation, interpersonal relationships, team atmosphere and the example of managers. It is believed that these factors form the basis for effective collaboration, as they directly affect employee engagement, trust in the organization and the desire to achieve common results. Relationships based on mutual trust and a favorable emotional environment promote open communication, sharing of ideas and constructive problem solving.

Opportunities for improving the culture of employee cooperation in the Šilalė District Municipality Administration

The analysis of the research results showed that the culture of employee cooperation in the organization is important for achieving smooth work and the implementation of the organization's common goals. However, certain factors that promote cooperation are not consistently applied in the organization. Therefore, it is important to clearly define possible measures to strengthen the culture of cooperation and the directions for their improvement. The main measures to improve the culture of employee cooperation and the directions for their improvement are presented in Figure 5.

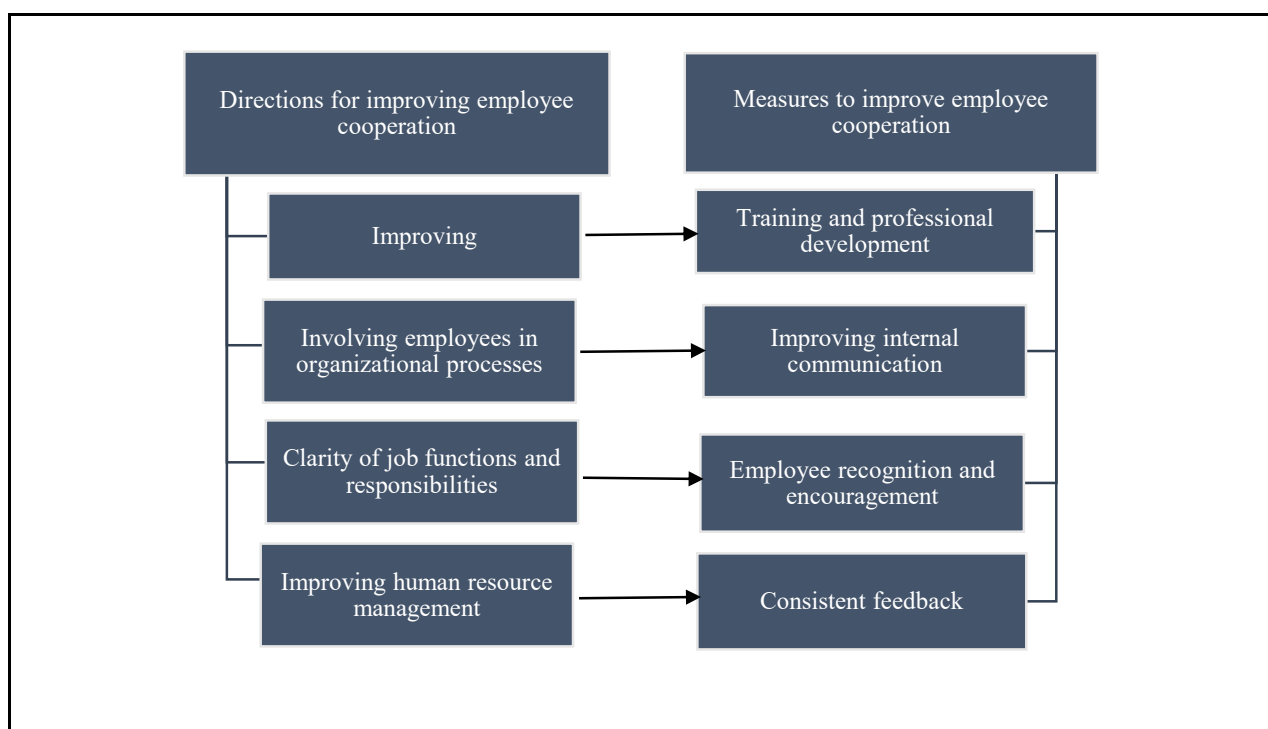


Fig 5. Directions for improving the culture of employee collaboration in the organization

**Source: compiled by the author based on research data*

As shown in Figure 5, improving the culture of employee collaboration in an organization is associated with key areas such as strengthening internal communication, involving employees in organizational processes, clarity of job functions and responsibilities, and improving human resource management. These areas are implemented through specific measures, including employee recognition and promotion, consistent feedback, improving internal communication, and training and skill development.

The interaction of these directions and tools creates the prerequisites for the systematic development of a culture of cooperation, promotes employee involvement, improves internal communication and has a positive impact on the effectiveness of the organization's activities and the quality of services. It is believed that the consistent application of these tools allows for the formation of an environment based on trust, openness and cooperation.

Conclusions

After analyzing the theoretical aspects of the culture of employee collaboration, it was determined that it is one of the most important factors determining the effectiveness of the organization's activities. It is based on shared values, trust, open communication and employee involvement, which create the prerequisites for smooth teamwork and the implementation of organizational goals. It was also determined that the organizational environment, leadership style and personnel management processes have an important influence on the formation of a culture of collaboration.

The study found that the expression of the culture of employee cooperation in the Šilalė District Municipality Administration is quite favorable – the organization is dominated by a medium-strength culture of cooperation, focused on achieving common goals and teamwork principles. It was found that the majority of respondents (71%) associate cooperation with the implementation of common goals, and more than half (51%) believe that innovations in the organization promote cooperation, creativity and employee involvement.

It was found that the culture of employee cooperation is most determined by human factors – employee motivation, interpersonal relationships, team atmosphere and the example of managers. A significant part of the respondents (46%) noted that the culture of employee cooperation is most strengthened by consistent support from managers, therefore it can be stated that both internal communication and active involvement of managers play an important role.

Based on the suggestions presented, it can be stated that improving the culture of employee collaboration in an organization depends on consistently implemented organizational measures. It has been

determined that improving internal communication, increasing employee involvement, clear distribution of responsibilities, and improving human resource management create the prerequisites for more effective collaboration in an organization.

References

1. Arminienė, A., Kupstienė, L., Girininkaitė-Lenzė, A. (2024). *Research on employee diversity and inclusion management in business organizations from the perspective of managers and employees*. Kaunas University. [accessed 2026-02-20]. Online access: <file:///C:/Users/sukur/Downloads/ramune,+8+.pdf>
2. Bučaitė-Vilkė, J., Civinskas, R., Lazauskienė, A., Leščiauskaitė, V., Lackowska, M., Gendzwill, A., Krukowska, J., Mikalauskas, A. (2019). *Municipal cooperation in Lithuania: forms, possibilities, visions*. Kaunas. Vytautas Magnus University. [Accessed 2026-02-21]. Online access: https://www.researchgate.net/profile/Remigijus-Civinskas/publication/340152481_Savivaldybiu_bendradarbiavimas_Lietuvoje_formos_galimybes_vizijos/link/s/6092bbe292851c490fbb9fb9/Savivaldybiu-bendradarbiavimas-Lietuvoje-formos-galimybes-vizijos.pdf
3. Budreikaitė, J. (2025). *The relationship between manager behavior and employee sense of meaning in the context of inclusive leadership*. Mykolas Romeris University. [Accessed 2026-02-21]. Online access: <https://ojs.mruni.eu/ojs/vsvt/article/view/8129/5812>
4. Ding, J., Hong, G. (2025). *Fostering Loyalty and Creativity: How Organizational Culture Shapes Employee Commitment and Innovation in South Korean Firms*. College of business, Pusan National University, Busan. Republic of Korea. [Accessed 2026-02-20]. Online access: [file:///C:/Users/sukur/Downloads/Fostering_Loyalty_and_Creativity_How_Organizationa%20\(1\).pdf](file:///C:/Users/sukur/Downloads/Fostering_Loyalty_and_Creativity_How_Organizationa%20(1).pdf)
5. Gražulis, V., Račelytė, D., Dačiulytė, R., Valickas, A., Adamonienė, R., Sudnickas, T., Raišienė, A.G. (2015). *Human Resources Management*. Vilnius. Mykolas Romeris University. [Accessed 2026-02-20]. Online access: <https://etalpykla.lituanistika.lt/fedora/objects/LT-LDB-0001:B.03~2015~1468254829630/datastreams/DS.001.0.01.BOOK/content>
6. Gomez-Ruiz, L.M., Sanchez-Exposito, M.J. (2020). *The Impact of Team Identity and Gender on Free-Riding Responses to Fear and Cooperation Sustainability*. Spain. Pablo de Olavide University. [Accessed 2026-02-21]. Online access: [file:///C:/Users/sukur/Downloads/The_Impact_of_Team_Identity_and_Gender_on_Free-Rid%20\(1\).pdf](file:///C:/Users/sukur/Downloads/The_Impact_of_Team_Identity_and_Gender_on_Free-Rid%20(1).pdf)
7. Jesiūnienė, D. (2025). *Cooperative Governance: From Theory to Practice in Democracy and Sustainable Development*. Vytautas Magnus University, Panevėžys College. [Accessed 2026-02-21]. Online access: https://www.kolpingokolegija.lt/wp-content/uploads/2025/09/Leidiny_2025.pdf
8. Jakubauskytė-Andriulienė, V. (2024). *A communication model for the employee creativity in the context of sustainability and organizational culture*. Vilnius. Vilnius Gediminas Technical University. [Accessed 2026-02-21]. Available online: [file:///c:/users/sukur/downloads/jakubauskyt-andriulien_2024%20\(1\).pdf](file:///c:/users/sukur/downloads/jakubauskyt-andriulien_2024%20(1).pdf)
9. Kardelis, K. (2016). *Research Methodology and Methods: Education and Other Social Sciences*. Vilnius: Science and Encyclopedia Publishing Center.
10. Lidman, L., Gustavsson, M., Fogelberg-Erksoon, A. (2022). *Learning and employee-driven innovation in the public sector – the interplay between employee engagement and organizational conditions*. Sweden. Linköping University. [accessed 2026-02-20]. Online access: <https://www.diva-portal.org/smash/get/diva2:1736332/fulltext02.pdf>
11. Pavlova, O. (2020). *Links between organizational culture and modern human resource management in an organization*. Vilnius University. [Accessed 2026-02-21]. Online access: <https://etalpykla.lituanistika.lt/fedora/objects/LT-LDB-0001:J.04~2019~1588660226401/datastreams/DS.002.0.01.ARTIC/content>
12. Pakeltienė, R., Giedraitis, A., Ispiryan, A. (2024). *Fostering Organizational Sustainability Through Employee Collaboration: An Integrative Approach to Environmental, Social, and Economic Dimensions*. Vytautas Magnus University, Lithuanian University of Health Sciences, Klaipėda University. [Accessed 2026-02-20]. Online access: [file:///C:/Users/sukur/Downloads/Fostering_Organizational_Sustainability_Through_Em%20\(6\).pdf](file:///C:/Users/sukur/Downloads/Fostering_Organizational_Sustainability_Through_Em%20(6).pdf)
13. Rieger, V., Klarmann, M. (2022). *The effect of cooperative team culture on innovation*. Germany. Karlsruhe Institute of Technology. [Accessed 02/20/2026]. Available online: https://www.researchgate.net/publication/358981379_The_effect_of_cooperative_team_culture_on_innovation
14. Rumayanto, T., Sanusi, S., Bani, S. (2025). *Opportunities and Challenges of Implementing Communication Management in Organizations Managed by Gen-Z*. Sekolah Tinggi Ekonomi Widya Persada, Jakarta, Indonesia. [Accessed 2026-02-20]. Available online: [file:///C:/Users/sukur/Downloads/Opportunities_and_Challenges_of_Implementing_Commu%20\(2\).pdf](file:///C:/Users/sukur/Downloads/Opportunities_and_Challenges_of_Implementing_Commu%20(2).pdf)

EXPERIENTIAL LEARNING IN PRESCHOOL EDUCATION: THE CONNECTION BETWEEN THEORY AND PRACTICE IN THE CONTEXT OF NEURODIDACTICS

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Abstract

The article theoretically reveals the principles of experiential learning and their relevance in the education of preschool-age children, and empirically substantiates teachers' attitudes toward the possibilities of applying experiential learning in educational activities in the context of neurodidactics. Research aim – to analyse the importance of experience-based learning in the context of neurodidactics. Main research results: The context of applying experiential learning is not only broad and versatile but also adaptable when working with children of different ages. In the context of neurodidactics, experiential learning is particularly effective, as meaningful, emotionally engaging, and active experiences support brain-based learning processes. The principles of experience-based learning can be applied in outdoor, artistic, and play-based activities. Respondents note that experiential learning fosters children's independence, social, communication, and cooperation skills, and encourages exploration, which is reflected in children's achievements. However, teachers face challenges in applying experiential learning due to large group sizes, the integration of children with special educational needs and the need for individual attention, as well as a lack of time and difficulties in activity planning.

Introduction

Relevance of the Article. Experiential learning is increasingly recognized as a significant approach in contemporary education, particularly in early childhood settings, where learning is closely connected to children's direct experiences, exploration, and interaction with their environment (Gerulaitis & Vaivadienė, 2019; Kolb, Kolb, Passarelli & Sharma, 2014). Grounded in a constructivist perspective, this approach emphasizes that children actively construct knowledge through meaningful engagement rather than passively receiving information. In preschool education, experiential learning is most often realized through play, exploration, and creative activities, which support the development of cognitive, social, emotional, and physical competencies. In recent years, growing attention has been given to the relationship between experience-based learning and neurodidactics. Neurodidactics, as an interdisciplinary field combining insights from cognitive neuroscience, educational psychology, and pedagogy, explains learning as a process grounded in brain functioning (Tyng et al., 2017). It highlights that effective learning occurs when cognitive, emotional, and sensory processes are actively engaged, and when learners experience emotional security and meaningful involvement. These conditions are considered essential for strengthening neural connections and supporting deeper and more sustainable learning outcomes (Zhu et al., 2022). From this perspective, experiential learning can be seen as a pedagogical approach that creates favourable conditions for the implementation of neurodidactic principles in practice. Through active participation, direct experience, and reflection, children are encouraged to engage in learning processes that are compatible with natural brain functioning (Kolb & Kolb, 2022). However, while theoretical connections between experiential learning and neurodidactics are increasingly discussed, there is still a need to better understand how these connections are reflected in everyday educational practice, particularly in preschool settings.

Therefore, **the aim of this article** is to reveal the possibilities of applying experiential learning in preschool educational activities and to analyze the relationship between theory and practice in the context of neurodidactics, based on educators' experiences.

Research question. What are the possibilities of implementing experiential learning in preschool education in relation to neurodidactic principles?

Research object. The application of experiential learning and its relationship with brain-based learning processes in preschool education.

Objectives of the Article:

1. To theoretically substantiate the concept, importance, and possibilities of experiential learning in relation to neurodidactic principles in preschool education.
2. To empirically determine teachers' attitudes toward the application of experiential learning in educational activities and to present the research results.

Methods of research: Scientific literature analysis, written survey, and quantitative and qualitative data analysis.

Theoretical Framework and Research Data

Neurodidactics is an interdisciplinary field that integrates insights from cognitive neuroscience, educational psychology, and pedagogy to better understand how learning processes are grounded in brain functioning. Its central premise is that learning becomes more effective when it aligns with natural brain processes, particularly when it involves active engagement, emotional involvement, and meaningful experience. Rather than replacing traditional pedagogical approaches, neurodidactics provides explanatory frameworks that help to understand why certain learning conditions are more effective than others. In this context, its principles are particularly relevant to experience-based learning in early childhood education.

One of the key insights from neuroscience is the close relationship between emotion and cognition. Research suggests that emotional processes play a significant role in attention, motivation, and memory formation. Brain structures such as the amygdala and hippocampus interact in encoding emotionally significant experiences, which can enhance memory consolidation (Tyng et al., 2017). More recent studies indicate that emotionally engaging learning experiences may also support the integration of new and previously acquired knowledge through neural reactivation processes (Zhu et al., 2022). In early childhood education, this implies that emotionally meaningful and engaging activities can create favourable conditions for deeper learning.

Another important aspect highlighted in neurodidactic research is active and multisensory participation. Learning that involves multiple sensory modalities and active engagement has been associated with stronger and more integrated neural activation patterns compared to passive forms of instruction. Multisensory experiences support more complex neural connectivity and contribute to more durable learning outcomes (Tyng et al., 2017). In preschool education, this is reflected in the importance of play-based, outdoor, and creative activities, where children learn through exploration, movement, and interaction with their environment.

Neuroscience research also emphasizes the importance of errors and reflection in the learning process. When outcomes differ from expectations, the brain is prompted to adjust and seek deeper understanding — a mechanism that actively drives learning. However, these processes are influenced by emotional context, as high levels of stress may impair learning mechanisms (Carvalho et al., 2021). This highlights the importance of psychologically safe learning environments, particularly in early childhood education. Reflection following experience is also considered essential, as it supports the organisation and consolidation of knowledge and may facilitate the transition from immediate experience to longer-term understanding (Kolb & Kolb, 2022).

From this perspective, experiential learning can be interpreted as a pedagogical approach that creates conditions for the implementation of neurodidactic principles. Through active engagement, emotional involvement, multisensory experience, and reflection, children are provided with opportunities to construct knowledge in ways that are compatible with brain-based learning processes. Thus, experiential learning does not represent a neurodidactic principle itself, but rather a practical framework through which such principles can be realised in educational practice.

Experiential learning can be described as a non-traditional approach, closely related to the surrounding environment and real-life situations, involving learners in active practical and creative activities, and fostering critical thinking, problem-solving skills, and a holistic understanding of the world (Gerulaitis & Vaivadienė, 2019). The concept of experience-based learning is presented by many authors. Experiential education of children is defined as a process in which a preschool teacher creates conditions for children to see, hear, experience, and reflect, that is, to gain various experiences through active participation, engagement, and collaboration with peers and adults (*Methodological Recommendations for Preschool Education*, 2015). Experience-based learning is a learning strategy in which experience is the main learning resource. It is learning by doing, where learners construct their own knowledge, develop skills and abilities, and cultivate values based on their own and others' experiences (Braslauskienė et al., 2018). According to D. Kirchhöfer (2004), experiential learning is a process inseparably linked to changing activities, involving a complex reflection on the relationship between conditions, actions, and outcomes, as well as the integration of newly acquired and existing knowledge and experiences. Experiential learning is also understood as an organized process in which knowledge and skills are constructed through experience and later applied in practice (Gass, Gilliss, & Russell, 2020). Understanding the concept of experience-based learning is important for every educator. Its foundation lies in personal development achieved through meaningful experiences, discoveries,

and active participation. The connection between a child's existing knowledge and new information is a key factor that gives meaning to the learning process from the learner's perspective (Braslauskienė et al., 2018). Experiential learning can therefore be described as a deep-level learning process. A. Jakubė and A. M. Juozaitis (2012) argue that meaningful learning process involves the active role of the learner, where knowledge, skills, and attitudes become an integral part of the individual. By analyzing information, solving problems, acting, and reflecting on their experiences, learners remain active, focusing not on isolated facts but on underlying ideas and relationships between them, discussing their insights and constructing their own understanding of reality.

According to P. Malik and S. Behera (2024), experiential learning is a process of knowledge creation through the transformation of experience, involving focus, reflection, the formation of generalizations, and the testing of these generalizations. One of the most well-known and frequently cited authors in the field of experience-based learning is D. Kolb (2014). He developed a model of experiential learning that explains learning through and from experience as a process of constructing new knowledge. The relationship between acquired information and new experience was described by Kolb as a four-stage cycle (see Fig. 1):

- Concrete activity/experience – an experience that can be described through facts and specific terms. At this stage, the learner actively engages in the learning process and performs tasks.
- Observation and reflection – recognition of feelings arising from the activity, as well as evaluation of behavior and outcomes. In group tasks, it is important that all members experience learning success at this stage.
- Generalization – linking experience with abstract concepts in order to form broader understanding.
- Practical application and experimentation – applying newly acquired knowledge in practice to gain further experience, which is then refined based on previous learning (Gerulaitis & Vaivadienė, 2019).

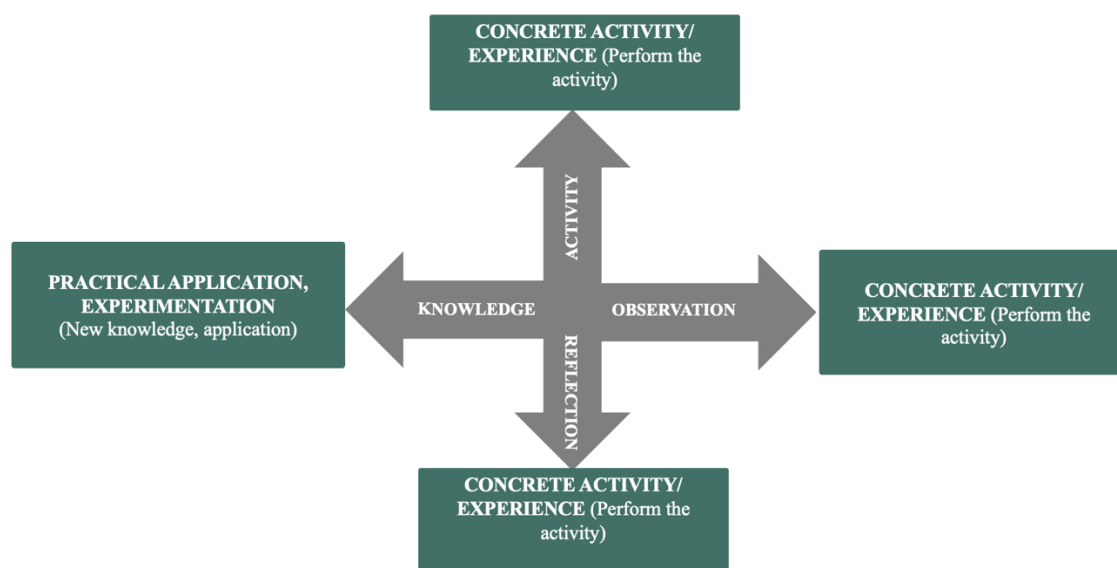


Fig. 1. D. Kolb's Experiential Learning Cycle

**Source: compiled according to Kolb (2014), Kember et al. (2000), McCurdy (2012)*

The possibilities for implementing and applying experiential learning are highly diverse and can be used during play, musical activities, and in outdoor environments. The ability to generate original ideas, improvise freely, symbolize, fantasize, and express oneself (Monkevičienė, 2011) promotes a child's physical and psychological development. According to I. Becker-Textor (2001), the most favorable period for developing children's creativity is early childhood, as children are most receptive at this stage: they are curious, eager to explore the world, gain experiences, and form their own understanding, as their thinking is free and unconstrained; however, a safe environment that encourages a child's self-expression is essential for effective learning (Description of Achievements of Preschool-Age Children, 2014). For preschool-age children, the world is like one large laboratory, and children are naturally scientists who use various methods and senses to accumulate experience (Citro, 2015, p. 7), as sensory perception is the primary way of understanding the world (Baltakienė & Valeikienė, 2016), which is essential for successful physical and spiritual development in

childhood (Vilkonis, 2008). Children are naturally curious, and in seeking answers to their questions, they explore their environment, thereby becoming familiar with the world around them (Dodge, Colker, & Heroman, 2007), thus, through different activities and in various environments, they gain a wider range of experiences. In this context, the role of the teacher becomes particularly important, as a teacher must be a continuous learner, competent, and striving to acquire new knowledge, methods, and ways to engage children and help them gain as much knowledge as possible (Autukevičienė, 2007).

A quantitative and qualitative study was conducted at the nursery–kindergarten “X”. Based on the developed research instrument, a questionnaire for teachers was constructed. The questionnaire for preschool and pre-primary teachers included 13 closed-ended questions, 2 semi-closed questions (where respondents could choose a provided option or add their own answer), and 4 open-ended questions. The study involved 18 respondents and was conducted in accordance with the principles of voluntariness, integrity, and anonymity.

In the scientific field, a number of broader concepts extending the standard definition of learning by doing are presented; therefore, at the beginning of the study, it was important to determine how participants define experiential learning and what keywords and associations they use. This question was also essential for refining and expanding the concept of experiential learning within the theoretical framework. Five subcategories were identified (see Table 1): gaining experience through practice, construction of new knowledge, educational strategy, exploration and experimentation, and discoveries. The results revealed that respondents provided diverse statements, yet all of them reflected the essence of experiential learning. In summary, experience-based learning can be described as a deep-level learning method and an educational strategy based on experience and learning through experience, involving interaction with the environment, exploration, and experimentation, while fostering independence, thinking skills, and the construction of new knowledge.

Table 1

The Concept of Experiential Learning

Subcategories	Supporting respondent statements
Gaining experience through practice and activity	“Learning from experience” [T1] “Education through experiences” [T5] “Children’s learning through senses, thinking, and the use of natural materials” [T18] “It is learning from one’s own personal experience and discoveries” [T8] “It is knowledge independently acquired by the child through certain activities” [T7]
Construction of New Knowledge	“It is learning by doing, where learners construct their own knowledge, acquire skills, develop abilities and values through their own direct experience, and sometimes through the experiences of others” [T6]
Educational Strategy	“A strategy for children’s education. a form of learning where not knowledge but experience and skills are emphasized” [T4]
Exploration and Experimentation	“Experimentation, exploration, the discovery of experience and its application in learning” [T2] “Investigative experimental activity” [T3] “Exploration, trials, activities outdoors and in other environments” [T4]
Discoveries	“When conditions are created for the child to discover and understand independently” [T9]

**Source: compiled by the author*

The study aimed to determine when respondents apply experiential learning (see Fig. 2).

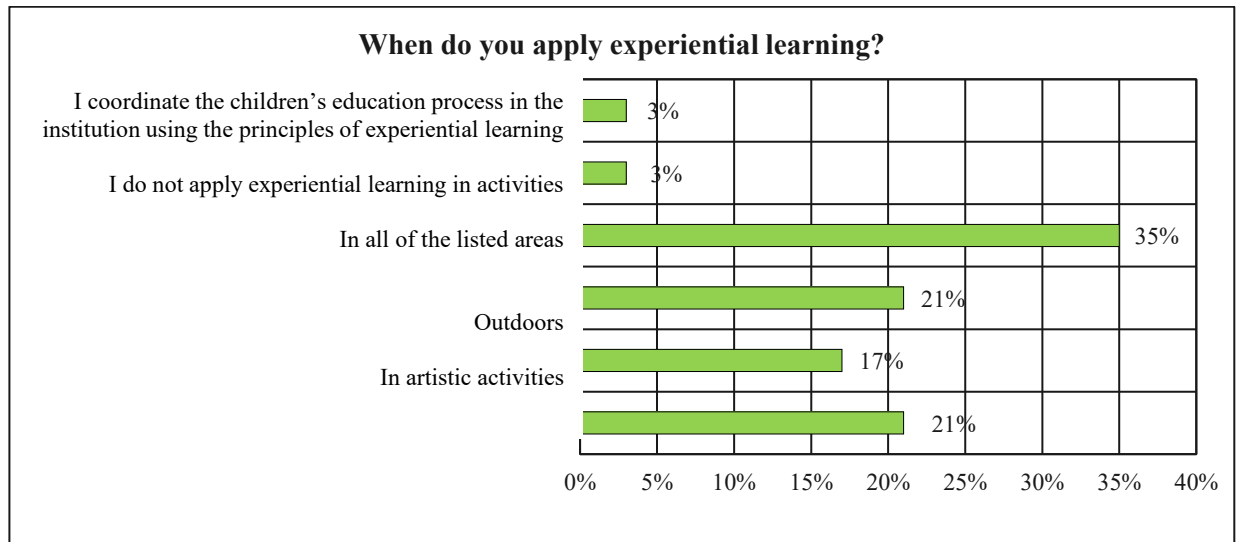


Fig. 2. Possibilities for the Application of Experiential Learning

**Source: compiled by the author, distribution of Respondents' Answers*

The results revealed that 35% of respondents apply experiential learning in all listed activities, i.e., during play, artistic activities, and outdoors. 21% of respondents indicated that they apply it during play and in outdoor activities, while 17% stated that they use it during artistic activities. Only 3% reported that they do not apply this method in their activities. In summary, the findings show that the majority of respondents apply experience-based learning across all listed activities – during play, artistic activities, and outdoor learning.

The study sought to identify which improved child abilities respondents associate with experiential activities, as reflected in the evaluation of children's achievements (see Table 2). The results revealed that experience-based learning supports a holistic approach to personality development, and its principles in the educational process create opportunities to explore the environment comprehensively, develop stronger skills, encourage confident exploration, enhance concentration, promote reflection on actions, and foster experimentation. According to the Methodological Recommendations for Preschool Education (2015), children demonstrate their accumulated experience, knowledge, and abilities in various ways—through play, communication, speaking, exploration, creativity, and solving everyday problems. Thus, the findings indicate that experiential learning is closely related to socialization. This is also reflected in respondents' observations that children learn to seek help from adults while building relationships with them. Overall, the results show that most respondents believe experiential learning enhances children's independence, communication and social skills, and encourages more confident exploration of the environment. In addition, respondents noted improvements in logical thinking, relationships with adults, the ability to absorb new information more easily and apply it in practice, as well as strengthened self-regulation and self-control. It is also evident that experiential activities contribute to the development of all age-appropriate competencies, including cognitive, communication, social, artistic, and health-related areas.

Table 2

Improved Child Abilities

Subcategories	Supporting respondent statements
Acquired skills	"Children acquire knowledge more quickly and are able to apply it. I have noticed that children, in various situations, look for ways to solve problems and, when they fail, turn to an adult" [T10] "Independence" [T9] "Cooperation skills" [T4] "Social skills" [T7] "Absorbs new information more easily" [T14] "Logical thinking" [T16] "Communication skills" [T11] "Making choices, applying results in activities" [T1]

Environmental awareness	“Stronger in the natural science domain” [T2] “Explores the environment with confidence” [T5] “Concentrates more, reflects on their actions, experiments” [T4] “Gets to know the environment with the help of an adult, building a relationship with them” [T12]
Holistic development	“Experiential activities should develop all age-appropriate competencies of children in cognitive, communication, social, artistic, and health education domains” [T3] “Gradually improving in all areas comprehensively and holistically” [T8]

**Source: compiled by the author*

The study also aimed to identify the challenges faced in educational institutions when teachers attempt to apply the principles of experiential learning in the educational process. The majority of respondents indicated that the main difficulties are large group sizes and conducting activities with children who have special educational needs. Respondents also identified other challenges, such as a lack of IT resources, insufficient reflection and feedback, limited materials in the group, lack of time, challenging working conditions (e.g., use of natural materials and ensuring a safe environment suitable for all children), difficulties in planning activities, and insufficient knowledge.

In summary, the results revealed that the possibilities for applying experiential learning principles in preschool education are broad and widely implemented in the educational process. Teachers recognize the relevance of experiential learning in developing children’s competencies and apply it in daily activities. The benefits of experience-based learning are reflected in children’s achievements, socialization, and everyday experiential activities. However, it is evident that teachers face various challenges when applying experiential learning, which are prevalent in the current educational context and affect both institutions and individual educators. According to K. Rani and T. K. Tyagi (2022), it is essential for teachers to gain a thorough understanding of experiential learning principles and their application, as superficial or low-quality implementation of this method often fails to achieve the desired outcomes and does not create a meaningful and engaging learning process.

Conclusions

1. The analysis of scientific literature revealed that experiential learning is a deep-level learning process in which information about the surrounding world is gathered, sensory experiences are engaged, cognitive competence is developed, and the acquired experience is later reflected upon. Learning through experience promotes children’s social, communication, cognitive, emotional, and physical development. Experience-based learning is beneficial for all participants in the process, as it develops the ability to learn and encourages understanding not only of the surrounding world but also of oneself. These principles are closely related to neurodidactics, which emphasizes that learning is most effective when it is based on active participation, emotions, and experience, as such conditions activate brain processes and strengthen long-term memory formation. D. Kolb developed a model of experiential learning that can be described as a cycle consisting of essential stages: concrete experience, observation, reflection, generalization, and application in everyday life. Experience-based learning can be applied in various activities, such as play, creative activities, and outdoor learning. In each activity, it is important to provide children with opportunities to experience success, as this motivates them to continue engaging in learning.

2. The results of the study revealed that teachers have knowledge about experiential learning in early childhood education, and its application possibilities are broad and can be integrated into various daily educational activities. It was found that experiential learning supports holistic child development, strengthening independence, communication and social skills, as well as thinking abilities, while acquired knowledge is more easily applied in practice. These findings also confirm the principles of neurodidactics, which state that active, experience-based, and emotionally engaging learning promotes deeper understanding and more effective learning. However, despite the benefits of this method, teachers face various challenges, such as large group sizes, lack of time, limited resources, and the need to adapt activities to children with different abilities.

References

1. Autukevičienė, B. (2007). *Studento praktikanto ir padedančiojo dirbti ikimokyklinio ugdymo pedagogo saviugdų ir karjeros planavimo ypatumai*. Vilniaus pedagoginis universitetas.
2. Baltakienė, J., & Valeikaitė, G. (2016). Pojūčių lavinimo svarba, plėtojant ikimokyklinio amžiaus vaikų pažinimo kompetenciją. *Gamtamokslinis ugdymas bendrojo lavinimo mokykloje*, 22.
3. Becker-Textor, I. (2001). *Kūrybiškumas vaikų darželyje*. Presvika.
4. Braslauskienė, R., Norvilienė, A., Šmitienė, G., & Vismantienė, R. (2018). *Patirtinis ugdymas(is) vaikystėje: Šiuolaikinės medijos ir informacinių komunikacinių technologijų galimybės*. Klaipėdos universiteto leidykla.
5. Carvalho, J., Conceição, V. A., Mesquita, A., & Seara-Cardoso, A. (2021). Acute stress blunts prediction error signals in the dorsal striatum during reinforcement learning. *Neurobiology of Stress*, 15, 100412. Retrieved from: <https://doi.org/10.1016/j.ynstr.2021.100412>
6. Citro, A. (2015). *The curious kid's science book: 100+ creative hands-on activities for ages 4-8*. Retrieved from: https://www.theinnovationpress.com/thecuriouskidssciencebook?utm_source=chatgpt.com
7. Compani, M. L., & Lang, P. (2015). *Valdorfo vaikų darželis šiandien*. Mijalba
8. Dodge, D. T., Colker, J. L., & Heroman, C. (2007). *Ikimokyklinio amžiaus vaikų kūrybiškumo ugdymas*. Presvika.
9. Gass, M. A., Gillis, H. L., & Russell, K. C. (2020). *Adventure therapy: Theory, research, and practice*. Routledge. Retrieved from: <https://doi.org/10.4324/9781003016618>
10. Gerulaitis, Š., & Vaivadienė, E. (2019). *Patirtinis mokymas(is): Metodinė medžiaga*. Nacionalinė švietimo agentūra. https://www.researchgate.net/publication/315793484_Experiential_Learning_Experience_as_the_source_of_Learning_and_Development_Second_Edition
11. *Ikimokyklinio amžiaus vaikų pasiekimų aprašas*. (2013). Vilnius: Švietimo ir mokslo ministerijos Švietimo aprūpinimo centras.
12. *Ikimokyklinio ugdymo metodinės rekomendacijos*. (2015). Vilnius: Švietimo ir mokslo ministerijos Švietimo aprūpinimo centras.
13. Jakubė, A., & Juozaitis, A. M. (2012). *Bendrujų kompetencijų ugdymas aukštojoje mokykloje: Metodinės rekomendacijos*. Kriventa
14. Kember, D., Leung, D. Y. P., Jones, A., Loke, A. Y., McKay, J., Sinclair, K., Tse, H., Webb, C., Wong, F. K. Y., Wong, M., & Yeung, E. (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment & Evaluation in Higher Education*, 25(4). Retrieved from: <https://doi.org/10.1080/713611442>
15. Kirchhöfer, D. (2004). *Lernkultur Kompetenzentwicklung: Begriffliche Grundlagen*. ESM Satz und Grafik GmbH. Retrieved from: https://www.abwf.de/QUEM/publik/content/main/publik/handreichungen/begriffliche_grundlagen.pdf
16. Kolb, A. Y., & Kolb, D. A. (2022). Experiential learning theory as a guide for experiential educators in higher education. *ELTHE: A Journal for Engaged Educators*, 1(1). Retrieved from <https://doi.org/10.46787/elthe.v1i1.3362>
17. Kolb, A. Y., Kolb, D. A., Passarelli, A., & Sharma, G. (2014). On becoming an experiential educator: The educator role profile. *Simulation & Gaming*, 45(2). Retrieved from: <https://doi.org/10.1177/1046878114534383>
18. Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Pearson Education. Retrieved from:
19. Liubinienė, R. (2011). *Žaidimo džiaugsmas*. Klaipėdos valstybinė kolegija.
20. Makauskienė, V. (2008). Logopedinės pagalbos mikčiojantiems moksleiviams modeliavimas į vaiką orientuoto ugdymo paradigmoje (daktaro disertacija). Šiaulių universitetas.
21. Malik, P., & Behera, S. (2024). The transformative power of experiential learning: Bridging theory and practice. *International Journal of Indian Psychology*, 12(2). <https://doi.org/10.25215/1202.007>
22. McCurdy, S. (2012). Developing reflective practice in science and engineering students. In K. E. Zegwaard (Ed.), *New Zealand Association for Cooperative Education 2012 Conference Proceedings: Nurturing Good Practice: "Getting Stuck In Together"*. Retrieved from: https://www.researchgate.net/publication/336056283_New_Zealand_Association_for_Cooperative_Education_2012_Conference_Proceedings_Nurturing_Good_Practice_Getting_Stuck_In_Together
23. Monkevičienė, O., Autukevičienė, B., Kaminskienė, L., & Monkevičius, J. (2020). Impact of innovative STEAM education practices on teacher professional development and 3–6 year old children's competence development. *Journal of Social Studies Education Research*, 11(4).
24. Monkevičienė, O., Glebuviienė, V., Stankevičienė, K., Mozolevskienė, A., Montvilaitė, S., Jonilienė, M., Kerulienė, I., & Mauragienė, V. (2011). *Metodinis leidinys priešmokyklinio ugdymo pedagogams*. Klaipėdos banga.

25. Rani, K., & Tyagi, T. K. (2022). Experiential learning in school education: Prospects and challenges. *International Journal of Advance and Applied Research*. Retrieved from: <https://doi.org/10.5281/zenodo.7652609>
26. Tyng, C. M., Amin, H. U., Saad, M. N. M., & Malik, A. S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology*, 8, 1454. Retrieved from: <https://doi.org/10.3389/fpsyg.2017.01454>
27. Vilkonis, R. (2008). *Neuždarykite vaikystės tarp keturių sienų*. Šiaulių universiteto leidykla.
28. Zhu, Y., Zeng, Y., Ren, J., Zhang, L., Chen, C., Fernandez, G., & Qin, S. (2022). Emotional learning retroactively promotes memory integration through rapid neural reactivation and reorganization. *eLife*, 11, e60190. Retrieved from: <https://doi.org/10.7554/eLife.60190>

EVALUATION OF SALES PROMOTION TOOLS AT CJSC LIDL LIETUVA

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Keywords: sales promotion tools, evaluation of sales promotion tools.

Abstract

In today's highly competitive market, organizations must attract consumer attention and encourage product purchases. One of the most widely used tools for this purpose is sales promotion, which consists of short-term consumer-oriented actions designed to generate an immediate response and stimulate prompt purchasing decisions. This article analyzes and evaluates the sales promotion tools applied by CJSC Lidl Lietuva. The findings reveal that financial promotion tools, particularly discounts and coupons, have the strongest impact on consumer behavior, significantly influencing purchase intentions, impulse buying, and store visits. In contrast, non-financial measures, such as product sampling and promotional games, have a weaker effect, although they contribute to long-term outcomes such as brand awareness and customer loyalty. Overall, the results indicate that while sales promotion tools are highly effective in driving short-term sales, their long-term impact on brand perception and loyalty remains moderate.

Introduction

Relevance of the Article. In today's highly competitive market, where consumers are exposed to a wide variety of product offerings, it is essential for organizations to capture consumer attention and motivate them through various means to purchase specific products. One of the most commonly used tools by organizations is sales promotion. Sales promotion measures are short-term solutions directed at consumers, aimed at eliciting an immediate response. The application of these measures seeks to encourage consumers to purchase specific products without delay (Išoraitė & Kojelytė, 2020). Sales promotion tools are particularly effective for products with low unit value, which are purchased frequently, and where the purchasing process is often impulsive. The use of sales promotion is especially relevant for sellers, as it allows them to manage inventory levels and sell less popular products. Sales promotion can also be used as a primary incentive to attract consumers to stores and significantly increase short-term sales volumes (Khan & Warraich, 2021).

Problem of the Article. The retail food market in Lithuania is highly concentrated. In 2024, nearly 80% of the food retail market in Lithuania was occupied by five retail chains – Maxima, Iki, Lidl, Norfa, and Rimi (ELTA, 2024). Intense competition encourages these retail chains to apply various sales promotion tools, which creates a need to analyze the sales promotion measures used by CJSC Lidl Lietuva and to evaluate their impact on consumers.

Object of the Article. Sales promotion tools applied by CJSC Lidl Lietuva.

Goal of the Article. To evaluate the sales promotion tools used by CJSC Lidl Lietuva.

Objectives of the Article:

1. To analyze the theoretical aspects of sales promotion.
2. To examine the sales promotion tools applied by CJSC Lidl Lietuva.

Methods of research: analysis of scientific literature, questionnaire survey, statistical data analysis.

Theoretical aspects of sales promotion

According to Belch and Belch (2018), sales promotion is a marketing instrument used to provide additional incentives to sellers or end consumers in order to increase product sales. Similarly, Hanaysha (2018) emphasizes the role of sales promotion in attracting consumer attention, providing information about products or services, and encouraging immediate purchase decisions. Išoraitė and Kojelytė (2020) define sales promotion as a marketing strategy in which products are introduced to the market through short-term attractive initiatives designed to stimulate demand and increase sales. Other authors highlight the value creation aspect of sales promotion. For instance, Gorji and Siami (2020) argue that sales promotion aims to demonstrate the value consumers would receive if they purchased products immediately, while Sinha and Verma (2020) describe it as a temporary activity that offers additional benefits to consumers who make prompt purchasing decisions. Gedenk (2021) notes that sales promotion measures are designed to create sudden and impulsive purchase motivations, whereas Kotler et al. (2021) define them as short-term incentives that provide added value to consumers and stimulate sales. Furthermore, Helmi et al. (2022) describe sales promotion as a marketing element used to communicate specific messages and increase consumer interest in products and services. Blakeman (2023) emphasizes its short-term impact on encouraging consumers to purchase specific products. Schamp et al. (2023) and Mishra et al. (2024) highlight the role of sales promotion in demonstrating economic or other forms of value and influencing both new and existing customers' purchasing behavior. An analysis of these definitions reveals that sales promotion is generally understood as a marketing tool or a set of short-term actions aimed at stimulating product demand and increasing sales volume.

In the scientific literature, sales promotion tools are commonly classified according to their duration of impact into short-term (financial) and long-term (non-financial) measures (Figure 1).

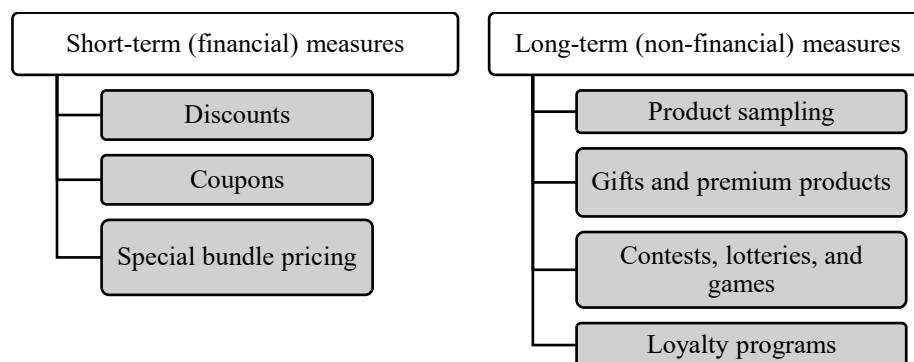


Fig. 1. Sales promotion tools

**Source: compiled by the author based on Khan, Warraich, 2021; Išoraitė, Kojelytė, 2020; Blakeman 2023*

Kaveh et al. (2021) notes that short-term sales promotion tools are aimed at achieving specific results within a limited period, such as introducing new products to the market, activating potential buyers, clearing excess inventory, or increasing profits. Short-term sales promotion tools include discounts, coupons, and special bundle pricing. Discounts involve temporarily reducing the price of products to encourage consumers to purchase larger quantities. According to Salim and Delvi (2022), the main objective of discount strategies is to increase sales at specific retail locations by attracting both new and existing customers. Another widely used short-term tool is coupons, which, as noted by Blakeman (2023), can take various forms such as newspaper cutouts, promotional leaflets, or digital messages offering financial benefits. Coupons typically provide price reductions, free additional items, or other benefits associated with purchasing certain products. Special bundle pricing is another short-term measure, encouraging consumers to purchase product sets rather than individual items. Khan and Warraich (2021) argue that such pricing allows consumers to acquire larger quantities at lower prices due to additional units included in the bundle.

Long-term sales promotion tools are more closely related to building lasting relationships with consumers. One such tool is product sampling, which involves offering free product trials to encourage future purchases (Juska, 2021). Another commonly used measure is gifts and premium products, where additional items are provided to consumers upon purchasing a product. These are often small gifts or sample-sized products included in packaging, creating added value and encouraging product selection (Juska, 2021). Contests, lotteries, and games are also categorized as long-term sales promotion tools, as they provide consumers with opportunities to win prizes when purchasing certain products (Khan & Warraich, 2021). Finally, loyalty programs represent a key long-term measure, designed to encourage repeat purchases and strengthen customer loyalty. According to Shahzad et al. (2020), loyalty schemes offer benefits to consumers for repeated purchases or continued preference for a company's products.

The impact of sales promotion tools on consumer behavior is significant and varies depending on the type of measure applied (Fig. 2). Financial sales promotion tools, such as discounts, coupons, and bundle pricing, are particularly effective in attracting consumer attention and increasing purchase intentions, often leading to impulse buying (Iyer et al., 2020). Purchase intention is considered the first stage of consumer behavior that sales promotion seeks to influence. As noted by Gedenk (2021), a strong purchase intention reduces decision-making time and increases the likelihood of spontaneous purchases. Impulse buying itself is defined as an unplanned and spontaneous purchasing action, often made without evaluating potential risks (Kempa et al., 2020). In contrast, the long-term impact of sales promotion tools is associated with changes in consumer attitudes and behavior over time. According to Fam et al. (2019), such changes are reflected in increased brand awareness, a more favorable brand image, and higher levels of customer loyalty. Non-financial sales promotion tools – such as gifts, contests, games, lotteries, loyalty programs, and product sampling – play a significant role in shaping consumer experiences and perceptions of brands (Belch & Belch, 2018). Therefore, while short-term measures are more effective in driving immediate sales, long-term sales promotion tools contribute to building sustainable relationships with consumers and enhancing brand value.

Research methodology

Research Methods. A quantitative research strategy was selected for the study. In order to evaluate the impact of sales promotion tools applied by CJSC Lidl Lietuva on consumers, a questionnaire survey was conducted. For this purpose, a structured questionnaire was developed, consisting of 19 closed-ended questions, where respondents were required to select the answer options that best reflect their opinions.

Research Sample. It is assumed that customers of CJSC Lidl Lietuva include individuals living throughout Lithuania. Therefore, the study sample consisted of respondents aged 18 and above who are capable of understanding and answering the survey questions in Lithuanian. In order to ensure the reliability of the survey, the required sample size was calculated using the Paniotto formula (Vaitkienė et al., 2024):

$$n = \frac{1}{\Delta^2 + \frac{1}{N}}$$

where: n – required sample size;
 Δ – margin of error (with a confidence level of 94 %, $\Delta=0,06$);
 N – population size.

According to data from the Official Statistics Portal, on January 1, 2026, Lithuania had 2.88 million permanent residents. Based on the official age structure, individuals under the age of 18 accounted for 18% of the population in 2025. This means that the target population for the study consisted of 2.36 million individuals. With a selected margin of error of $\Delta = 0.06$, the calculated sample size using the Paniotto formula is: $n = 1 / (0.06^2 + 1 / 2,360,000) = 277.75$. Thus, a minimum sample of 288 respondents was required to ensure the representativeness of the study.

Research Procedure. The questionnaire was distributed online via the survey platform www.apklausa.lt. The survey link was shared on social media in order to reach respondents with diverse demographic characteristics. Further participant recruitment was carried out using the snowball sampling method, where existing respondents were asked to recommend additional participants. According to Pranulis and Dikčius (2012), a heterogeneous snowball sampling approach was applied, aiming to include individuals with diverse demographic characteristics rather than focusing on a specific subgroup of the population.

Data Processing. The data collected during the study were processed using statistical data analysis methods, including the calculation of frequency distributions and graphical representation of the results. The data analysis was performed using Microsoft Excel.

Research Data Analysis

The research participants were asked to indicate how frequently they notice different sales promotion tools in Lidl stores (see Figure 2).

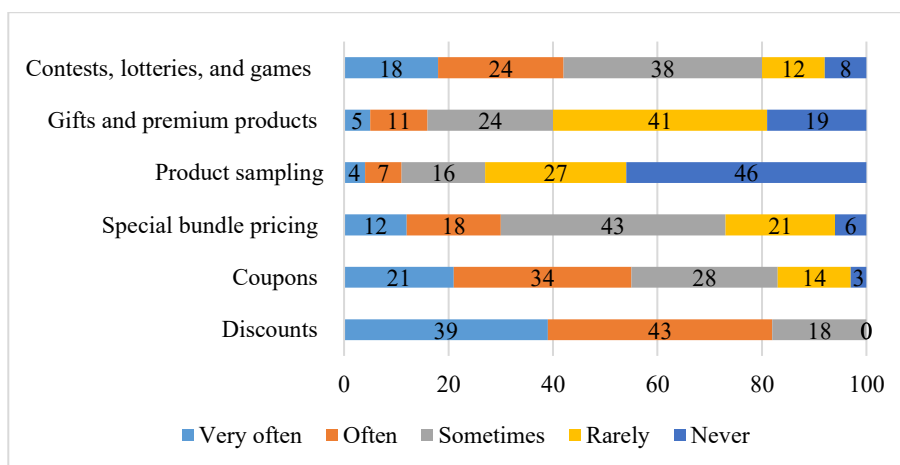


Fig. 2. Frequency of Noticing Different Sales Promotion Tools in Lidl Stores (N=288)

*Source: compiled by the author

The results show that participants most frequently notice discounts (82% of respondents reported noticing them very often or often) and product coupons (55% reported noticing them very often or often). In contrast, the least noticeable sales promotion tools in Lidl stores are free product samples (46% of respondents have never noticed them, while 27% notice them rarely) as well as gifts and premium products (19% have never noticed them, and 41% notice them rarely).

Participants were also asked to evaluate different sales promotion tools used in Lidl stores (see Figure 3).

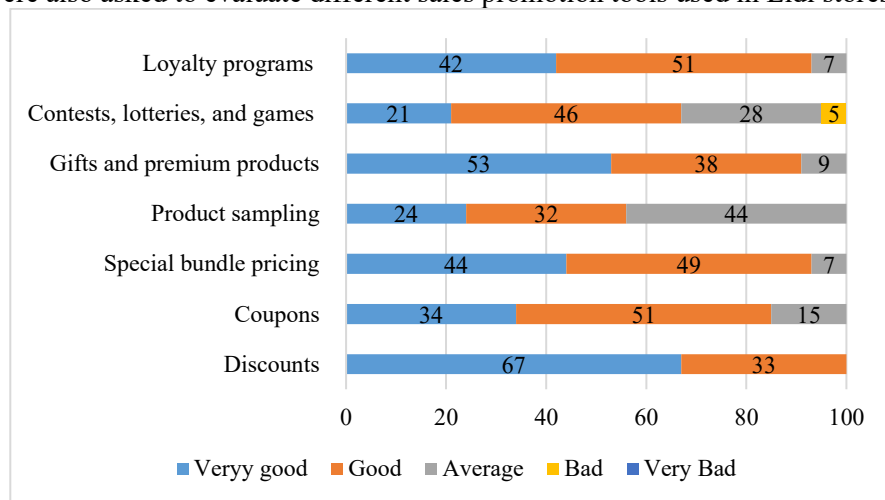


Fig. 3. Evaluation of Different Sales Promotion Tools in Lidl Stores (N=288)

**Source: compiled by the author*

Although all sales promotion tools were evaluated positively, discounts received the most favorable evaluation (100% of respondents rated them very good or good), followed by loyalty programs and special product bundle prices (both evaluated very positively by 93% of respondents).

The impact of each sales promotion tool was assessed using a Likert scale (5 – almost always, 1 – never). The results are summarized in Table 1.

Table 1

Evaluation of the Impact of Different Sales Promotion Tools in Lidl Stores (N=288)

	Discounts	Coupons	Special bundle pricing	Product sampling	Gifts and premium products	Contests, lotteries, and games	Loyalty programs
Gets your attention	4,6	3,3	3,5	2,6	3,8	1,8	3,9
Encourages you to try new products	3,8	3,1	3,2	4,1	3,3	1,6	2,4
Creates value for you	4,5	4,2	4	2,8	4	1,8	4,2
Encourages you to buy	4,5	4,2	4	3,8	3,6	1,6	3,6
Helps you to become more familiar with the brand	1,6	1,2	1,8	3,2	2,4	1	1,4
You start to view the brand more favorably	2,6	2,4	2,4	2,1	2,4	1,6	2,1
Increases your loyalty	3,4	3,2	2,8	1,8	2,6	2,4	4,3
Forms a habit of not buying products without a discount	4,4	4,2	3,7	-	-	-	-

**Source: compiled by the author*

The findings indicate that discounts attract the greatest attention from participants (4.6), while contests, games, and lotteries attract the least attention (1.8). The strongest motivation to try new products is provided

by free product samples (4.1), whereas contests, games, and lotteries have the weakest effect (1.6). In terms of value creation, discounts (4.5), product coupons (4.2), and loyalty programs (4.2) are perceived as the most beneficial, while contests, games, and lotteries create the least value. Similarly, purchasing decisions are most strongly influenced by discounts (4.5) and product coupons (4.2), whereas contests, games, and lotteries have minimal impact (1.6). Free product samples contribute most significantly to improving brand awareness (3.2), while contests, games, and lotteries (1.0) and product coupons (1.2) contribute the least. According to respondents, none of the sales promotion tools significantly improves their perception of the brand, as all evaluations remain below 2.6. In terms of customer loyalty, loyalty programs have the strongest influence (4.3), followed by discounts (3.4) and product coupons (3.2). Additionally, discounts (4.4) and product coupons (4.2) most strongly contribute to the formation of a habit of not purchasing products without discounts.

Participants were also asked to indicate which sales promotion tools encourage them to visit Lidl stores (see Figure 4).

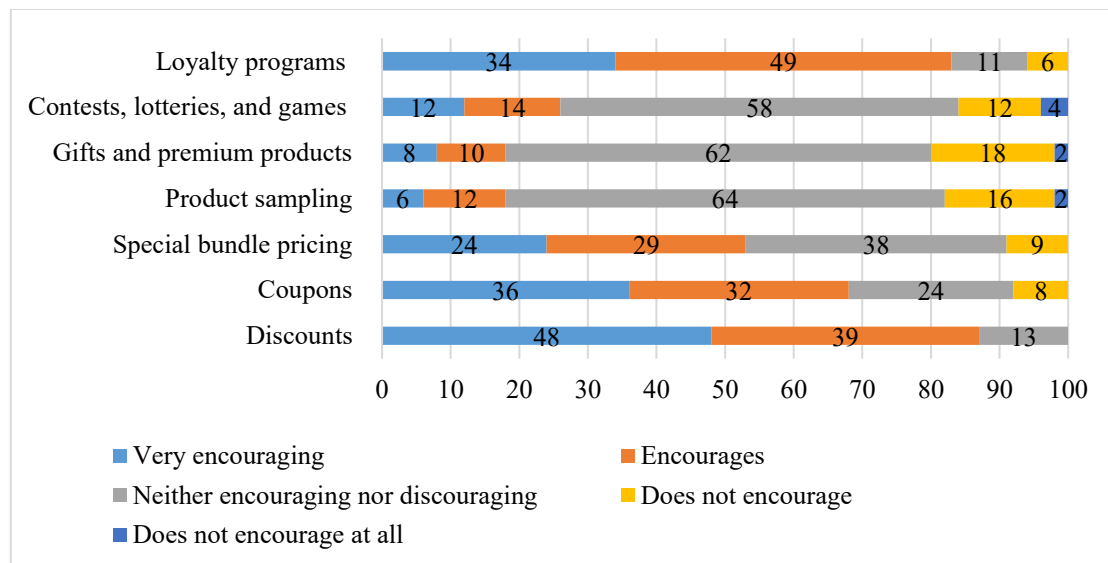


Fig. 4. The Influence of Sales Promotion Tools on Store Visits in Lidl Stores (N=288)

**Source: compiled by the author*

The results reveal that discounts (87% of respondents reported that they strongly or moderately encourage store visits), loyalty programs (83%), and product coupons (68%) have the greatest impact on encouraging store visits. In contrast, free product samples and gifts or premium products have the weakest effect, each encouraging only 18% of respondents to visit the stores.

Finally, participants evaluated statements related to the sales promotion tools applied in Lidl stores (see Figure 5).

An overwhelming majority of respondents (98%) agreed or strongly agreed that sales promotion tools are attractive to them, while 95% agreed that these tools encourage them to visit Lidl stores more frequently. Furthermore, 82% of respondents indicated that sales promotion measures lead them to purchase more products than initially planned, 84% stated that these measures influence their product choices, and 81% reported that they help them save money. Although the long-term impact of sales promotion tools was evaluated as less significant, it was still considered important. Specifically, 52% of respondents indicated that sales promotion tools contribute to their loyalty to Lidl stores, 64% stated that these measures encourage them to try new products, and 76% reported that sales promotion tools make Lidl stores more attractive compared to competitors.

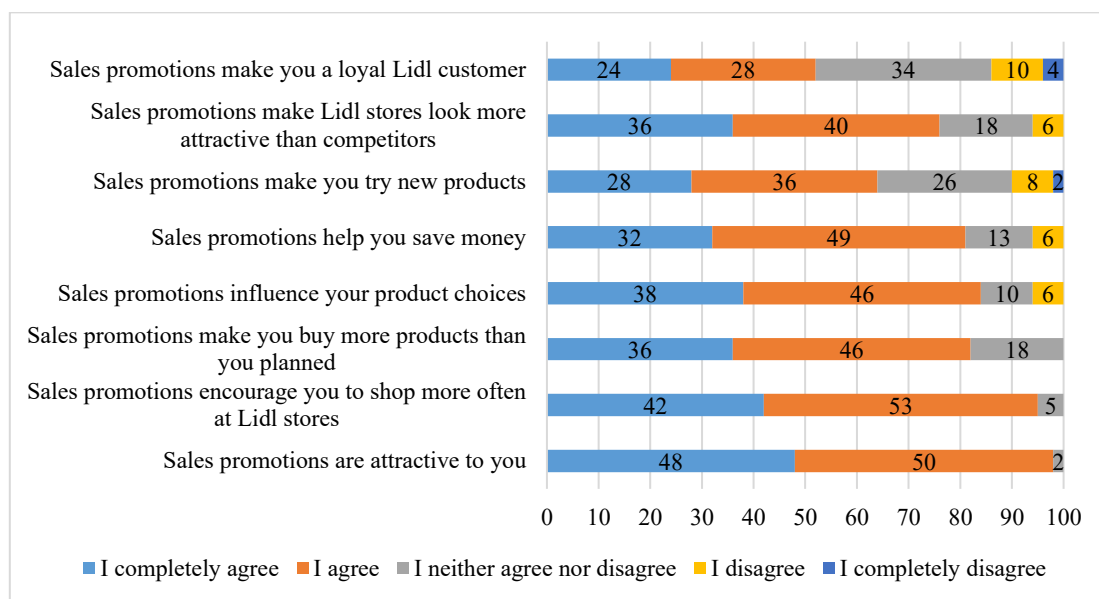


Fig. 5. Evaluation of Sales Promotion Tools Applied in Lidl Stores (N=288)

**Source: compiled by the author*

Conclusions

1. Sales promotion tools are short-term, limited-duration actions undertaken by organizations with the aim of increasing the demand for specific products in the market and stimulating their sales. Financial sales promotion tools (such as discounts, coupons, and special product bundle pricing) have a short-term effect, as they influence consumers' purchase intentions and encourage impulse buying behavior. In contrast, non-financial sales promotion tools (such as gifts and premium products, contests, games and lotteries, loyalty programs, and product sampling) are associated with enhancing consumer experience and shaping attitudes toward brands. Therefore, the application of these measures can have an impact on brand awareness, the development of a favorable brand image, and the strengthening of customer loyalty.

2. The results of the empirical research show that sales promotion tools applied by CJSC Lidl Lietuva have a strong impact on consumer behavior, particularly in the short term. Discounts emerge as the most effective and most frequently noticed measure, significantly influencing consumer attention, perceived value, and purchasing decisions. Other financial incentives, such as product coupons and loyalty programs, also play an important role, especially in encouraging store visits and repeat purchases. In contrast, non-monetary tools, such as free samples, gifts, and promotional games, are less noticeable and have a weaker influence, although free samples are effective in promoting new product trials. Overall, sales promotion measures are perceived as attractive and significantly affect consumer decisions, including increased spending and impulse buying. However, their long-term impact is more limited, as they have a weaker effect on brand perception and only moderate influence on customer loyalty. The findings suggest that while financial incentives are highly effective in driving short-term results, their role in building long-term consumer relationships is less significant.

References

1. Belch, G.E., Belch, M.A. (2018). *Advertising and Promotion: An Integrated Marketing Communications Perspective*. 9th ed. New York: McGraw-Hill/Irwin. [Accessed 2026-03-02]. Available at: https://www.academia.edu/download/62177110/Advertising_and_Promotion_An_Integrated_Marketing_20200223-24801-1yx6bur.pdf
2. Blakeman, R. (2023). *Integrated Marketing Communication: Creative Strategy from Idea to Implementation*. Rowman & Littlefield. [Accessed 2026-02-15]. Available at: <https://books.google.lt/books?hl=lt&lr=&id=tPDIEAAAQBAJ>
3. ELTA (2024). Beveik 80 proc. prekybos maistu rinkos užima penki prekybos tinklai: pirmos vietos šeiminkas nesikeičia. [Accessed 2026-02-19]. Available at: <https://www.elta.lt/lt/pranesimai-spaudai>
4. Fam, K. S., Brito, P. Q., Gaddekar, M., Richard, J. E., Jargal, U., Liu, W. (2019). Consumer attitude towards sales promotion techniques: a multi-country study. *Asia Pacific Journal of Marketing and Logistics*, 31(2), 437-463.

5. Gedenk, K. (2021). Measuring sales promotion effectiveness. In: *Handbook of Market Research*. Cham: Springer International Publishing. [Accessed 2026-02-08]. Available at: https://link.springer.com/rwe/10.1007/978-3-319-57413-4_32
6. Gorji, M., Siami, S. (2020). How sales promotion display affects customer shopping intentions in retail. *International Journal of Retail & Distribution Management*, 48(12), 1337-1355.
7. Hanaysha, J. R. (2018). An examination of the factors affecting consumer's purchase decision in the Malaysian retail market. *PSU Research Review*, 2(1), 7-23.
8. Helmi, S., Ariana, S., Supardin, L. (2022). The role of brand image as a mediator of the effect of advertising and sales promotion on customer purchase decision. *Journal of Economics and Sustainable Development*, 13(8), 90-99.
9. Išoraitė, M., Kojelytė, I. (2020). Pardavimo skatinimas imitacinėje bendrovėje „Miglė“. Vilnius: Vilniaus kolegija, Verslo vadybos fakultetas, (1), 57-66.
10. Iyer, G. R., Blut, M., Xiao, S. H., Grewal, D. (2020). Impulse buying: A meta-analytic review. *Journal of the Academy of Marketing Science*, 48, 384-404.
11. Juska, J. M. (2021). *Integrated Marketing Communication: Advertising and Promotion in a Digital World*. Routledge. [Accessed 2026-02-21]. Available at: <https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9780367443382&type=googlepdf>
12. Kaveh, A., Nazari, M., van der Rest, J. P., Mira, S. A. (2021). Customer engagement in sales promotion. *Marketing Intelligence & Planning*, 39(3), 424-437.
13. Kempa, S., Vebrian, K., Bendjeroua, H. (2020). Sales promotion, hedonic shopping value, and impulse buying on online consumer websites. *EDP Sciences*. [Accessed 2026-02-19]. Available at: https://www.shs-conferences.org/articles/shsconf/abs/2020/04/shsconf_icsh2020_01052/shsconf_icsh2020_01052.html
14. Khan, I., Warraich, U. A. (2021). Sales promotional tools – a catalyst to speed up sales. *Journal of Marketing Strategies*, 3(2), 38-53.
15. Kotler, P., Kartajaya, H., Setiawan, I. (2021). *Marketing 5.0: Technology for Humanity*. Wiley. [Accessed 2026-02-19]. Available at: <https://elib.vku.udn.vn/handle/123456789/4078>
16. Mishra, M., Kushwaha, R., Gupta, N. (2024). Impact of sales promotion on consumer buying behavior in the apparel industry. *Cogent Business & Management*, 11(1), 2310552. [Accessed 2026-02-12]. Available at: <https://www.tandfonline.com/doi/abs/10.1080/23311975.2024.2310552>
17. Pranulis, V., Dikčius, V. (2012). Rinkodaros tyrimai: teorija ir praktika. Vilnius: Vilniaus universiteto leidykla.
18. Salim, E., Delvi, N. G. (2022). Improving purchase decisions in pandemic times through expected value by analyzing direct selling and sales promotion at CV. Dunia Unggas. *Journal of Science Education and Management Business*, 1(1), 1-5.
19. Schamp, C., Heitmann, M., Bijmolt, T. H., Katzenstein, R. (2023). The effectiveness of cause-related marketing: A meta-analysis on consumer responses. *Journal of Marketing Research*, 60(1), 189-215.
20. Shahzad, K., Bhatti, A., Islam, T., Javaid, A. (2020). Impact of sales promotion on consumer buying behavior: A case of garments industry of Pakistan. *International Journal of Advanced Research in Engineering and Technology*, 11(10). [Accessed 2026-02-09]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3736539
21. Sinha, S. K., Verma, P. (2020). Impact of sales promotion benefits on perceived value: Does product category moderate the results? *Journal of Retailing and Consumer Services*, 52, 101887. [Accessed 2026-02-15]. Available at: <https://www.sciencedirect.com/science/article/pii/S0969698917307567>
22. Vaitkienė, R. et al. (2024). Sociologinis tyrimas. Kaunas: Technologija.

SALES STRATEGIES FOR AESTHETIC DEVICES IN THE BEAUTY INDUSTRY

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Keywords: aesthetic devices, beauty industry, sales strategy, sales promotion, target audience.

Abstract

The article analyses sales strategies for aesthetic devices in the beauty industry, with particular attention to the characterisation of the target audience and the suitability of sales approaches for different buyer groups. The relevance of the topic is determined by the growing importance of aesthetic devices in the beauty industry, the increasing demand for effective and less invasive procedures, as well as the intensifying competition in the market. The aim of the article is to analyse the target audience for aesthetic devices and sales strategies in the beauty industry. The following theoretical research methods were used in the article: analysis of scientific literature, analysis of professional and industry literature, secondary data analysis, and comparative analysis. The article examines the main sales promotion strategies, the target audience for aesthetic devices, and the suitability of sales strategies for specific target audience groups. It was concluded that effective sales of aesthetic devices should be based on an understanding of the target audience, the building of trust, and the selection of an appropriate sales approach for each buyer segment.

Introduction

Aesthetic devices have, over the past few years, become one of the most popular directions in the beauty industry. Clients are more educated in the field of beauty care and therefore increasingly choose procedures whose effectiveness is measurable, understandable, and demonstrable through objective indicators. This trend in consumer choice is also significantly influenced by the digital environment—social media, public reviews, and transparent communication—which affect both brand perception and consumer purchase decisions (Dingre et al., 2025; Wang et al., 2022).

In the beauty industry, topical cosmetic products (locally applied to the skin) are increasingly being combined with beauty devices. Aesthetic devices enhance the effect of cosmetics, promote the action of active ingredients, and make it possible to achieve visible results more quickly. Home-use and professional beauty devices, particularly radiofrequency, LED, and microcurrent technologies, have gained increasing importance in the beauty industry in recent years due to growing demand for effective, more convenient to use, and less invasive solutions.

At the same time, the market for aesthetic devices is not homogeneous. It consists of different buyer groups with varying needs, professional experience, budgets, and decision-making motives. Therefore, the sale of aesthetic devices in the beauty industry cannot be based solely on the technical characteristics of the product. In order to develop an effective sales strategy, it is important to understand the target audience and determine which sales approach is the most appropriate for a particular customer segment.

Relevance of the Article

The relevance of the article is related to the growing importance of aesthetic devices in the beauty industry and the need for targeted sales strategies in this segment. The topic is also relevant to the author's professional activity, as the author's individual business activity is related to the sale of cosmetology aesthetic devices to industry professionals, salons, and educational institutions. The results of device sales directly affect the development and sustainability of the author's business activity; therefore, it is essential to analyse the audience for aesthetic devices and the most appropriate sales approaches.

Problem of the Article

The problem addressed in the article is related to the fact that the target audience of buyers of aesthetic devices in the beauty industry is not homogeneous, while, in practice, sales approaches are not always sufficiently adapted to the needs of specific customer segments. As a result, the sales process for aesthetic devices may not be sufficiently effective, since different audiences have different purchase motives, needs, and expectations regarding the product.

Object of the Article

The object of the article is sales strategies for aesthetic devices in the beauty industry.

Goal of the Article

The goal of the article is to analyse sales strategies for aesthetic devices in the beauty industry in relation to different buyer target audiences.

Research Questions. In order to achieve the goal of the article, three main research questions have been formulated:

1. What are the sales promotion strategies for aesthetic devices?
2. Who is the target audience for aesthetic devices, and how can it be characterised?

3. Which sales promotion strategy is the most appropriate for the target audience of buyers of aesthetic devices?

Objectives of the Article

1. To collect and analyse information on product sales promotion strategies.
2. To identify and describe the target audience for aesthetic devices
3. To evaluate the suitability of sales strategies for different buyer target audiences.
4. To draw conclusions and develop proposals for improving sales strategies for aesthetic devices in the beauty industry.

Methods of research. The article uses the following theoretical research methods: analysis of scientific literature, analysis of professional and industry literature, as well as secondary data analysis. Comparative analysis was used in the interpretation of the data in order to characterise the target audience segments for aesthetic devices and the sales strategies appropriate to them.

Sales Promotion Strategies for Aesthetic Devices

This section analyses the most popular sales strategies for promoting product sales, with particular attention paid to the cosmetology market. Special attention is given to the role of social media and brand identity in buyers' product choices. The section examines sales techniques that promote customer trust in the product, as well as the use of technological innovations, such as augmented reality, in sales, and the application of the classical 4P marketing model in the cosmetology industry.

Today, one of the most common and effective sales promotion tools, especially in the beauty industry, is social media influencers. A study on the role of social media influencers in promoting cosmetic brands on the Instagram platform concluded that influencers motivate consumers to make impulse purchases and also help create an emotionally attractive and trustworthy brand image. In the beauty industry, consumers often trust the opinions of influencers because they perceive them as a reliable source of information and advice. This perception is formed by viewing photos and videos created by influencers, in which they share their personal experience of using a particular product. Such communication is often more effective than traditional advertising because it is based on trust and seemingly real experience (Talreja & Chaturvedi, 2024). The author of the article uses the word "real" in quotation marks because a large proportion of authentic product experience stories are at the same time brand-paid hidden advertisements.

However, not every influencer is equally capable of effectively influencing product sales. Much more important than an influencer's popularity or number of followers on social media are their competence and credibility. Competence is an important factor in sales because it directly affects buyer trust. It has been found that consumers place much greater trust in influencers who are able to demonstrate professional knowledge and provide practical advice about a particular product or its industry (Rahma & Suparna, 2025).

The author of the article wishes to emphasise once again that credibility is closely linked to the influencer's authenticity, namely, the consumer wants to see the influencer's authentic experience with the product that they sell or use. The consumer values an honest review of the product and a respectful attitude towards the brand and their audience. As a result, customers who are offered clear, honest, and educational information are much more likely to develop loyal relationships with the brand.

It can also be observed in Latvia that authentic and honest influencers with a smaller audience are able to promote product sales much more effectively than idealised advertisements by major brands. In the market for cosmetology aesthetic devices, this aspect is particularly important because the customer perceives such a product as a long-term investment in the development of their business and in the well-being of their clients. For this reason, influencer recommendations can significantly affect consumer decision-making and levels of trust, thereby reducing the risk that a competitor's offer will be chosen.

However, in the long term, influencer recommendations and product experience stories alone are not sufficient to ensure customer loyalty. It is necessary to build lasting relationships with consumers, and in order to achieve this, it is important to promote recognition by building a strong brand. A strong brand, or brand identity, creates a sense of trust for the customer, shapes perceptions of the product's value, and encourages repeat purchases.

Brand identity is one of the most important factors in promoting product sales because it helps the customer recognise a particular brand and distinguish it from competing offers. Brand identity is linked to the brand's values, positioning, visual image, and communication content. If a company implements a consistent marketing strategy and unified communication, brand identity becomes more stable and easier for the

consumer to perceive. This is particularly important in the digital environment, where the consumer is exposed to a large amount of information and many similar offers (Shams, Chatterjee, & Chaudhuri, 2024).

In the digital age, the development of brand identity is significantly influenced by digital marketing tools and the company's ability to use them purposefully. The study emphasises that electronic word-of-mouth, digital infrastructure, digital marketing capability, and skilled personnel positively influence the development of brand identity. This means that brand identity is formed not only by the logo or other visual elements, but also by the company's ability to provide consistent, clear, and professional communication in digital channels. The more consistently a company builds its presence in the digital environment, the more strongly the consumer's perception of the brand is reinforced (Shams et al., 2024).

The author wishes to emphasise that brand identity is closely linked to the building of consumer trust. If a company demonstrates a unified value system, clear positioning, and a professional image across different communication channels, the customer perceives it as a trustworthy and predictable partner. This perception is particularly important in the market for cosmetology aesthetic devices because these products are often a financially substantial and long-term investment. Therefore, it is important for the consumer not only to understand the functionality of the product, but also to feel confident in the brand's safety, professionalism, and reputation. The study indicates that brand identity influences sales strategy and may also affect the consumer's purchase decision, while the consumer's belief in the brand strengthens this influence (Shams et al., 2024).

In the cosmetology device segment, the importance of brand identity increases particularly in situations where there is high competition in the market with similar product ranges. If a brand is consistently positioned as innovative, safe, and professional, it is able to create a more enduring emotional and psychological connection with the customer. Such an identity may affect not only the initial purchase but also the customer's willingness to cooperate with the company again in the future. Therefore, the author concludes that brand identity is not merely a visual or communicative element, but an important component of a sales promotion strategy that helps build trust, differentiate the brand from competitors, and strengthen its position in the market (Shams et al., 2024).

With the rapid development of digital technologies, interactive solutions are becoming increasingly important in sales strategies, which the author identifies as the third strategy for promoting product sales. One of the most effective innovations is augmented reality, hereinafter referred to in the text as AR. In the beauty industry, it has already become an important tool for attracting customers and motivating purchase decisions. In 2022, Wang, Ko, and Wang conducted a study on how mobile AR applications affect consumer attention and brand awareness in the beauty industry. The aim of the study was to determine how the use of AR influences the willingness to purchase a product and the customer's confidence in their choice. The study used the "YouCam Makeup" application, which allows users to virtually try cosmetic products, such as lipstick shades. Participants were allowed to use the application for five minutes, after which they completed a questionnaire about their experience. The study concluded that AR applications increase consumer interest in the product. Participants were more interested in trying different functions of the application, comparing products, and understanding how they work before making a purchase decision. The study also revealed that the reactions of different consumer groups to AR applications vary. For participants with a higher interest in the latest fashion innovations, the experience appeared particularly attractive and inspiring, which further increased their willingness to purchase the product (Wang, Ko, & Wang, 2022).

In the market for cosmetology products and devices, AR offers several advantages. The customer can virtually obtain information about what their skin reaction to a procedure using one of the cosmetology devices might be or what result could be achieved by undergoing a specific course of procedures. This helps the customer reduce doubts about their choice and increases confidence in the decision to purchase the product, as it provides a sense of control over the process and informed decision-making. The interactive purchasing process enabled by AR is interesting and engaging for the consumer. For example, a virtual mirror that allows visualisation of the product's effect creates pleasant feelings and emotional attachment even before the product is purchased. In the cosmetology device segment, this is particularly important because the purchase decision usually requires a greater financial investment than, for example, purchasing a cream. The buyer wants to be sure that the product is worth the investment (Wang, Ko, & Wang, 2022).

The author wishes to draw attention to the fact that AR creates a positive customer experience and increases consumer trust, which in turn positively influences the decision both to make the first purchase and to build long-term relationships and repeat purchases. The use of augmented reality in product sales promotion creates an innovative, professional, and technologically advanced company image. Such a unique buyer

experience creates the desire to interact with the company repeatedly. In the cosmetology device segment, AR solutions help not only to appeal to consumers with a higher understanding of technology and innovation, but also to strengthen customer trust and confidence in the quality and necessity of the product.

A sales promotion strategy that remains relevant and continues to work successfully is the 4P marketing mix, namely product, price, place, and promotion (Vuković, Marušić, & Mihaljević, 2025). This marketing model is flexible and allows the systematic analysis and adaptation of sales strategy to different consumer groups and market conditions.

In the following paragraphs of this article, the author evaluates the four directions of the 4P marketing mix and their suitability in the cosmetology device segment.

First, the product, in this case cosmetology devices. This product differs from, for example, cosmetic products in its high price, functionality, requirements regarding the consumer's level of knowledge, and long-term use. Therefore, it is important to clearly demonstrate the product's effectiveness, quality, aesthetic appearance, safety, as well as ease and simplicity of use. In the product strategy, it is valuable to emphasise device innovations, the possibility of obtaining a certificate of new competence by mastering the device's functions, as well as professional support. These aspects increase trust in the product and reduce doubts about its high price.

Second, pricing policy, which is particularly important in the cosmetology market. Price flexibility helps companies adapt to different consumer groups and market situations (Vuković, Marušić, & Mihaljević, 2025). As mentioned previously, the purchase of cosmetology devices is a long-term investment at a relatively high price; therefore, pricing policy must be strategically beneficial and flexible. Different solutions may be used for different customer segments, such as discounts on the first purchase, instalment payment options, and loyalty programmes. These solutions make the product more accessible and at the same time increase the likelihood that the consumer will also make a repeat purchase.

Third, place, or sales channels. In promoting the sales of cosmetology devices, the simultaneous use of multiple channels plays an important role. From a strategic point of view, it is useful to ensure product availability both physically in specialised beauty stores and on digital platforms. This approach makes it possible to reach a broader audience, including beauticians and cosmetologists, beauty salons, aesthetic medicine clinics, as well as individual clients who wish to use devices at home. Digital channels are particularly valuable because they provide an opportunity to use additional marketing tools, such as online consultations or AR demonstrations.

Fourth, promotion, through the use of combinations of different solutions. For example, social media marketing, influencer involvement, and the use of AR tools. These marketing tools can be successfully combined with one another, as well as integrated with classical sales promotion methods, such as special offers, exhibitions, and product demonstrations in clinics. The advantage of the 4P mix lies in its ability to combine all these approaches and adapt them to a particular product and the needs of the target audience (Vuković, Marušić, & Mihaljević, 2025).

After reviewing and analysing sales promotion tools and strategies, the author concludes that a successful product sales promotion strategy cannot be based solely on one specific tool or technique. It is more effective to combine several strategies: social media communication and influencer marketing, the development of a strong brand identity, the use of interactive digital solutions such as augmented reality, as well as the thoughtful application of the 4P marketing mix. Moreover, one of the main insights highlighted by all the sales strategy methods discussed is the building of consumer trust in the product and, above all, in the brand. In order for the integration of sales promotion strategies in a company to be successful, it is important to build a strong brand in order to gain loyal customers and thereby ensure the company's long-term sustainability and competitiveness in the market.

Characterisation of the Target Audience of Buyers of Aesthetic Devices

The author analyses how the target audience of buyers of aesthetic devices is divided among industry professionals, independent specialists, and individual users. Attention is also paid to the regulatory framework that determines the rights to purchase and use devices in the professional segment. The section also examines trends that influence buyers' choices and motivation.

The audience in the beauty device market is not homogeneous; it is divided among beauty salons, aesthetic medicine clinics, independent specialists, and individual users. High-quality multifunctional devices, such as intense pulsed light systems (IPL), radiofrequency (RF), and high-intensity focused ultrasound (HIFU), are most often purchased by medical clinics. These types of businesses form the most expensive segment of the

market because they invest significant financial resources in the purchase of modern devices. Cosmetology aesthetic devices used in clinics are usually more powerful, technologically more complex, and intended for higher-level professional use. Beauty salons, in contrast, more often choose devices that are more financially accessible and better suited to frequently requested procedures in everyday practice (Treacy, 2022).

In Latvia, the composition of the target audience for beauty aesthetic devices is significantly influenced by qualification requirements for working with cosmetology devices. High-risk devices, such as lasers and HIFU, are classified as medical devices, and they may be used only by healthcare practitioners with the appropriate certification (Cabinet Regulation No. 268, 2013). Medium-risk devices, such as microdermabrasion or electroporation devices, may be used by certified cosmetologists and beauticians who have obtained the appropriate professional qualification in the beauty industry. Low-power devices, in turn, may also be used by consumers at home, because these devices have technical limitations in power and depth of effect in order to reduce possible harm to the user's health. Such home-use aesthetic devices are subject to Regulation (EC) No. 1223/2009 of the European Parliament and of the Council on cosmetic products, as well as Cabinet Regulation No. 1046 (2010) on the distribution of cosmetic products, which set requirements for product safety assessment, safety of use, and warning labels (European Parliament and Council, 2009; Cabinet Regulation No. 1046, 2010). This regulatory framework clearly highlights the difference between aesthetic medicine clinics and beauty salons.

The aim of aesthetic medicine clinics when purchasing a device is to differentiate their services by offering modern and effective solutions, thereby increasing client satisfaction. In essence, aesthetic medicine clinics offer procedures performed by a certified physician, and these procedures are usually more invasive, involve a longer recovery period, and produce a more long-lasting effect. Such services cannot be fully replicated by cosmetologists working in beauty salons. At the same time, beauty salons are able to offer long-term cooperation, safe procedures, and prices that are more acceptable to the client.

Salons follow the demand for specific aesthetic solutions, such as skin rejuvenation or lifting procedures, as well as procedures that can prolong the results achieved in the clinic. Independent specialists and users of home-use devices, in contrast, more often choose affordable and portable devices that allow them to expand the range of procedures with limited resources (Ankiel & Kuczyńska, 2024).

Studies indicate that innovative aesthetic medicine devices are most often purchased by clinics and physicians because they wish to provide patients with high-quality services. In a 2024 study conducted in Poland involving 745 patients, a quantitative survey was carried out with the aim of determining client satisfaction with aesthetic medicine services and identifying the factors influencing it. Respondents were asked to evaluate clinic services according to several criteria, such as professionalism, technological innovation, and the modernity of equipment. The results show that client satisfaction is largely determined precisely by the competence of professionals and the availability of modern equipment, as this creates greater trust in the services provided. The results of this study clearly show that the target audience for aesthetic medicine equipment consists of physicians and clinic owners who are willing to invest in new and modernised devices in order to maintain competitiveness and attract clients (Ankiel & Kuczyńska, 2024).

Table 1

Characterisation of the Target Audience

Target audience	Characterisation	Regulation	Motivation
Aesthetic medicine clinics and physicians	Invest in innovative, high-risk technologies (HIFU, laser, RF, etc.). High requirements for effectiveness and safety	Cabinet Regulation No. 268 (2013); physician qualification and certification required	To ensure prestige, effective procedures for patients, and a high pricing policy
Beauty salons and independent specialists	Prefer financially accessible, multifunctional devices. Interested in quick return on investment and attracting new clients	Cabinet Regulation No. 268 (2013); professional qualification and certification as a cosmetologist/beautician required	To maintain competitiveness in the market, expand the range of services, and increase income
Individual users	Choose safe devices for home use. Influenced by influencers and their advertisements	EU Regulation No. 1223/2009; Cabinet Regulation No. 1046 (2010) – no professional qualification required	Convenience and simplicity of device use. No need for large financial investments. Privacy when using the device at home

Source: compiled by the author

An important part of the buyer audience for aesthetic devices is also formed by individual consumers who purchase beauty devices for home use. Devices intended for home use are designed with much lower power and depth of effect in order to ensure their safe use without special qualifications or professional supervision. Some products have been withdrawn from sale because of overheating or excessively high metal content, which emphasises the importance of regulation and quality control. The audience for such home-use devices includes people of different ages and social groups who wish to maintain a youthful skin appearance by using simpler solutions. Their main motivation for purchasing beauty devices for home use is lower cost, convenience, and privacy, which allow them not to visit salons or clinics. Buyers of home-use devices are more likely to accept a less intensive and shorter-lasting effect (Bu et al., 2024).

After analysing the above, the author concludes that the market for beauty aesthetic devices is multilayered and that three main categories of buyers can be distinguished within it. Aesthetic medicine clinics and beauty salons form the professional consumer segment, which is significantly influenced by regulatory requirements and professional qualification requirements. The individual segment, in contrast, consists of consumers for whom convenience, price, and privacy are important; therefore, they choose devices intended for home use. This divided market structure indicates that sales strategies for aesthetic devices must be different and precisely adapted to each consumer group in order for the sales process to be effective and for the company to be able to maintain competitiveness in the long term.

The Suitability of Sales Strategies for the Target Audience of Buyers of Aesthetic Devices

In this part of the article, the author seeks answers to the question of which sales strategies best correspond to the target audiences of buyers of beauty aesthetic devices. The author reminds the reader that the market for beauty devices is multilayered. Two segments are formed by industry professionals: beauty salons, aesthetic medicine clinics, and independent certified beauty specialists. The third segment, in turn, consists of individual consumers who purchase home-use devices. Each of these target groups makes decisions on device purchases based on different criteria. Professionals place greater value on evidence, effectiveness, and regulation, while home users consider convenience, price, and safety to be more important. Therefore, the author concludes that sales strategies must be appropriately adapted to the needs of each target audience in order to be effective and at the same time build long-term trust.

In his book *The Evolution of Aesthetic Medicine*, the American physician and researcher Treacy states that the most appropriate sales strategy for aesthetic medicine clinics and certified physicians is the B2B, or business-to-business, model, because this audience chooses professional equipment that provides evidence-based results. This means that the product is sold to businesses or industry professionals who use it in their work to generate profit. For clinics, such equipment helps differentiate their services and maintain competitive advantages in the market (Treacy, 2022). In this target audience segment, consultative and evidence-based selling is effective. This means that when selling a beauty device, the seller must provide extensive information about the device's compliance with regulatory requirements and clinical data, as well as ensure training, support, and documentation confirming the mastered method. Clinics and physicians want to be sure that the investment will be safe and justified in the long term. Therefore, in-person device demonstrations or webinars with industry experts are important. Trust is built when buyers see summaries of clinical data, are given the opportunity to test the device in practice, and receive a guarantee of professional support (Ankiel & Kuczyńska, 2024; Gold, Biesman, & Cohen, 2024).

The author believes that this target audience segment, especially clinics, is the most complex and demanding. The buyer in this segment is most often a physician or clinic manager, for whom, alongside the effectiveness of the device, the legal aspect is also important. Therefore, in the sales strategy, superficial product advertising alone is not sufficient; it must include documented results and professional facts.

The professional audience also includes beauty salons and independent industry specialists. The interests and motivation of this audience differ from those of the clinic audience, because here the main role of the device is to attract new clients, modernise services in line with trends, and at the same time avoid excessively large investments. The most effective approach for this target audience is value-based selling. This means that the seller must clearly demonstrate that the device will pay off for the specialist both financially and in terms of customer satisfaction (Keränen, Totzek, Salonen, & Kienzler, 2023).

The author believes that for salons an important argument is the return on investment, or ROI, that is, how quickly the funds invested in the device will be recovered, taking into account procedure prices and demand. In selling devices to this segment, ROI calculators, digital demonstrations, training, and already developed treatment protocols are effective, because salons want to clearly see the practical benefit, such as new clients, higher income, and improved competitiveness. In this segment as well, the B2B sales strategy is well suited, because a salon or specialist, when purchasing a new device, perceives it as an investment in their business rather than merely as a consumer good. Although clinical data are less important here, possibilities for practical application and financial benefit are very important. For this segment, the B2B sales strategy is simpler and more based on economic aspects, yet it must still remain professional and trust-building.

The next segment of the target audience of device buyers is the B2C, or business-to-consumer, audience, where the company sells the product directly to the end user. In the beauty industry, this is a rapidly growing segment. People increasingly choose to purchase devices for home use in order to maintain a well-groomed appearance without the need to regularly visit a salon or clinic. Devices intended for this target audience are adapted for safe use. Home-use beauty devices have much lower power than professional devices. The results are usually less noticeable and shorter-lasting, but for this target audience privacy and lower costs are important. The market for home-use devices is growing precisely because people want accessible everyday solutions for skin care. Buyers of home-use devices want to see how the device works in practice; therefore, micro-influencers who share their experience are of great importance. They often appear more trustworthy than advertisements by large sellers, and as a result, the use of trust-building and educational content is one of the most effective sales strategies for this segment (Bu, Duan, Luo, Yang, Liu, & Wen, 2024).

The author believes that this target audience segment differs from the two previously mentioned segments in that technical data or certificates are not the most important factors for them; rather, the simplicity of use, safety, and effectiveness of the device are what matter most. If communication is open and the buyer receives reliable information about what results can truly be expected from the device, this builds long-term trust in the brand, which in turn motivates repeat purchases.

Digital solutions, especially interactive technologies, are now becoming a universal sales promotion tool that can be applied to all target audiences. Augmented reality (AR) simulations and applications give the consumer the opportunity to “try” the product before purchasing it, which is both an entertaining and positive experience and a stimulus in the purchase decision-making process. By trying different products in this way, the consumer’s doubts about purchasing the product are reduced, and at the same time the feeling of risk that the purchase may be unsuccessful is decreased. This creates an emotional attachment to the brand, which in turn may potentially develop into a long-term relationship with the company (Wang, Ko, & Wang, 2022).

The author emphasises that AR solutions can be applied both to individual end consumers (B2C) and to the professional audience (B2B). This type of technology is highly practical, because applications can be used at any time and in any place, thus creating a widely accessible and cost-effective marketing strategy. As a result, digital solutions expand a company’s communication channels and provide a flexible platform for attracting different audiences and building loyalty, which is an important component of a sales promotion strategy (Wang, Ko, & Wang, 2022).

In summary, it can be concluded that sales strategies cannot be the same for all groups; they must be adapted to each target audience segment. For clinics and physicians, a consultative, evidence-based approach works best, with the main emphasis placed on regulatory compliance and clinical data. For beauty salons, value-based selling is more appropriate, where both financial return and the opportunity to differentiate themselves through popular procedures are important. For individual clients, educational and trust-building communication works best, using understandable explanations, experience-based stories, and real examples. What all segments have in common is the importance of digital and interactive tools – they make the purchasing process more interesting and safer, help build an emotional attachment to the brand, and strengthen long-term relationships with the client.

Table 2

The most suitable type of sales strategy for the target audience

Target audience	Strategies
Aesthetic medicine clinics and physicians	Consultative and evidence-based B2B selling; in-person demonstrations and webinars with industry experts; emphasis on clinical data and regulatory compliance; provision of professional support, training, and guarantees
Beauty salons and independent specialists	Value-based B2B selling; emphasis on return on investment (ROI); digital demonstrations; provision of training and treatment protocols; highlighting the device's financial benefits and competitive advantages
Individual users	Educational and trust-building B2C communication; clear explanations about the use of the device, safety, and expected results; use of micro-influencers and experience-based stories; digital and interactive solutions, such as AR

Source: compiled by the author

Conclusions

When analysing sales strategies for aesthetic devices in the beauty industry, it can be concluded that the most important sales promotion strategies in this segment are social media communication and influencer involvement, the development of a strong brand identity, the use of digital and interactive solutions such as augmented reality, as well as the application of the 4P marketing mix. These strategies are effective when they are combined and adapted to the needs of the specific product and target audience.

It was concluded that the target audience of buyers of aesthetic devices in the beauty industry is not homogeneous. It consists of aesthetic medicine clinics and physicians, beauty salons and independent specialists, as well as individual users. Each of these groups has different purchase motives, requirements, and expectations regarding the product. In the professional segment, the effectiveness, safety, regulatory compliance, and return on investment of the device are of significant importance, whereas for individual users, convenience of use, safety, price, and privacy are more important.

After evaluating the suitability of sales strategies for different buyer target audiences, it can be concluded that for aesthetic medicine clinics and physicians, the most suitable approach is consultative and evidence-based B2B selling, in which the main emphasis is placed on clinical data, regulatory compliance, professional support, and practical demonstration of the device. For beauty salons and independent specialists, the most suitable approach is value-based B2B selling, where it is important to emphasise the device's financial benefits, return on investment, opportunities for attracting clients, and the strengthening of competitiveness. For individual users, the most suitable approach is educational and trust-building B2C communication, in which it is important to use clear explanations, experience-based stories, micro-influencer content, and digital solutions.

Overall, the author concludes that effective sales of aesthetic devices in the beauty industry cannot be based only on the technical parameters or visual attractiveness of the product. They must be based on an understanding of the target audience, the adaptation of the sales approach to a specific segment, the building of brand trust, and the combination of diverse sales promotion tools.

Based on the conclusions drawn, it is recommended that differentiated sales strategies be developed for different target audiences, that brand identity be strengthened, and that digital solutions be used purposefully to build customer trust in the sale of aesthetic devices in the beauty industry.

References

1. Ankiel, M., & Kuczyńska, A. (2024). *Satisfaction of consumers using innovative aesthetic medicine services in Poland. Marketing of Scientific and Research Organizations*, 54(4), 91-109.
2. Bu, P., Duan, R., Luo, J., Yang, T., Liu, N., & Wen, C. (2024). Development of home beauty devices for facial rejuvenation: Establishment of efficacy evaluation system. *Clinical, Cosmetic and Investigational Dermatology*, 17, 553-563.
3. Dingre, S., Girbane, V., Tekavade, G., Todakari, P., Borawake, D., & Deshmukh, M. (2025). Strategic sales and marketing approaches in the dermatology product segment. *World Journal of Biology Pharmacy and Health Sciences*, 22(3), 249-258.
4. Eiropas Parlaments un Padome. (2009). Regula (EK) Nr. 1223/2009 par kosmētikas līdzekļiem [pieņemta 30. novembrī 2009.]. *Eiropas Savienības Oficiālais Vēstnesis*, L 342/59.

5. Gold, M., Biesman, B., & Cohen, J. L. (2024). System using Intense Pulsed Light, Radiofrequency Microneedling, HIFU, and Thermal RF for Skin Rejuvenation. *Journal of Cosmetic Dermatology*, 23(7), 1123-1134.
6. Keränen, J., Totzek, D., Salonen, A., & Kienzler, M. (2023). Advancing value-based selling research in B2B markets: A theoretical toolbox and research agenda. *Industrial Marketing Management*, 111, 55-68.
7. Ministru kabinets. (2010). Noteikumi Nr. 1046 "Kosmētikas līdzekļu izplatīšanas noteikumi" [spēkā no 01.01.2011.]. *Latvijas Vēstnesis*, 205.
8. Ministru kabinets. (2013). Noteikumi Nr. 268 "Noteikumi par ārstniecības personu profesionālās darbības un izglītības kritērijiem" [spēkā no 23.04.2013.]. *Latvijas Vēstnesis*, 75.
9. Rahma, R. W., & Suparna, G. (2025). The influence of influencer credibility on brand loyalty with brand trust as a mediating variable: Study on Make Over lipstick product customers in Denpasar City. *International Journal of Business, Marketing, Economics & Leadership*, 2(3).
10. Shams, R., Chatterjee, S., & Chaudhuri, R. (2024). Developing brand identity and sales strategy in the digital era: Moderating role of consumer belief in brand. *Journal of Business Research*, 179, 114689.
11. Talreja, M., & Chaturvedi, V. (2024). The role of social media influencers in advertising cosmetic brands: A study on Instagram. *Journal of Public Relations and Advertising*, 3(2).
12. Treacy, P. (2022). *The Evolution of Aesthetic Medicine*. Austin Macauley Publishers.
13. Vuković, M., Marušić, F., & Mihaljević, A. (2025). Income's moderating effect on the 4P's influence on purchase intention: The Garnier cosmetics case. *Croatian Review of Economic, Business and Social Statistics*, 11(1), 51-66.
14. Wang, Y., Ko, E., & Wang, H. (2022). Augmented reality (AR) app use in the beauty product industry and consumer purchase intention. *Asia Pacific Journal of Marketing and Logistics*, 34(1), 110-131.

THE IMPACT OF VISUAL BRANDING ON CONSUMER BEHAVIOUR

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Keywords: visual branding, consumer behavior, brand identity, marketing, purchasing decisions.

Abstract

Visual branding is one of the key elements of modern marketing communication. In today's competitive market, companies need not only to offer high-quality products but also to build a strong, memorable visual identity. Consumers are often influenced by visual elements such as logos, colors, packaging, typography, and overall design. These elements shape first impressions, emotions, and trust toward a brand. The aim of this article is to analyze how visual branding affects consumer behavior and purchasing decisions. The research is based on literature analysis, case studies, comparative analysis, and a small survey. The results show that strong visual branding attracts more attention, improves brand recognition, creates an emotional connection, and positively influences purchase decisions. Companies that maintain a consistent and attractive visual identity gain a clear competitive advantage in both physical and digital markets.

Introduction

In today's highly competitive, digitalized world, consumers are constantly exposed to a large number of brands across platforms such as social media, websites, advertisements, and physical retail environments. Because of this high level of information overload, companies have only a few seconds to attract attention and create a strong first impression. Visual branding therefore, plays a crucial role in modern marketing, as it helps brands communicate their identity instantly and influence how consumers perceive them before any direct interaction with the product or service occurs. Visual branding encompasses all visual elements of a brand, including logo design, colors, typography, packaging, imagery, and overall aesthetic style, which together create a unified, recognizable brand identity. These elements are not only decorative but also psychological tools that shape emotions, expectations, and trust. In modern digital environments, where most consumer interactions occur online, visual presentation has become even more important, as users often judge brands within seconds based solely on appearance. This makes visual branding a key factor in building competitive advantage and shaping consumer decision-making.

Relevance of the Article: The topic is highly relevant in modern digital marketing, where visual communication dominates consumer interaction with brands. Social media platforms such as Instagram, TikTok, and Pinterest are heavily visual, meaning a brand's appearance often becomes the first and most important factor in attracting consumer attention. In addition, modern consumers, especially younger generations, tend to value aesthetics, identify expression, and emotional connection when making purchasing decisions. As a result, visual branding is no longer just a marketing tool but an essential element of how companies position themselves in the market and build relationships with consumers.

Problem of the Article: The main problem is that many companies still underestimate the importance of consistent and strategic visual branding. While product quality remains important, poor or inconsistent visual identity can significantly reduce consumer trust, recognition, and engagement. In many cases, brands fail not because of their products, but because their visual communication does not effectively reflect their value or differentiate them from competitors.

Aim of the Article: The aim of this article is to analyze the impact of visual branding on consumer behavior and purchasing decisions.

Objectives of the Article

- To explain the concept of visual branding and its main elements.
- To analyze how visual design influences consumer perception and emotions.
- To examine the role of branding in purchasing decisions.
- To provide real-life brand examples.
- To support findings with a small survey.

Methods of research: literature analysis, comparative analysis, case study method and survey method.

Theoretical Background

Visual branding is a key part of modern branding theory, which focuses on how companies create a unique identity in consumers' minds. According to marketing researchers such as Kotler and Keller (2016), branding is not only about a product or service itself, but also about the emotional and psychological associations that

consumers build with a company. Visual elements play a central role in this process because the human brain processes images much faster than text, so visual information often creates the first impression of a brand.

Consumer behavior theory explains how people make decisions when choosing, buying, and using products. Solomon (2018) states that these decisions are influenced by both rational and emotional factors. These decisions are influenced by a combination of rational and emotional factors. While price and product quality are important, psychological factors such as perception, memory, and emotions often strongly influence final choices. Visual branding directly interacts with these psychological processes by shaping how consumers feel about a brand at first sight.

One of the most important psychological aspects of visual branding is perception. Consumers do not view a brand objectively; instead, they interpret visual information through their personal experiences, culture, and emotions. For example, minimalist design is often associated with luxury and professionalism, while bright, colorful designs are linked to energy and friendliness. These associations influence how trustworthy or attractive a brand appears.

Another important factor is memory. Strong visual identity helps consumers remember a brand more easily. Logos, colors, and design patterns create visual cues that stay in the mind over time. When consumers repeatedly encounter the same visual elements, brand recognition becomes automatic, increasing the likelihood of future purchases.

Emotional response is also a key part of consumer behavior. Visual branding can trigger emotions such as happiness, trust, excitement, or comfort. These emotional reactions often happen unconsciously and can strongly influence purchasing decisions. For example, consumers may prefer a product not because it is objectively better, but because its design creates a positive feeling.

Overall, theoretical research shows that visual branding is not just a design element but a psychological tool that influences how consumers perceive, remember, and emotionally connect with brands. This makes it an essential part of modern marketing strategies.

Main Analysis

Colors and Visual Elements: Colors are among the most important elements in visual branding because they directly influence emotions and perceptions. Labrecque and Mine (2012) found that colors can shape how trustworthy, exciting, or premium a brand appears. Different colors create different psychological reactions, and companies use this shape to determine how consumers feel about their brand. For example, red is often associated with energy, excitement, and urgency, which is why it is used by brands such as Coca-cola or fast-food companies. Blue is connected with trust, stability, and professionalism, and it is commonly used by banks and technology companies. Black is often associated with luxury and elegance, while green is associated with nature, health, and sustainability. These color associations are not random but based on psychological studies of consumer perception.

Table 1

Colors and emotions

Color	Emotion	Brand example
Red	energy	Coca-cola
Blue	Trust, safety	Facebook
Black	luxury	Chanel
Green	nature	Starbucks

**Source: compiled by the author*

This table visually compares how different colors are used in branding and the emotional reactions they elicit in consumers. It shows that color choice is not only aesthetic but also strategic, because it can influence buying decisions and brand perception.

Logo and Recognition: Logos are another key part of visual branding because they are often the first element consumers remember. A strong logo should be simple, easy to recognize, and connected with the brand identity. For example, Nike's swoosh or Apple's logo are very simple, yet recognized globally without any text. This shows how powerful visual memory can be in marketing. When consumers repeatedly see a logo, they start associating it with specific emotions, quality, or lifestyle.

Packaging: Packaging also plays a very important role because it directly influences purchase decisions in stores and online. Attractive packaging can make a product stand out from competitors and convey a sense of quality or trust. In e-commerce, packaging visuals are often the only physical representation of the product, so design becomes even more important. Companies use packaging to communicate brand values such as luxury, simplicity, or sustainability.

Table 2

Packaging comparison or brand examples

Question	Most common answer	%
What attracts first?	Packaging	40%
Does design matter?	Yes	70%
Bought because of look?	Yes	80%

**Source: compiled by the author*

Social media: In modern marketing, social media is one of the strongest tools for visual branding. Platforms like Instagram and TikTok are built on visual content, so brands must focus on aesthetic presentation to attract attention. Consistent style, colors, and content design help brands build identity and recognition online. Influencer marketing also plays a role because people trust visual recommendations more than traditional ads.

Case Studies

Real brand examples clearly show how visual branding works in practice and why it's important for consumer behavior. Successful companies use a consistent visual identity not only to look attractive, but also to communicate values, evoke emotions, and stay memorable in the consumers minds.

Apple is one of the strongest examples of minimalistic visual branding. The company uses clean design, simple packaging, neutral colors, and modern product presentation. This creates a premium and innovative image. Many consumers associate Apple with quality, status, and simplicity. The brand's visual style is immediately recognizable and supports customer loyalty.

Nike uses a different strategy based on movement, energy, and motivation. Its famous swoosh logo is simple but powerful. The brand often combines bold visuals with emotional campaigns focused on achievement and self-confidence. As a result, consumers not only buy sports products, but also connect Nike with an active lifestyle and personal success.

Coca-Cola is a strong example of long-term visual consistency. The company has used its red color, classic typography, and recognizable packaging for many years. Because of this consistency, consumers can identify the brand very quickly in almost any market. Coca-Cola branding is also strongly connected with positive emotions such as happiness, friendship, and shared moments.

IKEA shows how visual branding can communicate accessibility and practicality. Its blue and yellow colors reflect Swedish identity, while its store design and product presentation support the idea of affordable, functional living. Consumers often see IKEA as friendly, practical, and easy to understand.

These examples show that visual branding is not based on one universal formula. Different companies use different styles depending on their target audience, values, and market position. However, all successful brands have one thing in common: clear identity, consistency, and strong emotional associations.

Table 3

Comparison of Visual Branding Strategies

Brand	Main Visual Style	Key Message	Consumer Effect
Apple	Minimalist, clear, modern	Premium quality and innovation	Loyalty, prestige, trust
Nike	Dynamic, bold, energetic	Motivation and achievement	Inspiration, confidence
Coca-cola	Bright, classic, emotional	Happiness and connection	Recognition, positive emotions
IKEA	Functional, symple, friendly	Affordable every living	Trust, accessibility

**Source: compiled by the author based on brand analysis*

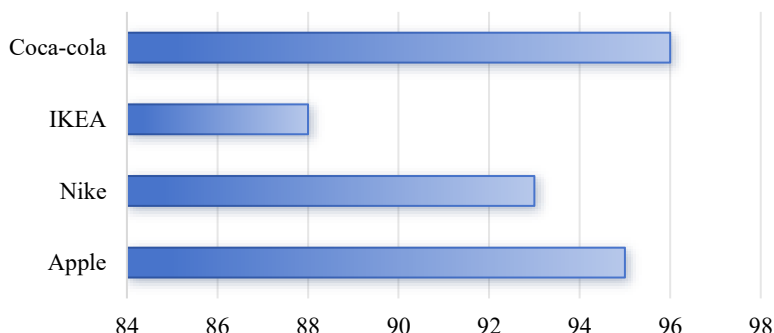


Fig. 1. Brand Recognition Through Visual Identity

**Source: compiled by the author*

Mini Survey and Results

To better understand how visual branding influences young consumers, a small survey was conducted among students and people aged 18-25. The aim of the survey was to identify which visual elements attract the most attention and whether design can influence trust and purchasing decisions. The survey included three short questions and received responses from 20 participants.

The first question asked what attracts attention first when people see a product online. The results showed that packaging and overall design were the most common answers, followed by brand name, price, and customer review. This suggests that visual presentation often becomes the first point of contact between the consumer and the product.

The second question asked whether attractive branding increases trust in a product. Most respondents answered yes, which indicates that visual identity can positively affect how reliable and professional a brand appears.

The third question asked whether participants had ever bought a product because it looked attractive online. A large number of respondents agreed, which confirms that visual appeal can directly influence purchasing behavior, especially in digital environments.

Table 4

Survey Results

Question	Most Common Answer	Result
What attracts attention first?	Design	45%
Does attractive branding increase trust?	Yes	75%
Have you bought because of appearance online?	Yes	70%

**Source: compiled by the author based on survey results*

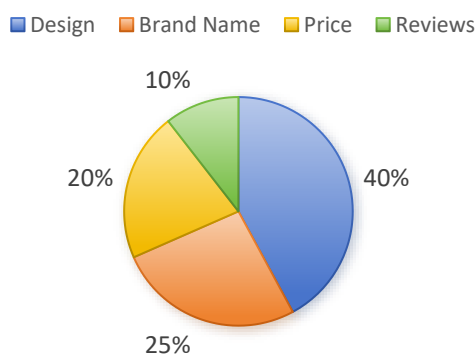


Fig. 2. Factors That Attract Attention First

**Source: compiled by the author*

Conclusion

To conclude, visual branding has a significant impact on consumer behavior and has become a key element of modern marketing communication. The research presented in this article showed that visual elements such as colors, logos, packaging, typography, and social media design can strongly influence how consumers perceive a brand and how they make purchasing decisions. In many situations, customers notice a product's appearance before evaluating its quality, price, or technical characteristics. This means that first impressions created by design can play a decisive role in attracting attention and encouraging interest.

The theoretical part of the article demonstrated that visual branding is closely connected with psychological factors such as perception, memory, and emotions. Consumers often react to visual information unconsciously, and this reaction may affect whether they trust a brand, remember it, or choose it over competitors. Repetition of the same colors, symbols, and design style helps build recognition over time, while positive emotional associations can increase customer loyalty. For this reason, visual branding should be seen not only as decoration, but as a strategic business tool.

The practical analysis and brand examples also confirmed the importance of a strong visual identity. Global companies such as Apple, Nike, Coca-Cola and IKEA use consistent branding to create clear market positions and an emotional connection with consumers. Their success shows that effective design can communicate values such as quality, innovation, motivation, and accessibility without many words. At the same time, this principle is relevant not only to large international brands but also to small businesses that want to grow and become more competitive.

The survey results supported the main ideas of the research. Most respondents stated that packaging and overall design attract their attention first, and many agreed that attractive branding increases trust in a product. Many participants also admitted that they had bought products because they looked appealing online. These findings are especially relevant today, when online shopping and social media have become an important part of everyday consumer behavior.

In my opinion, visual branding will continue to grow in importance in the future because modern consumers live in a fast and highly visual environment. People often make quick decisions, compare many options at once, and expect brands to communicate clearly and attractively. Because of this, companies need to invest not only in product quality but also in the way they present themselves visually. However, strong branding should always be supported by real value and honest communication, because attractive design alone cannot create long-term trust.

Overall, visual branding is no longer optional in marketing. Armstrong and Kotler (2020) state that modern companies need strong branding strategies to remain competitive in changing markets. It is an essential factor that influences consumer choices, shapes brand reputation, and helps businesses succeed in a competitive market. Companies that understand this and build a clear, consistent, and meaningful visual identity will have better opportunities to attract customers and maintain long-term relationships.

Discussion

The survey results support the theoretical ideas discussed earlier in this article. Visual branding clearly plays an important role in first impressions, trust, and purchase decisions. This is especially relevant for younger consumers who spend a lot of time online and are constantly exposed to visual content from brands, influencers, and advertisements.

In my opinion, the influence of visual branding is becoming stronger every year because people make faster decisions and compare many products in a short time. In such situations, appearance can become the deciding factor. I have also noticed that products with clean, modern designs often seem more reliable, even before checking detailed information or reviews.

However, visual branding alone is not enough for long-term success. If the product quality does not meet expectations set by design, consumers may lose trust. This means that effective branding should be supported by real value, honest communication, and positive customer experience.

References

1. Aaker, D.A. (1996). *Building Strong Brands*. New York. Free Press.
2. Armstrong, G., Kotler, P. (2020). *Principles of Marketing (18th ed.)*. Harlow. Pearson Education.
3. Forbes (2022). Why Branding Matters in the Digital Age [viewed: 2026-03-29]. Available at: *Why Branding Matters in the Digital Age – Alien Road Company*, <https://alienroad.com/branding-2/why-branding-matters-in-the-digital-age/>

4. Hoyer, W.D., MacInnis, D.J., Pieters, R. (2018). *Consumer Behavior*. Boston. Cengage Learning.
5. HubSpot (2025). The Importance of Branding in Marketing [viewed: 2026-04-01]. Available at: *What is Branding? Understanding Its Importance*, <https://blog.hubspot.com/marketing/branding>
6. Keller, K.L. (2013). *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*. Harlow. Pearson Education.
7. Kotler, P., Keller, K.L. (2016). *Marketing Management*. Harlow. Pearson Education.
8. Labrecque, L.I., Milne, G.R. (2012). Exciting red and competent blue: The importance of color in marketing. *Journal of the Academy of Marketing Science*, 40(5), 711-727.
9. Lindstrom, M. (2005). *Brand Sense: How to Build Powerful Brands through Touch, Taste, Smell Sight and Sound*. New York. Free Press.
10. Percy, L. (2018). *Strategic Integrated Marketing Communications*. London. Routledge.
11. Schmitt, B. (1999). *Experiential Marketing*. New York. Free Press.
12. Solomon, M.R. (2018). *Consumer Behavior: Buying, Having, and Being*. London. Pearson.
13. Underwood, R.L. (2003). The communicative power of product packaging. *Journal of Marketing Theory and Practice*, 11(1), 62-76.
14. Wheeler, A. (2017). *Designing Brand Identity (5th ed.)*. Hoboken. Wiley.

MOTIVATIONAL MEASURES IN HUMAN RESOURCE MANAGEMENT IN THE MUNICIPALITY ADMINISTRATION

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Keywords: employee motivation, commitment and engagement, motivational measures.

Abstract

Public sector organizations, including municipalities, face a limited selection of motivational measures due to strict legal regulations and budgetary constraints; therefore, the application of motivational measures in human resource management remains a relevant and practically significant issue. The aim of this article is to analyze motivational measures in human resource management within the municipal administration. Research methods: analysis of scientific literature and quantitative research - an anonymous questionnaire survey. The study involved 110 employees of the district municipal administration. The results of the study showed that the most effective motivational measures in the municipality are a supportive psychological climate and a work-life balance, which respondents evaluate very positively. Meanwhile, financial incentives, participation in decision-making, and systematic recognition by management emerged as the least developed measures. It is important to note that the vast majority of respondents indicated that employee engagement would be most effectively increased by a systematic combination of internal and external motivational measures. The study's results confirm that the municipality needs to create an integrated and consistent motivation system that meets the diverse needs of employees and is aligned with the organization's goals.

Introduction

As author K. Dieser (2025) notes, the success of public sector institutions increasingly depends on their ability to effectively manage their most important resource. Rising public expectations, technological advancements, and demographic challenges are forcing local government organizations to re-examine human resource management, while G. Ulinskienė (2024) emphasizes that it is precisely employee motivation that becomes the decisive factor ensuring the organization's ability to achieve its set goals and meet the community's needs with high quality.

Relevance and research of the article. Employee motivation is considered one of the key factors for success in public administration, as it directly affects employee productivity, job satisfaction, and the quality of public services (E. Mansaray, 2019). A. Fabre, D. Liban, J. Alejandro, B. Malang, and J. Malang (2024) note that despite this, operational efficiency in the public sector remains lower than in private organizations, which indicates that motivational measures do not always meet employees' needs (Raudeliūnienė and Meidutė-Kavaliauskienė, 2013). K. Heinz (2025) points out that there are no universal motivational measures, so it is important for every organization to seek individualized solutions or to combine both internal and external motivational measures. Motivation and human resources in the public sector are widely analyzed both internationally and in Lithuania. In the international scientific literature, concepts and measures of public sector motivation are examined by A. Ritz, G. A. Brewer, and O. Neumann (2016), E. Knies, P. Boselie, J. Gould, and W. Vandenabeele (2024), K. Dieser (2025), and B. Zolak, A. Gričnik, and S. Šarotar (2025). Their research reveals that motivation systems in the public sector must be flexible and integrated into strategic human resource management. The interaction between internal and external motivation is analyzed by L. Morris, M. Grehl, S. Rutter, M. Mehta, and M. Westwater (2022), as well as A. Fishbach and K. Woolley (2022). In the Lithuanian context, the application of human resource motivation measures is examined by A. Rakšnys and A. Valickas (2016), G. Ulinskienė (2024), and A. Skeberdytė (2022). However, the application of motivational measures in the selected public organizations, municipalities, has not yet been scientifically investigated. This article is relevant from both a theoretical and practical perspective.

Problem formulation. Public sector organizations, including municipalities, often face a limited range of motivational measures due to strict legal regulations and bureaucratic structures (Zolak et al., 2025; Rakšnys and Valickas, 2016). As highlighted in the study (Ulinskienė, 2024), insufficient attention to individual employee needs and the use of outdated incentive methods increase staff turnover and contribute to a shortage of specialists. A. Skeberdytė (2022) highlights the argument that choosing poor or ineffective motivational measures reduces productivity, as employees lose motivation to pursue common goals. In the selected municipality, the application of motivational measures in human resources has not been scientifically researched, so there is a lack of evidence-based knowledge about existing motivational measures.

Subject of the article: motivational measures in human resource management.

Objective of the article: is to analyse motivational measures in human resource management within the municipal administration.

Objectives:

1. To examine the theoretical aspects of motivation.
2. To conduct a study on the application of motivational measures in human resource management at the municipality.

Research methods: analysis of scientific literature, questionnaire survey.

Theoretical Aspects of Motivation and Human Resources

The concept of human resources in academic literature lacks a single, universally accepted definition and is interpreted differently depending on the field of study. In economic literature, human resources are understood as an investment from which a financial return is expected, and the employee is viewed as a rational individual seeking personal gain (Thierry, 2018). In management literature, P. Boselie, J. Gould, and W. Vandenaabeele (2018) emphasize a strategic approach in which the employee is considered the organization's primary resource for achieving its goals. In psychological literature, B. Zolak et al., 2025, emphasize the employee's internal motivation, the fulfillment of needs, and individual characteristics, which, according to A. Fishbach and K. Woolley, 2022, are precisely what determine the employee's value to the organization.

According to Knies et al. (2024), human resources encompass employees' knowledge, skills, competencies, and personal qualities, which create value only within an appropriate organizational environment. W. Cai, S. Khapova, B. Bossink, E. Lysova, and J. Yuan (2020) argue that an employee's potential is realized only when abilities, motivation, and opportunities work together. Y. Wang, S. Kim, A. Rafferty, and K. Sanders (2020) add that even the best measures will not yield effective results if employees perceive them as a formal obligation. In the public sector, human resource management takes on particular importance because employees serve the public interest. Management must be directed not toward profit-seeking but toward the creation of public value (E. Knies et al., 2024). This is precisely why employee motivation becomes one of the most important measures for unlocking the potential of human resources within an organization.

The concept of motivation is defined slightly differently in various academic literatures. In economic literature, this concept is associated with incentives and compensation structures, which, as researchers W. Liu and Y. Liu (2022) assert, influence employee productivity and organizational performance. In management literature, it is described as a managed process in which employees within an organization are guided through compensation systems, career opportunities, and training programs (Mansaray, 2019). In the scientific literature on psychology, motivation is described as an internal process that regulates the direction of human behavior, attitudes, and desires, directly linked to the satisfaction of basic psychological needs (Laguerre and Barnes, 2025). A. Ritz et al. (2016) emphasize in their research that, in the field of public administration, the concept of motivation is also linked to the pursuit of the public interest and service to society. To better illustrate the diversity of these views, the main concepts of motivation are presented in Table 1.

Table 1

The Concept of Motivation

Authors	The Concept of Motivation
Raipa, A., et al., (2016)	A psychological trait that determines a person's level of commitment and their motivation to act in a certain direction.
Fabre A., et al., (2024)	A set of factors shaping the productivity, engagement, and job satisfaction of public sector employees, emphasizing the importance of career development, job security, service.
Chen, G., Kanfer R., (2024)	The determining process of how an individual allocates their efforts and resources-their direction, intensity, and consistency at both the individual and team levels.
Heinz, K., (2025)	An employee's internal energy and focus, shaped by the organizational environment, leadership style, and opportunities for professional growth.
Laguerre, R., Barnes J., (2025)	The direction of an employee's efforts, which arises when human resource practices satisfy basic psychological needs.
Musayev, T., Jafarova, G., (2026)	A strategic process through which an organization creates conditions to sustain employees' internal energy and commitment by balancing individual and organizational goals.

**Sources: Raipa, Smalskys, Giedraitytė (2016); Fabre et al. (2024); Chen, Kanfer (2024); Heinz (2025); Laguerre, Barnes (2025); Musayev, Jafarova (2026)*

Summarizing the concepts presented in Table 1, we can see different yet complementary perspectives. A. Fabre et al. (2024) and R. Laguerre and J. Barnes (2025) add that motivation encompasses career development, security, and a sense of service to society, but this arises only when organizational practices satisfy the employee's basic psychological needs. K. Heinz (2025) and G. Chen and R. Kanfer (2024) agree that motivation is shaped by the work climate and leadership style and manifests itself at both the individual and team levels. T. Musayev and G. Jafarova (2026) emphasize that an organization must consciously create conditions in which individual and organizational goals are aligned. To better understand the practical relevance of motivation in an organization, Table 2 summarizes its main areas of application and impact.

Table 2

The Essence of Motivation and the Impact

Scope of Application	The Essence of Motivation and Its Impact
Increasing productivity and engagement	It directly influences employees' efforts, productivity, and the quality of their work.
Promoting loyalty and satisfaction	Motivated employees feel a stronger connection to the organization and are less likely to quit.
Creating organizational goals and public value	It helps to balance personal expectations with the public interest (particularly relevant in the public sector).
Talent attraction and retention	A competitive motivation system makes the organization attractive in the market, especially in conditions of staff shortages.
Promoting innovation and flexibility	It encourages employees not to be afraid of change, to adopt new technologies, and to work creatively.

*Sources: Ripoll, Ritz (2022); Fishbach, Woolley (2022); Knies et al. (2024); Fabre et al. (2024); Ulinskienė (2024); Laguerre, Barnes (2025); Musayev, Jafarova (2026)

Summarizing the essence of motivation and its impact as presented in Table 2, R. Laguerre and J. Barnes (2025) as well as T. Musayev and G. Jafarova (2026) emphasize that long-term loyalty and job satisfaction arise only when the organizational system meets basic psychological needs, but E. Knies et al. (2024) warn that an excessive level of control can have the opposite effect and lead to employee burnout. In the context of the public sector, A. Fabre et al. (2024) and G. Ripoll and A. Ritz (2022) emphasize that motivation is inseparable from public service and the creation of public value. A. Fishbach and K. Woolley (2022) and G. Ulinskienė (2024) agree that motivation helps employees adapt flexibly to change and work creatively, which is particularly important in the evolving environment of public administration.

In management science literature, motivational measures are classified in various ways: by nature, duration, target audience, or source of motivation (Mansaray, 2019; Ripoll and Ritz, 2022). A. Skeberdytė (2022) notes that financial compensation provides basic security for employees, but only non-financial measures create a long-term emotional connection with the organization. In this article, the measures are analyzed according to the source of motivation and categorized as internal and external, as this classification allows for a deeper understanding not only of the measures an organization employs but also of how employees perceive them. To present internal motivational measures and their impact on employees in a more systematic way, they are summarized in Table 3.

Table 3

Internal motivation measures and their effects

Internal motivation measures	Effect
Autonomy and empowerment	Employees feel a sense of responsibility and purpose, and initiative and creativity are encouraged.
Flexible work organisation	Improves work-life balance, reduces stress, and increases loyalty.
Participation in decision-making	Strengthens commitment and a sense of belonging to the community.
Professional development and learning	Increases employee confidence and raises the organization's competency level.
Career opportunities	Provides a long-term perspective and a sense of recognition.
Meaningful and challenging tasks	Provides a sense of achievement and ensures high-quality work.
Recognition and evaluation	Strengthens confidence and job satisfaction.

Support and feedback from management	Creates psychological safety and reduces stress.
Positive social environment	Increases the sense of belonging and strengthens teamwork.

*Sources: Mansaray (2019); Hirawat (2024); Suprianto et al. (2024); Ulinskienė (2024); Dieser (2025); Heinz (2025); Laguerre, Barnes (2025)

In analyzing the measures presented in Table 3, R. Laguerre and J. Barnes (2025) note that autonomy is one of the strongest sources of internal motivation, as it allows the employee to feel not only like an executor but also like the organizer of their own work. K. Dieser (2025) points out that autonomy is rarely applied in the public sector due to strict legal regulations, but K. Heinz (2025) adds that even in a constrained environment, managers can increase it through task delegation and the promotion of initiatives. H. Mansaray (2019) treats competency development as a strategic motivational measure, as investments in training not only increase professional preparation, but also strengthen internal motivation when an employee feels that the organization values their growth. K. Heinz (2025) confirms that these measures are effective in the public sector, especially when opportunities for financial compensation are limited. Hirawat (2024) and Suprianto et al. (2024) note that managerial support and sincere recognition in practice involve regular one-on-one conversations, constructive criticism, and emotional support, which create psychological safety and reduce stress. G. Ulinskienė (2024) adds that a favorable psychological climate encourages employees to communicate and collaborate more openly, increases their sense of belonging to the community, and strengthens teamwork. External motivational measures will be analyzed further. Their classification is presented in Table 4.

Table 4

Classification of External Motivational Measures

Category	Measure
Material (monetary) Salary	Salary, bonuses, incentives, one-time payments
Material (non-monetary)	Benefits package, insurance, additional vacation time
Social	Training and professional development funded by the organization

*Sources: Mansaray (2019); Fishbach, Woolley (2022); Morris et al. (2022); Knies et al. (2024); Dieser (2025); Heinz (2025); Zolak, Poljašević et al. (2025)

To summarize Table 4, external motivation is defined as the promotion of employee behavior and engagement through external factors, such as remuneration or learning opportunities, and is categorized into material monetary, non-monetary, and social measures (Mansaray, 2019; Morris et al., 2022). Wages and bonuses satisfy employees' basic needs, but their application in the public sector is limited by strict legislation, and standardized compensation systems often do not correspond to the results achieved or the workload (Dieser, 2025; Zolak Poljašević et al., 2025). Furthermore, L. Morris et al. (2022) and Fishbach and Woolley (2022) warn that if monetary compensation is perceived as a control mechanism, internal motivation weakens. Non-monetary benefits, such as insurance and additional vacation time, are also considered an important part of the overall compensation package. Meanwhile, social measures, such as training and professional development funded by the organization, become a significant part of the compensation package, offsetting financial constraints (Heinz, 2025; Mansaray, 2019). However, E. Knies et al. (2024) emphasize that to ensure long-term employee engagement, external measures must be combined with factors that strengthen internal motivation.

The human resources motivation system in the public sector is fundamentally different from that in the private sector due to the different nature of activities, strict legal regulation, and limited material resources (Ulinskienė, 2024; Zolak Poljašević et al., 2025). J. Raudeliūnienė and I. Meidutė (2013) note that a centralized reward system and standardized incentive measures leave virtually no room to take individual employee needs into account, while E. Knies et al. (2024) add that administrative logic is more often oriented toward task compliance rather than the realization of human potential. Due to these limitations, internal motivational factors such as autonomy, professional development, and managerial support, as well as a sense of public service, become the primary sources of employee motivation, which compensate for what external, primarily monetary, incentives cannot provide (Giedraitytė, 2016; Heinz, 2025). A. Fernandes, G. Santinha, and T. Forte (2022) emphasize that long-term employee engagement and job satisfaction can only be ensured by a

combination of internal and external measures tailored to employees' needs and linked to the organization's goals.

To summarize the theory, human resources are the sum of employees' knowledge, skills, and motivation, which determines organizational effectiveness. Motivation is understood as an internal force within the employee, shaped by the interaction between the individual's needs and the organizational environment. Employee motivation is ensured by a combination of internal and external motivation measures. In the public sector, due to legal regulations and budgetary constraints, internal motivation measures are particularly important.

Motivational measures in human resource management at the district municipal administration

The study aims to identify which motivational measures are currently in use and which measures would increase employee commitment and engagement in their work.

The objective of the study is to analyze motivational measures in the human resources department of the district municipality administration.

Research method: quantitative research - anonymous survey. This method is a reliable measure that allows for the collection of research data at a relatively low cost and its subsequent processing (Kardelis, 2017).

The purpose of the survey: the research data will help to present a plan for improving motivational measures, which shall be adapted for the employees of the district municipal administration.

The rationale for the survey: a probability-based purposive sampling method was applied.

Survey respondents were selected based on the following criteria:

1. Are employed by the district municipal administration.
2. Use a computerized workstation.
3. Hold a position within the district municipal administration (excluding sub-districts).
4. Agrees to participate in the study.

Survey Organization. Questionnaires were sent out on March 26, and the survey was completed on April 7. The survey was conducted anonymously to ensure respondent confidentiality. All collected data is statistically processed and used for scientific purposes only.

The study was conducted in a specific district municipal administration in Lithuania. A total of 152 questionnaires were sent out. The survey was completed by 110 respondents, representing a 72 percent response rate.

Respondents. The study data show that 76 percent of respondents are women and 24 percent are men. Regarding age distribution, the majority of respondents, as many as 55 percent, indicated they were 44 years old or older, 33 percent belonged to the 31-43 age group, while the youngest employees (18-30 years old) accounted for only 11 percent.

The particularly low proportion of young employees is a cause for concern, as a lack of attention to attracting and retaining young professionals may, in the long run, increase staff shortages and turnover; it is also important to examine the respondents' work experience within the district municipal administration. The distribution of work experience shows that the majority of respondents, 44 percent, have been working in the administration for 11 years or more. 22 percent have been working for 4-10 years, and 35 percent indicated they have been working for up to 3 years.

When analyzing the concept of motivation, the majority of respondents, 33 percent, associate motivation with good relationships within the team and support from their supervisor, 22 percent with financial incentives, 20 percent with inner energy and the desire to do meaningful work, and the fewest, just 11 percent, with career opportunities. This indicates that the social environment and psychological climate are the dominant motivators in this organization. When analyzing motivation at work, as many as 51 percent of respondents indicated that their motivation depends on the situation and working conditions, while only 11 percent noted that their work consistently inspires them. This suggests that the municipality lacks a consistent motivational environment that would ensure stable employee engagement.

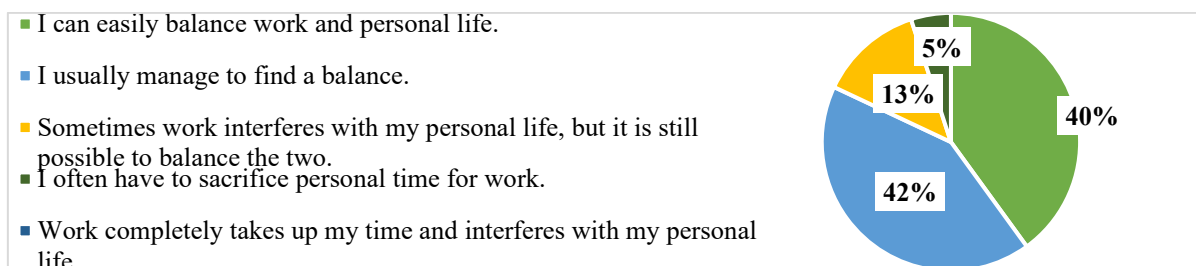


Fig. 1. Work-life balance

**Source: compiled by the authors*

When evaluating the internal motivation measures presented in Figure 1, the results regarding work-life balance are positive for 42 percent of respondents, who most often manage to find a balance, while 40 percent easily balance work with their personal lives. However, the situation is more complicated when it comes to participation in decision-making. The opinions of 53 percent of respondents are usually heard, but only occasionally have a real impact, while 11 percent are not involved at all.

Assessments of opportunities for professional development vary: 40 percent of organizations actively provide learning opportunities, but as many as 42 percent noted that these are not systematic. Regarding recognition by management, 45 percent of managers usually notice and evaluate work results, but only 4 percent indicated that recognition is consistent and sincere.

The psychological climate is rated most favorably by 41 percent of respondents, with a positive climate prevailing in the workplace, while 42 percent reported that relationships are generally good. When evaluating external motivational measures, 47 percent of respondents indicated that pay partially corresponds to the work performed, but as many as 56 percent noted that financial incentives are rarely or never provided. The system of additional non-monetary benefits is also viewed critically, with only 13 percent stating that the current benefits are sufficient.

Having established that the municipality lacks both financial and non-monetary benefits, the aim is to assess whether this shortfall can be compensated for by the internal motivational measure characteristic of the public sector service to the community. A summary of the responses is presented in Figure 2.

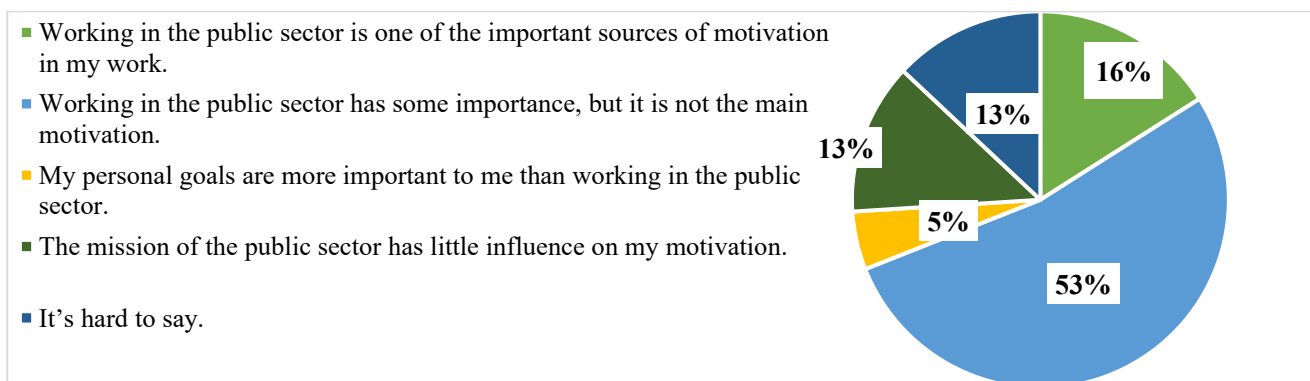


Fig. 2. The importance of public service for motivation

**Source: compiled by the authors*

The data from Figure 2 reveal that the majority of respondents, 53 percent, indicated that working in the public sector has some importance but is not the primary motivation measure. 16 percent of respondents stated that working in the public sector is one of the important sources of motivation, while 13 percent each indicated that the public sector's mission has little influence on their motivation or that it is difficult to say. Only 5 percent of respondents noted that personal goals are more important to them than working in the public sector. These results indicate that the sense of public service plays a certain role in employee motivation but is not the dominant factor, so the municipality should seek additional ways to strengthen this sense and link it to specific work outcomes.

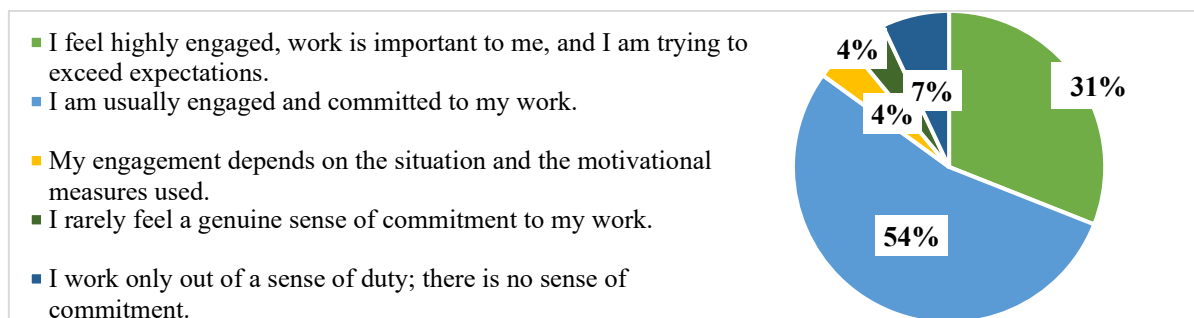


Fig. 3. Employee Engagement and Commitment to Work

**Source: compiled by the authors*

According to the data presented in Figure 3, the majority of respondents, 54 percent, are usually engaged and committed to their work, while 31 percent feel highly engaged, consider work important to them, and strive to exceed expectations. 7 percent of respondents indicated that they work only out of a sense of duty and feel no genuine commitment, while 4 percent rarely feel a genuine sense of commitment to their work. Another 4 percent noted that their engagement depends on the situation and the motivational measures applied. These results reveal that employee engagement in the municipality is generally positive, yet a portion of employees remain disengaged or conditionally motivated; therefore, the development of consistent and systematic motivational measures would be a key factor in increasing overall employee commitment to the organization.

Regarding the preferred methods of applying motivational measures, as shown in Figure 4, the absolute majority of the respondents, as many as 76 percent, noted that engagement would be most enhanced by a systematic and balanced combination of internal and external motivational measures. 13 percent of respondents disagreed with the majority, noting that external measures, such as high pay, bonuses, and financial benefits, are more important to them, while 11 percent prefer internal measures, namely recognition, a positive work environment, autonomy, and career opportunities.

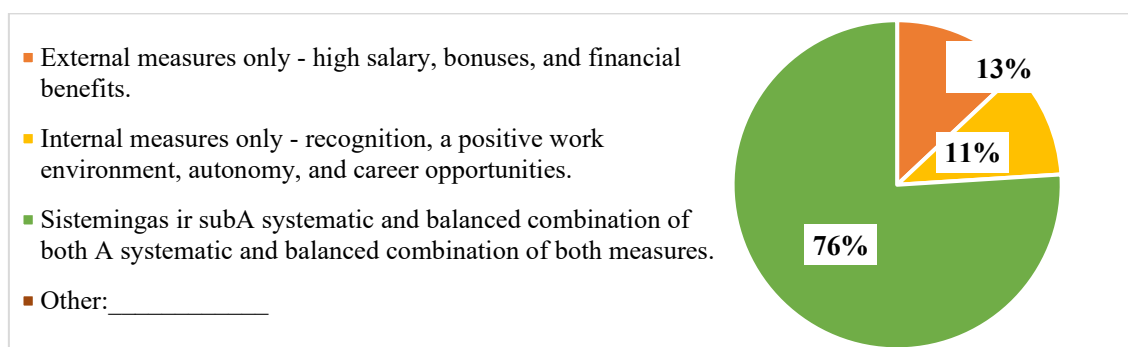


Fig. 4. Promoting Motivational Measures

**Source: compiled by the authors*

To find out which motivational measures would most improve employee engagement and commitment to the organization, respondents were asked to rate each factor on a 5-point Likert scale. Since the question covered 13 motivational measures, the distribution of responses is presented in two figures for clarity: Figures 5 and 6.

The data from Figure 5 reveal that the most popular motivational measure was an appropriate salary; as many as 70 percent of respondents fully agree that this financial incentive would improve their engagement, which can be explained by the fact that employees feel their compensation does not match their effort, primarily linking this gap to declining engagement, so properly set wages become the key factor in increasing engagement. Financial incentives for results also received particularly strong support, confirming that employees want to feel a direct link between their achievements and financial compensation. However, as revealed by previous survey results, this motivational measure is rarely and inconsistently applied in the municipality. Career growth opportunities are viewed somewhat more cautiously, which is linked to the results of previous surveys – employees are aware of structural career limitations, and therefore assess the impact of this motivational measure with greater caution.

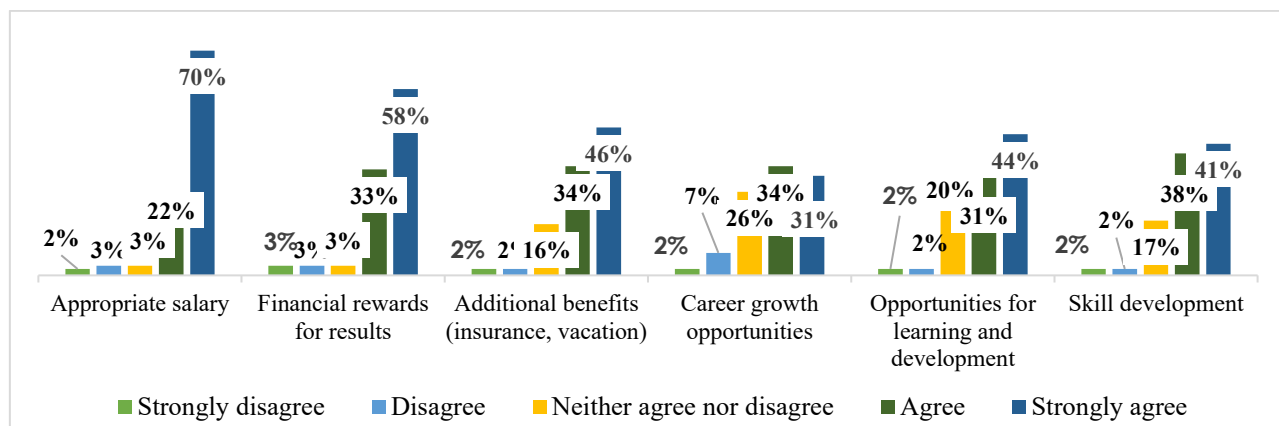


Fig. 5. Assessment of the Impact of Motivational Measures on Engagement

**Source: compiled by the authors*

An analysis of the motivational measures shown in Figure 6 reveals that a good work environment and flexible work schedules received particularly high approval, indicating that non-material motivational measures are no less important to employees than material ones. It is significant that participation in decision-making received the lowest number of respondents who fully agree, yet as many as 48 percent agree that this measure would improve their engagement, which indicates that employees value the opportunity to have an influence, though they may realistically recognize its limitations in the context of the public sector. In summary, the survey data reveal that employees value both material and non-material motivational measures equally, which once again confirms the importance of an integrated and balanced approach to motivation in the district municipal administration.

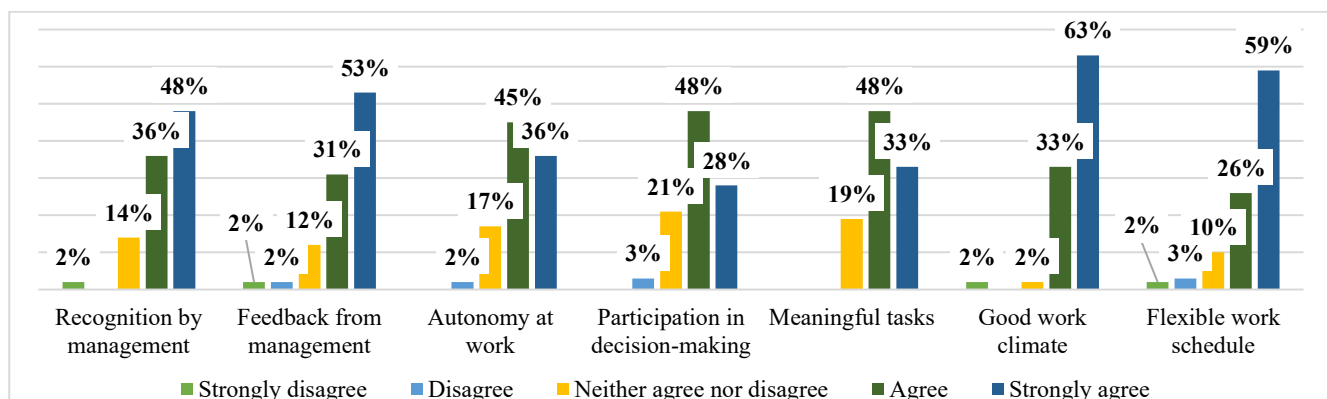


Fig. 6. Assessment of the Impact of Motivational Measures on Engagement

**Source: compiled by the authors*

The strongest measures are the psychological climate and work-life balance, but financial incentives, participation in decision-making, and systematic recognition by management require significant improvement. Employee engagement is situational and directly dependent on the measures applied, which indicates that the municipality must develop a consistent and integrated motivation system that combines both internal and external measures.

Conclusion

The theoretical analysis revealed that motivation in the public sector is a complex process constrained by legal regulations and budgetary limitations. Due to these characteristics, financial incentives cannot be the sole motivational measure; therefore, internal motivational factors such as psychological climate, management support, professional development, and participation in decision-making take on particular importance. These research findings practically confirm the assertion by G. Ulinskienė (2024), discussed in the theoretical section, that a favorable psychological climate encourages open communication and increases engagement. The scientific literature also confirms that sustainable employee motivation can only be ensured through a systematic combination of internal and external measures tailored to individual employee needs.

The study confirmed the insights presented in the theoretical section. The most effective motivational measures in the municipality were found to be the psychological climate and work-life balance, which respondents rated positively. However, financial incentives, participation in decision-making, and systematic recognition by management remain the least developed measures. Employees receive virtually no financial incentives, and consistent and sincere recognition is received by a very small percentage. This indicates that the existing motivation system is not sufficiently consistent and does not fully utilize its potential.

A particularly significant finding of the study is that employee engagement would be most effectively increased by a systematic combination of internal and external motivational measures. It would be worthwhile to examine this system more broadly, involving different municipalities or regions, in order to better understand the differences in the application of motivational measures and to develop more effective human resource management strategies in the public sector.

References

1. Boselie, P., Gould, J., Vandenabeele, W. (2018). Strategic human resource management and public sector performance: context matters. *The International Journal of Human Resource Management*, 35, p. 2432-2444.
2. Cai, W., Khapova, S., Bossink, B., Lysova, E., Yuan, J. (2020). Optimizing Employee Creativity in the Digital Era: Uncovering the Interactional Effects of Abilities, Motivations, and Opportunities. *International Journal of Environmental Research and Public Health*, 17, No 5.
3. Chen, G., Kanfer, R. (2024). The Future of Motivation in and of Teams. *Annual Review of Organizational Psychology and Organizational Behavior*, 11, p. 93-112.
4. Dieser, K. H. (2025). New Public Management: Employee Motivation in a Public Authority. *European Journal of Research in Social Sciences*, 13, No 1, p. 24-36.
5. Fabre, A., G., Liban, d., k., Alejandro, J., I., Malang, B., P., Malang, J., DS. (2024). Exploring The Impact of Motivation on Job Performance: A Study of Government Personnel in Public Sector Organizations. *International Journal of Multidisciplinary Applied Business and Education Research*, 5(11).
6. Fernandes, A., Santinha, G., Forte, T. (2022). Public service motivation and determining factors to attract and retain health professionals in the public sector: A systematic review. *Behavioral Sciences*, 12(4), 95.
7. Fishbach, A., Woolley, K. (2022). The Structure of Internal Motivation. *Annual Review of Organizational Psychology and Organizational Behavior*, 9, p. 339-363.
8. Heinz, K., D. (2025). Strategies to increase employee motivation in public administration. *World Journal of Advanced Research and Reviews*, 26(02), 1155-1163.
9. Hirawat, S. (2024). The Impact of Leadership Styles on Employee Motivation. *SSRN Electronic Journal*.
10. Knies, E., Boselie, P., Gould-Williams, J., Vandenabeele, W. (2024). Strategic human resource management and public sector performance: context matters. *The International Journal of Human Resource Management*, 35, No 14, p. 2432-2444.
11. Laguerre, R. A., Barnes-Farrell, J. L. (2025). Bringing Self-Determination Theory to the Forefront: Examining How Human Resource Practices Motivate Employees of All Ages to Succeed. *Journal of Business and Psychology*, 40, No 1, p. 1-37.
12. Liu, W., Liu, Y. (2022). The Impact of Incentives on Job Performance, Business Cycle, and Population Health in Emerging Economies. *Frontiers in Public Health*, 9, 778101.
13. Mansaray, H. E. (2019). The Role of Human Resource Management in Employee Motivation and Performance – An Overview. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 2, No 3, p. 183-194.
14. Morris, L. S., Grehl, M. M., Rutter, S. B., Mehta, M., Westwater, M. L. (2022). On what motivates us: a detailed review of internal v. external motivation. *Psychological Medicine*, 52, p. 1801-1816.
15. Musayev, T., Jafarova, G. (2026). Motivation in Human Resource Management. *Luminis Applied Science and Engineering*, 3, No 1.
16. Raipa, A., Smalskys, V., Giedraitytė, V., Nefas, S. (2016). *Šiuolaikinio viešojo administravimo pagrindai*. Vadovėlis. Vilnius.
17. Rakšnys, A. V., Valickas, A. (2016). Viešojo sektoriaus institucijų vadovų vaidmens ir organizacinės kultūros transformacijos modernizavimo tradicijų kontekste. *Viešojo politika ir administravimas*, 15(4), p. 687-701.
18. Raudeliūnienė, J., Meidutė-Kavaliauskienė, I. (2013). Analysis of Factors Motivating Human Resources in Public Sector. *Procedia - Social and Behavioral Sciences*, 110.
19. Ripoll, G., Ritz, A. (2022). Public service motivation and human resource management. *HRM in the public sector*, p. 245-259.
20. Ritz, A., Brewer, G., A., Neumann, O. (2016). Public Service Motivation: A Systematic Literature Review and Outlook. *Public Administration Review*, 76(3), p. 414-426.

21. Skeberdytė, A. (2022). Žmogiškųjų išteklių valdymo iššūkių sprendimų gerinimas: Lietuvoje veikiančių organizacijų pavyzdys. *Lietuvos aukštųjų mokyklų vadybos ir ekonomikos jaunųjų mokslininkų Konferencijų darbai*, 25, p. 349-354.
22. Suprianto, Ramli, Rosary, A., O. (2024). The Role of Leaders' Motivational Words in Improving Employee Performance in the Public Sector. *Jurnal Administrare: Jurnal Pemikiran Ilmiah dan Pendidikan Administrasi Perkantoran*, 11-2, p. 439-450.
23. Thierry, A. Z. (2018). Modelization of HRM and Perspectives for the Cameroon Public Administration. *International Journal of Research Science and Management*, 5(8), p. 74-87.
24. Ulinskienė, G. (2024). Darbuotojų motyvavimo priemonių reikšmė viešojo administravimo institucijose. *21-osios jaunųjų mokslininkų konferencijos straipsnių rinkinys*. Kaunas: Vytauto Didžiojo universitetas.
25. Wang, Y., Kim, S., Rafferty, A., Sanders, K. (2020). Employee perceptions of HR practices: A critical review and future directions. *The International Journal of Human Resource Management*, 31, No 1, p. 128-173.
26. Zolak Poljašević, B., Gričnik, A. M., Šarotar Žižek, S. (2025). Human Resource Management in Public Administration: The Ongoing Tension Between Reform Requirements and Resistance to Change. *Administrative Sciences*, 15, No 3, 94.

SYLHETI NAGRI LANGUAGE AND SCRIPT: A CULTURAL IDENTITY OF A NATION UNDER THREAT

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Keywords: Sylheti Nagri Language and Script, Cultural Identity, Cross-border Linguistic Heritage, Language Decline, Minority Language Preservation.

Abstract

The Sylheti Nagri language and its script were once used widely in the literature, religion, and daily life of the Sylheti people, who used to live as a unified population in India before the partition and border division of 1947. Now, this community is mainly living in the Surma River basins in Bangladesh and the Barak River basins in India. Also, a large number of Sylheti people are living abroad, especially in the UK, USA, Middle Eastern countries, and other European countries as a diaspora community. The Sylheti Nagri language bears the heritage, culture, identity, and rights of this community living mainly in the India-Bangladesh border region. But this language is now declining because of several reasons. Although the Sylheti language is spoken by millions of people, it is officially unrecognized, socially undervalued, and politically minoritized both in India and Bangladesh, causing this language to disappear. The aim of this research is to examine the importance of the Sylheti language and its script as the cultural identity of the Sylheti people, the current declining status of this language, and the reasons for its decline. This study used a qualitative research methodology by conducting semi-structured interviews among Sylheti people all over the world to collect their opinions on the importance of this language as a cultural identity and to identify the factors of its decline. The results indicate that the Sylheti language strongly bears the cultural identity of the Sylheti people, which is declining. They also indicate the factors of its decline, where lack of governmental awareness, lack of official recognition, and the educational system are the main factors; influences of dominant languages and multilingualism caused by the diasporic community are moderate factors; and border division and nationalism are minimal factors behind this language decline. Therefore, it is an urgent issue to take necessary steps to preserve this language for the purpose of saving the cultural identity of the Sylheti people.

Introduction

A nation's cultural identity is mostly connected with its language. For a minority community, language is not only a way of expressing their emotions, but it also bears the identity, tradition and cultural value of this community. The Sylheti Nagri language also represents the identity of the Sylheti community who are mainly living in the Surma River basins in Bangladesh and the Barak River basins in India. Also, a huge number of the Sylheti diaspora community are living abroad especially in the UK, USA, Middle Eastern countries and other European countries (Simard et al. 2020, p. 1-2; Ahmed, 2021-2022, p. 1-2; Raychoudhury & Mahanta, 2022; Malakar, 2017, p. 1; Ahmed, 2021-2022, p. 1). Additionally, this language is spoken by around 11 million people all over the world (Simard et al. 2020, p. 1; Raychoudhury & Mahanta, 2022, p. 1). Moreover, this language has its own script which is known as Sylheti Nagri, once used widely for documenting religious beliefs, literary and cultural traditions (Simard et al. 2020, p. 7). However, this language is still not officially or politically recognized in both India and Bangladesh (Simard et al., 2020, p. 1; Ahmed, 2021-2022, p. 1; Raychoudhury & Mahanta, 2022, p. 1). And this language is now declining because of several reasons which puts the cultural identity of the Sylheti people under threat.

For understanding the decline of the Sylheti language, it is necessary to understand the socio-political history of Sylhet. Historically, Sylhet was a part of the Bengal presidency before 1874 and later on after 1874 it became a part of Assam as per the decision of the British government in India (Wouters & Subba, 2023, p. 42; Singha, 2025, p. 1-2; Hossain, 2013, p. 9). After a long struggle, in 1947, during the partition of India-Pakistan, Sylhet was divided into two pieces through a referendum. Among the two parts, one part stayed with India and another with East-Pakistan (Singha, 2025, p. 3). In 1971, when East-Pakistan became independent and turned into a new country named Bangladesh, the border among the Sylheti community was formed as the Indo-Bangla border which made Sylheti people as a minority community in both countries (Simard et al. 2020, p. 2; Bhattacharya, 2023, p. 6-7).

Moreover, the Sylheti Nagri script had a valued literary heritage with the Puthi-Pora tradition, is also being disappeared (Raychoudhury & Mahanta, 2022, p. 1; Simard et al. 2020, p. 7). The lack of using this script in education and official work, and gradual shift to Bengali and English is the most important cause of its decline. However, some technologies like OCR system and BGG-19 model contribute a lot to preserve it (Islam et al. 2025, p. 1-2, 8). But, without a structured script of Sylheti Language, the younger generation has limited access to learn it and keep it alive.

Because of mass migration, particularly in the UK, the younger generation is growing up with the English language. They are practicing multilingualism, making the Sylheti language disappeared. Furthermore, linguistic hierarchies, social stigma and perceived economic advantages connected with the majority language accelerate voluntary language shift in families, reducing the number of Sylheti speakers

day by day. At the same time, the influence of dominant national languages of India and Bangladesh is creating an extra pressure to adapt the national language rather than Sylheti language. Even considering the Sylheti language as a dialect of standard Bengali language, it creates a negative impact in the case of its decline. It is also noticeable that, the younger generations are not getting any access to use the Sylheti language in online platforms, as a result they are adopting dominant languages.

However, there are few studies conducted about the Sylheti community, but most of them focused on the history of Sylheti people and the phonology of their language. So, there is a knowledge gap in this field as no one has conducted research about the cultural value, current status and factors of its decline. Therefore, our research aim is to find out the relation between cultural identity and the language of Sylheti people. Also, we aimed to identify current situation of this language, like it is declining or not. If it is declining then what are the factors of its decline.

Therefore, this study adopts an interview based qualitative research methodology to examine Sylheti people's opinion, knowledge and practices about this language. By collecting data from Sylheti people living in different places all over the world, this research tried to get opinions about the importance of this language as a cultural identity, current situation of this language and the reasons of its decline. Our research suggests that Sylheti language bears the cultural identity of the Sylheti people and this language is declining day by day. Moreover, there are some factors responsible for its decline where lack of governmental awareness, lack of official recognition, and the educational system are the main factors; influences of dominant languages and multilingualism caused by the diasporic community are moderate factors; and border division and nationalism are minimal factors behind this language decline.

This research is important, because it highlights the urgency of preserving the Sylheti language and its script as foundational pillars of cultural identity of the Sylheti community. In this case, the government of both countries should take necessary steps to save the language. Because, it is a mark of the identity of the Sylheti people. However, many necessary steps have already been taken for its preservation. Among them the SOAS Sylheti Project in the UK and the creation of Unicode for the Sylheti language are mostly appreciated (Simard et al. 2020, p. 12, 14; Winstanley, 2025, p. 19-20; Simard et al. 2020, p. 8). However, those steps are not enough to preserve the language in this way.

Literature Review

Sylheti is an eastern Indo-Aryan language which is minoritised, politically unrecognised and insufficiently researched (Simard et al., 2020, p. 1), (Ahmed, 2021-2022, p. 1), (Raychoudhury & Mahanta, 2022, p. 1). This language is spoken by about 11 million people all over the world (Simard et al. 2020, p. 1), (Raychoudhury & Mahanta, 2022, p. 1). The Sylheti-speaking community mainly lives in the Surma river basins in Bangladesh and the Barak River basins in India. The Surma River basins are mostly located in the north-eastern part of Bangladesh which is known as the Sylhet division. And the Barak river basins are located under some states of India including Assam, Tripura and Manipur. Moreover, several diaspora communities live all around the world, mainly in the UK, the USA, Middle Eastern countries and other European countries (Simard et al. 2020, p. 1-2; Ahmed, 2021-2022, p. 1-2), (Raychoudhury & Mahanta, 2022; Malakar, 2017, p. 1; Ahmed, 2021-2022, p. 1). Unfortunately, this historic language, which bears the identity of a huge community is declining day by day because of several reasons.

The history of Sylheti people and their language is so long and full of struggles. Following this history, Sylhet was a part of the Bengal Presidency during the time of British rule in India before 1874. But, in 1874, the British administration transferred Sylhet from Bengal to a new province named Assam, because of their economic interest especially based on the tea industry (Wouters & Subba, 2023, p. 42; Singha, 2025, p. 1-2; Hossain, 2013, p. 9). However, the inclusion of Sylhet with Bengal caused an identity crisis for the Sylheti people and it was a burning issue for the Sylheti people living in the Bengal-Assam borderlands (Hossain, 2013, p. 9). The people of Sylhet were unable to accept this sudden decision as they had a strong cultural, linguistic and social connection with the Bengal region. They started to protest against the British government for the reunion of Sylhet and Bengal, but it failed as the British administration declined their proposal. So, it was always a desire for Sylheti people to reunite with Bengal, but no major development took place in this issue until 1905 (Singha, 2025, p.1-2).

In 1905, the British government divided Bengal and created a new province named Eastern Bengal and Assam. This decision was not accepted by the people of Bengal and Assam. For this reason, they started a protest named "Swadeshi Movement" against this decision. As a result, in 1911, the British government withdrew the decision and reunited Bengal. Although it solved the problem for the people of Assam and

Bengal, the Sylheti people remain in the same situation as they were still a part of Assam (Singha, 2025, p. 2). After a few decades, in the 1930s, the demand for separate Sylhet from Assam increased among the people of Assam to protect Assam people's political and economical progress (Hossain, 2013, p. 3). This demand was more highlighted, in the mid 1940s, when a tug of war was conducted between Muslim League and the Indian National Congress about the destiny of Assam (Wouters & Subba, 2023, p. 42). However, this demand was more stronger, when Muslim League demanded for a separation of Muslim state. During this time the Hindu community of Sylhet wanted to be a part of India (a country with Hindu majority population), which means they were in support of remaining as a part of Assam. On the other hand the Muslim community of Sylhet suggested to stay with Pakistan (a country with Muslim majority population), which means they wanted to be a part of East Pakistan (now Bangladesh) (Singha, 2025, p. 2-3; Hossain, 2013, p. 13).

To solve this problem the British government decided to arrange a referendum among the Sylheti people in 1947, during the partition of India and Pakistan. Following this decision, the Sylheti Referendum was held on 6-7 July 1947, where 56.56% voted to stay with Pakistan, which means East Bengal (Now Bangladesh) and 43.44% voted to stay with India, which means Assam. According to this overall result, the whole of Sylhet should be a part of East Pakistan. But, a border division only based on the religious decision was too complicated for Cyril Radclif, who oversaw the boundary commission. According to Radclif, making a border based on religion can harm communication and transport routes. So, he decided to apply an area based approach for this partition, where the areas with Hindu majority should go to Assam and areas with Muslims majority should go to East Pakistan. As a result, most of the Sylhet went to Pakistan and some parts like Karimganj, Patharkandi, Ratarbari, and Badarpur remained in India. (Singha, 2025, p. 3) So, the border between India and Pakistan divided the Sylheti community into two pieces (Bhattacharya, 2023, p. 1-3). However, this Sylheti Referendum is one of the causes of losing Sylheti identity and it made their cultural identity more complex (Bhattacharya, 2023, p. 4).

After the creation of Pakistan in 1947, the country had two parts with different geographical locations, one was West Pakistan and another was East Pakistan. After about two decades, in 1971, there was a war between East Pakistan and West Pakistan. Following this war, East Pakistan was separated from Pakistan and turned into a new country named Bangladesh. As a result Sylhet became a part of Bangladesh. So, the border between Assam and Sylhet became the Indo-Bangla border. In 1974, the Prime Minister of both countries Indira Gandhi and Sheikh Mujibur Rahman made an agreement regarding this border, which was known as Land Boundary Agreement 1974 (Indira-Mujib pact). However, in 2015, this border was finalised with another land boundary agreement in the presence of both country's Prime Ministers Narendra Modi and Sheikh Hasina (Singha, 2025, p. 5-6). After all of those equations, now the Barak river basins are located in India and the Surma river basins are located in Bangladesh. Surma river basins are known as Sylhet Division of Bangladesh, which includes four districts named Sylhet, Moulvibazar, Sunamganj and Habiganj. On the other hand the Sylheti community in India are now living in several districts under three states. Most of them are living in Cachar, Hailakandi, and Karimganj under Assam state. Some of them are living in North Tripura, Unakoti and Dhalai under Tripura state. And a few Sylheti peoples are living in Jiribam under Monipur state (Simard et al. 2020, p. 2; Bhattacharya, 2023, p. 6-7)

Although Sylheti language is considered as a variety of Bengali language, it is very different from Standard Bengali in terms of Phonology and Morpho-Syntax (Ahmed, 2021-2022, p. 1-2). Considering Sylheti language as a part of Bengali language is one of the reasons for its disappearance. However, Sylheti Language has their own script which is known as Sylheti Nagri (Simard et al. 2020, p. 7). Moreover, It has its own distinct grammar and script structure (Raychoudhury & Mahanta, 2022, p. 1). Sylheti Nagri script also known as Sylheti Nagri or Sylheti Nagari is an ancient Indic script which belongs from the Brahmic family. This Nagri script, used to use widely for documentation in various regions, is now declining. Preservation of sylheti nagri script is very important for historical research and cultural heritage (Islam et al. 2025, p. 2). The Sylheti Nagri script has 32 letters, including 5 vowels and 27 consonants. According to Ahmed 2021-2022, Page 16, among the 5 vowels, two are close/high vowels, two are open mid vowels and one is open/low vowel. Compared to Bengali language, there are close mid vowels in Standard Bengali which Sylheti does not have. Even, the Sylheti Nagri language supports the Unicode. So, it can allow the digital representations of consonants, vowels and vowel marks. However, the compound character of Sylheti script does not have equivalent Unicode (Islam et al. 2025, p. 1-2; Ahmed 2021-2022, p. 16). Even, Sylheti Nagri has a unique literary tradition named "Puthi-Pora" where "Puthi" means "Book" and "Pora" means "Read". In this tradition, the performer performed "Puthi-Pora" with musical effects to talk about mythical

tales, love stories and religious faith (Simard et al. 2020, p. 7). In addition to its preservation, many researchers tried to create an OCR (Optical Character Recognition) system for Ngari. However, creating an OCR system for Nagri was very difficult because of many problems like complex characters, damage or noise, similarity with Bengali and Hindi language etc. (Islam et al. 2025, p. 1-2). Moreover, VGG-19 model contributes a lot to preserve and recognize Sylheti Nagri script, where VGG means Visual Geometry Group which is a type of Convolutional Neural Network, specially designed by a kind of artificial intelligence to process and understand images. This model helps researchers to classify and distinguish complex and similar looking letters. But there are some limitations of this model including data limitations, mostly similar looking characters, high computational cost etc. (Islam et al. 2025, p. 8).

Furthermore, language is the symbol of a nation which represents the ethnic identity of this nation. This concept is not only applicable for the major community, but also for the minority (Ayan, 2015, p. 1). Language plays an important role for shaping and preserving cultural identity. Sociologist Pierre Bourdieu says, “language is not just a medium of communication but a symbol of power. It reflects social status and reinforces existing social hierarchies” (Malakar, 2017, p. 3). Based on sociolinguistic, politics, and legal perspective language loss affects ethnic identity, because nationalism, ethnicity, identity and language are all connected. Even, many sociolinguists think that language and identity are naturally and strongly connected (Schmidt, 2008, p. 3). According to (Hossain, 2013, p. 10), Sylheti Nagri language is the identity of the Sylheti people. It is also important to know that the concept of Sylheti identity totally different from Bengali culture. So, the disappearance of Sylheti Nagri Language can be the cause of losing Sylheti identity. Even, (Malakar, 2017, p. 6) says, “the gradual decline of the Sylheti language is a serious threat to the cultural identity of the Sylheti community”. As language and culture are highly connected, important traditions and values can disappear because of the language decline.

There are so many reasons of a language decline, like political influences, economic pressures, religious factors, demographic changes, mass media, social markers, and ecological or natural disasters. But among them, Political Authority is the most important reason in this issue (Ayan, 2015, p. 1, 2). Sylheti language is not politically or officially recognised in both India and Bangladesh. Additionally, the Sylheti language is considered as a dialect of Bengali language in Bangladesh. Even, Sylheti is often regard as a ‘slang’ or as a poor version of Bengali, which does not have any rights. In Bangladesh, Bengali is the only national language of the country, which has an important political dimension in case of linguistic landscape. In India there are so many state languages which have official recognition, but Sylheti language is not recognised politically or officially (Simard et al. 2020, p. 2, 4). After 1971, the last printing presses of Sylheti Nagri Language were destroyed and newly formed Bangladesh government discouraged to use Sylheti Nagri, making this script gradually disappeared (Simard et al. 2020, p. 7). However, official recognition is mostly important to preserve a minority language. But in the case of Sylheti language, there is no official script or grammar for this language both in Bangladesh and India, as its political history considered this language as a dialect of Standard Bengali language. “Even the Sylheti speakers are encouraged to use the Bengali script rather than the Nagri script, which is closer to spoken Sylheti” (Raychoudhury & Mahanta, 2022, p. 1). Therefore, language loss can’t be explained only with Political or economical factors. In this case researchers found three types of Language loss. The first one is Population Loss which means the declining number of speakers. The second one is Forced Shift which means the force given by the government to stop using language. And the third one is Voluntary Shift, that refers to wishes of the minor community to use their own language. (Ayan, 2015, p. 8) In case of Sylheti language, the last type of language decline is mostly related as the people of Sylhet are shifting to another language because of the dominant language and the effect of multilingualism in the diasporic community.

One of the major reasons of Sylheti language decline is border division of 1947. This division make Sylheti community as two parts of two dominant countries. As a result Sylheti people were indirectly forced to adapt Bengali or Assamese for education, jobs, and social acceptance. Even, “Today’s political borders do not correspond to historical, cultural, and linguistic community borders” (Simard et al. 2020, p. 2). Consequently, the lack of language policy and language education can be the reason for minority language loss. Because, the language policy and language education are considered as a vehicle of promoting the vitality, versatility and stability of a language. Some people can say that language policies are the main reasons for losing minority languages, while some people can argue that it can be the only way to survive them. However, it is possible that a language still spoken or used by the minority where policy says it is prohibited to use. For example, “during the time of Franco regime, Basque language was prohibited to use, but the Basques were using their language continuously in several ways. When Franco died, Basque

government was established and they standardized their language. However, the Basque government still cannot require Basque for employment, because of the Spanish constitution” (Ayan, 2015, p. 2). However, in the case of Sylheti language there is not such a policy to prevent using Sylheti language in Bangladesh, India or any other countries, but it still needs a policy by the Bangladesh and Indian government to preserve it.

The migration rate of Sylheti people is significantly higher than other Bangladeshi people. As a result the Sylheti diasporic community is increasing day by day making their language disappear due to the impact of multicultural language mix. However, the identity of the diaspora community is tightly connected with their language (Winstanley, 2025, p. 68). A lot of Sylheti people are living abroad specially in the UK, USA, France, Middle east countries like UAE, Saudi Arabia (Amit, 2025, p. 2). Among them, a huge number of Sylheti people are living in the UK, which is approximately 90-95% of the overall Bangladeshi diasporic community. They are creating a strong connection between the UK and Sylhet region of Bangladesh (Amit 2025, p. 1), (Simard et al., 2020, p. 5). As a huge number of Sylheti people are leading a diaspora life, it is important to evaluate the reason for Sylheti language decline abroad, especially in the UK. The new generation of the Sylheti diasporic communities are suffering a lot to adapt Sylheti language for the impact of multilingual culture. Even in the diasporic community of Sylheti, some parents do not speak Sylheti to their children. As result the number of Sylheti speakers are reducing, because the new generation are not getting Sylheti as a mother tongue (Simard et al. 2020, p. 10-11; Winstanley, 2025, p. 5). However, In the UK there are many complementary schools who teach heritage languages like Bangla, which help Sylheti people to learn their language as Standard Bengali language is similar to Sylheti language. But only focusing on Standard form can be the cause of decline of Sylheti Language (Winstanley, 2025, p. 80). Another problem for new born Sylheti children in the UK to learn Sylheti without an associate Script. In many language schools they are learning Arabic (for religious purposes) and Standard Bangla, as they have their scripts and literature. But they are only learning sylheti from family, because in the language school it is too tough to teach Sylheti without a perfect script. (Winstanley, 2025, p. 279-280). Although Sylheti people in the UK speak their language freely, linguistic racism is increasing in the UK day by day. The people of different linguistic communities are being told to speak English or facing anti-multilingual graffiti. For example, the 2020 poster in Norwich banned other languages (Winstanley, 2025, p. 267). However, Winstanley did not appear strongly about this issue but it can be a big issue for the Sylheti diasporic community in the future.

The adoption of pan India norms and the influence of dominant culture has contributed much in the case of Sylheti language decline. Additionally, using Hindi and Bengali rather than Sylheti dialect has contributed much to this decline (Malakar, 2017, p. 1). For the Sylheti community, standard Bangla, Hindi and English are being used as a dominant and formal language in the educational institutes, government offices, and mass media, which made Sylheti language less valued. “As Sylheti language is not a formal language, it is only spoken as a dialect of the Sylheti community for centuries to express their thought and emotion” (Malakar, 2017, p. 6). As a result, Sylheti people borrow words from the dominant language like Hindi, Bengali and English, making the dialect gradually disappear. Even, native Sylheti speakers believe that using dominant language will help them to gain respect, approval and social advantage, which ultimately affects their identity. Developer of the concept of linguistic imperialism, Robert Phillipson, opines that “powerful languages (like Standard Bengali and Hindi) often replace marginalised, regional, and indigenous languages”. As a result, the modern generation of the Sylheti community feels ashamed of speaking in their own dialect. For this reason, the Sylheti parents are seen communicating with their children in Bangla, Hindi or English most often, making Sylheti language under threat (Malakar, 2017, p. 3, 6). According to (Ayan 2015, p. 14), he highlighted some factors for minority language loss. Among them, language acquisition is a factor which indicates that, when children learn language from their mother tongue only by hearing, language is not fully transmitted and minority languages disappear. Another reason is dialect differences within the minority which create discontinuities in the language. In the case of majority language, they get enough input for using their language like mother tongue, practice in the family, do study in the school and use as official language. As a result they can maintain the standardity of their language flow. On the other hand, minority language users only practice it at their home, making their language distorted. Even, minority children become bilingual, maintain one language at home another language in school (Ayan, 2015, p. 14).

According to (Winstanley, 2025, p. 19-20), one of the reasons behind Sylheti language decline is enregisterment and translanguaging, which means the idea of borrowing or language mixing. According to his findings, there is an inclusion of Arabic, English and Standard Bangla inside the Sylheti language. In his interview he noticed that the new generation of the Sylheti people was freely mixing Bangla, English and

Sylheti in their conversation. Also he Noticed that London born adolescents were frequently using a ‘SylhetiCockney’ that means a fluid mixture of Sylheti and East London language (Winstanley, 2025, p. 33-34). However, language loss mostly happens in multilingual societies where a minority language is gradually replaced by the majority language. As a result the speakers of minority languages are shifting to the dominant languages, because of power imbalances, prejudice, discrimination and social pressure. Even minority people adopt the majority language just because of gaining social culture and economical advantages. Moreover, identity and language are strongly influenced by political and social changes. Some language loss happens because of unequal power relations, where minority people are pressured to adopt majority languages (Schmidt, 2008, p. 11). Even, many language ecology supporters were unable to explain the actual reason for language to disappear, but they found that power imbalance, like the dominant group being more powerful than the minority, can be an important factor of language decline. An American linguist, philosopher and cognitive scientist Noam Chomsky says, ‘Questions of language are basically questions of power’ (May, 2012, p. 19).

In terms of multilingualism ideology, dominant languages always respect the minority language and support their development. Also, minority people feel free to express their own language (Ayan, 2015, p.13). But unfortunately, the practice of multilingual conversation in the Sylheti community is becoming a threat because of losing their own word dominated by other languages. In the UK the 2nd generation (parents) speaks English to the 3rd generation (children), where the 1st generation (grandfather or grandmother) had strong connection with Sylheti language and they are unable to speak English. As a result the people of 3rd generation use a mixture of Sylheti and English, which indicate how 3rd generation adapting multilingualism to maintaining family and cultural connection (Winstanley, 2025, p. 83-84). Because of practicing multilingual culture, many Sylheti words are disappearing day by day. However, many schools think that bilingual or dialect speaking students are similarly capable of learning as monolingual students. Even myths and misconceptions persist that bilingualism creates confusion, so students must give up one language fully to learn another language. As a result, minority languages are gradually declining. In many cases non-English speech is considered as a sign of deficiency rather than linguistic diversity (Murillo & Smith, 2011, p. 4, 6). Similarly, non- Bengali speech in Bangladesh and non-Hindi speech in India are considered as a sign of deficiency and shame, pushing Sylheti people to lose their language gradually.

Another reason for language loss is nationalism and nation state which means an ideology or a political entity defined with borders where people largely share one common identity. A philosopher and social scientist Ernest Gellner says that nationalism is an idea where a country should not have different ethnic groups divided by its borders (May, 2012, p. 21-22). According to (Ayan, 2015, p. 1), minority languages have few chances to survive because of nationalist language policies and other social factors. So, this nationalism practice can create a pressure to make them weaker and even disappear. Bangladesh has many minor languages which are crushed because of the processes of colonialism, post-colonialism and nation-building. Sylheti language is one of them. One nation one language” theory is one of the significant reason for making Sylheti language disappeared (Winstanley, 2025, p. 13; Malakar, 2017, p. 3) said, “the shift of religious practices and the decline of indigenous rituals among the Sylheti community can be seen as a form of cultural imperialism, where the Sylheti community is forced and compelled to adopt the values and practices of the dominant society”. Sylheti culture has a long tradition of Islamic mysticism and Sufism. However, the Sufi heritage is gradually declining as the younger generations are often influenced by different religious ideas coming from the Sylheti diasporic community. (Amit 2025, p. 8-9)

The process of language shift can be described in three stages. Firstly, the minority language speakers will get pressures from the dominant languages to use their language. This approach mainly happens through schooling system. Secondly, minority language speakers started practicing bilingualism. This tendency is mostly noticed by the new generation. In the third stage, most of the minority language speakers were replaced by the majority language. As a result, a few people remain to speak minority languages (May, 2012, p. 16-17). In the case of Sylheti language, it is in the 2nd stage. Because, the effect of the first stage already appeared, when the use of Bengali and Hindi language in schools and official works created an indirect pressure on the Sylheti people to use those dominant languages. Nowadays, the new generation practices bilingualism through the mixture of Sylheti, Bengali, Hindi and English, which indicate the 2nd stage of language shift. If this flow goes like this, in the future most of the Sylheti people will be replaced by the dominant language and a few people will be hardly able to speak Sylheti language

According to (Schmidt, 2008, p. 11-13), there are some reasons behind minority language. Such as the legal status of a language & institutions: official recognition of a minority language can affect its uses and

prestige. Otherwise, people will adopt majority language because of its recognitions, B. The symbolic value of a language: it indicates the social status of a language among people. The minority language connected with traditions and folklore, so it is considered as an outdated language. On the other hand, dominant languages are connected with modernity. As a result minority people want to adapt majority language, C. The restricted or weak functionality: it means minority language is not being used in modern life such as in education, work, media, technology etc, D. The demographic factor: demographic factors such as number of speakers, location, mixed marriages, immigration, social condition of population has a great affects in case of surviving of a language. In this case (Ayan, 2015, p. 1) added that, the surviving possibility of a minority language mostly depends on the number of its speakers. If the number of minority language use by the community goes less than 70%, it indicates that the language is at the high risk of disappearing, E. The participatory factor – economic and social opportunities: the effects of minority language mostly caused by the economical and social factors.

For understanding the reasons behind the decline of minority language and the exertion of its preservation, it is important to study some relevant cultural theories. One of the most important theory is Cultural Homogenisation. According to this theory, a unique or local culture becomes similar to a dominant culture due to the influence of globalization, mass media, technology, international trade etc. (Malakar, 2017, p. 1-2). In the case of Sylheti people, there is a clear impact of cultural homogenisation. For example, Sylheti young generations are speaking or using Hindi or Bangla language and culture instead of their Sylheti dialect and culture, resulting Sylheti language is being less used and Sylheti culture becoming more similar to Hindi or Bangla. Another theory is Postcolonial Theory. From the perspective of this theory, minor communities are often found controlled by the dominant culture, when these kinds of narratives are imposed by former colonizers or leading nations-state (Malakar, 2017, p. 3).

Another reason for the decline of Sylheti language is the use of other languages by the young generation in the social media platform. To practice Sylheti language in purpose of its preservation, a significant step has been taken by a group of individuals, who created a Unicode character for the Sylheti Nagri script. Creation of Unicode characters is the first step and the second step is to create fonts of this script, so that Unicode characters can be read in the text processing software and internet browser. The final development is to make a keyboard for this script and make it available for android and apple devices for the Sylheti people (Simard et al. 2020, p. 8). Another approach to protect the Sylheti language is SOAS Sylheti Project (SSP). It has a significant contribution to preserving Sylheti language. This project was taken by the collaboration of SOAS and Surma Community Centre in Camden. SOAS (School of Oriental and African Studies) is a constituent college of the University of London, specialized in the study of Africa, Asia and Middle-East about Language, Culture and Societies. From 2003, the Linguistics Department of SOAS started postgraduate teaching and research on the theory and practice of language documentation, description and revitalisation to develop the expertise of those who are working on minority language and train the future language documenters. On the other hand, Surma Community Centre was established in 1976 to support Bangladeshi migrants in the UK. In 2011, SOAS started collaborating with the Surma Community Centre as the community expressed concern that younger Sylheti speakers in the UK were shifting to English at a high rate, declining the use of sylheti language and cultural traditions. Following this issue, the SOAS Sylheti Project (SSP) was launched in 2012 to document and describe Sylheti in Camden (Simard et al. 2020, p. 12, 14; Winstanley, 2025, p. 19-20; Simard et al. 2020, p. 12-14) says, “The SSP has three important contributions, 1. to challenge the traditional exclusionary relationships between research, education, and the ‘real world’; 2. to enhance students’ experiences by giving them training in authentic aspects of research, including community-based fieldwork and analysis; and 3. to demystify the role of universities in UK society by encouraging Sylheti speakers to get directly involved in research activities, thus breaking down the walls between academia and the ‘outside world’ and raising awareness of the work that linguists do and its relevance to the lives of community members.”

Methodology

This study is based on a qualitative research method with semi-structured interviews. In this research 20 participants were selected to participate in the interview through video calls. Each interview took approximately 30 minutes. The participants were selected from different countries, but belong to the Sylheti community. There was no minor participant who is under 18 years old. All the participants gave their consent to participate in this interview and also the interviews were recorded with their permission.

The interview had three main parts. In the first part we collected data about participant's knowledge of Sylheti language and its script. Additionally, we got their opinions about the importance of this language as an identity of their community. In the second part, we discussed about the decline of this language and got the opinion of the participants about the factors behind Sylheti language decline. Finally, in the third part, we discussed the responsibility for preserving Sylheti language and got opinions from the participants about the necessary steps that should be taken to preserve this language.

Interview: An interview is a qualitative research method where participant are asked to share about their experiences, opinions, or perspectives through question and answer. It helps researchers to explore a topic more deeply which may be not possible to do through a structured surveys or other quantitative methods. In this study, we used semi structured interview method which means use of close ended questions with a comment at the end. Actually, this method allows the participants to elaborate their answers and share additional thoughts that may give some information which is new but important for our research.

Selection Procedure: We selected participants based on their connection with Sylheti community. Some of them were living in Sylhet where rest of them was leading diasporic life in many different countries in the world. Most of the participants were selected from Generation Z because they are the people who know how the Sylheti language was used in the past and how it's being use with decline among younger generations nowadays.

Analysis Method: This interview will be analyzed with coding, thematic, and deconstructive methods. In case of coding, we will codify the words by counting how many times a word was used during the interview by the participants. The frequency of the word will indicate the importance of it in this research. In terms of thematic analysis, we will identify the themes of the collected data. Actually, we will create a table where in the horizontal column we will write the main themes and in the vertical rows we will write the number of interviews. Then in the cells we will mark the events according to the Likert scale. However, in the deconstruction method, it is a psychological concept. Here we will try to find out the inner meaning of the thoughts of the participants even if they did not mention it directly.

Result

Codifying the Interviews. Here we will select key words related to both the factors of language decline and the importance or status of the language in two different tables. In both tables, the first column will contain key words and the second column will contain the frequency of words used by participants during the interviews to understand the perspectives of the participants regarding this study.

Table 1

Words that refer to the factors of Sylheti language decline

Key Words	Frequency of Words
Border Division	21
Lack of Official recognition	117
Educational System and Script Preservation	148
Influence of Dominant Language	109
Governmental Influences	136
Diasporic Community and Multilingualism	78
Nationalism	13

**Source: compiled by the authors*

Table 2

Words that referred to the status and importance of Sylheti language

Key Words	Frequency of Words
Cultural Identity	278
Language Declining	116
Minority Language or Dialect	103
Endangered Language Script	126

**Source: compiled by the authors*

Thematic Analysis. Here we will create another two tables where one table will assign a score in each cell to indicate the degree or intensity of the theme and another table will allow us quantify data based on the score of first table.

Table 3

This table assigns a score in each cell to indicate the degree or intensity of the theme

Score	Degree or Intensity
0	Absent
5	Moderately Present
10	Strongly Present

**Source: compiled by the authors*

Table 4

This table assigns score according to the table 01 for each key word that refer to the factors of Sylheti language decline and the status or importance of this language

Interviews	Cultural Identity	Language and Script Declining	Minority Language or Dialect	Border Division and Nationalism	Lack of Official recognition	Educational System	Influence of Dominant Language	Governmental Influences	Diasporic Community and Multilingualism
Interview-1	10	09	07	03	07	10	07	10	04
Interview-2	10	08	07	02	08	10	07	9	05
Interview-3	10	09	06	02	09	10	07	10	06
Interview-4	10	08	07	03	10	10	09	10	06
Interview-5	10	08	09	02	10	10	10	10	06
Interview-6	10	07	07	02	10	10	08	10	07
Interview-7	10	09	06	04	10	10	08	10	06
Interview-8	10	08	07	05	10	10	07	8	06
Interview-9	10	08	07	03	08	10	07	8	07
Interview-10	10	08	07	04	07	10	09	9	05
Interview-11	10	08	07	05	09	10	08	10	05
Interview-12	10	08	07	02	10	10	08	10	04
Interview-13	10	09	06	03	09	10	08	10	03
Interview-14	10	10	08	03	09	10	07	10	05
Interview-15	10	08	08	03	09	10	07	10	06
Interview-16	10	10	06	03	10	10	07	10	04
Interview-17	10	08	06	03	09	9	08	10	07
Interview-18	10	08	06	03	09	10	09	10	08
Interview-19	10	10	06	02	09	10	06	08	05
Interview-20	10	08	06	02	09	10	08	10	06
Total	200	169	142	59	181	199	155	192	111

**Source: compiled by the authors*

Deconstructive analysis: In this method, we tried to find out the inner meaning of the participant's thoughts regarding the decline of Sylheti language. Although most of the opinions regarding the factors language decline were clear by all the participants, there are some points which have hidden meaning. Firstly, most of the people said that Sylheti language should be recognized officially by the government. That means Sylheti language is not officially recognized and it is one of the major reasons of its decline. Secondly, many participants said that they are doing study in pure Bengali language and there is no education system or book that can teach them Sylheti language. That means this language is highly influenced by dominant language and it is important to include this language in the education system to preserve it. However, there were no other inner meanings for rest of the factors as they directly mentioned their concern about those factors.

Discussion

The findings of this study show that Sylheti language bears the cultural identity of the Sylheti community and this language is considered as a dialect or minority language both in Bangladesh and India. But, this language and its script are declining day by day making threat for the cultural identity of this community. This study also found that there are several factors are responsible for its decline including lack of official recognition, educational system, lack of governmental awareness, influences of dominant language, multilingualism caused by diasporic community, border division and nationalism. However, those factors are not equally responsible. Some factors have huge influences which are the main factors, some have mild influence and some have a few influences that can be ignored. According to the data analysis and result, we ensured that educational system, lack of official recognition and lack of governmental awareness are the main reasons. The most interesting part of those main factors is that they are deeply interconnected in a chain of dependencies. Because the educational system can include this language in its curriculum only if it is officially recognized. And recognition of this language mainly depends on the government. So, directly or indirectly our result indicate that the government is the main factor for this language decline. In case of the influences of dominant language and multilingualism caused by diasporic community, they have medium impact in this issue. However, border division and Nationalism are the minimal factors.

These results directly address the research question by showing that Sylheti language is the cultural identity of the Sylheti people which is declining because of some factors including lack of official recognition, educational system, lack of governmental awareness, influences of dominant language, multilingualism caused by diasporic community, border division and nationalism. Those findings support our expectations with some exceptions. Our aim of this research was to prove that this language bears the cultural identity of the Sylheti people which is declining because of some factors. And we found that this language is their cultural identity and it is declining day by day. We also found that our expected factors are also responsible for this decline. But, the unexpected thing is that border division and nationalism are not that much responsible as we expected. Because, we thought that border division could be the main reason and nationalism would be one of the important reason. But, according to the data and result, the influence of border division and nationalism are minimal that can be considered negligible.

The findings of our research are mostly aligns with previous studies but, still there are some differences. Firstly, our findings support that language is the identity and culture of the Sylheti community which is declining gradually (Ayan, 2015, p. 1; Schmidt, 2008, p. 3; Hossain, 2013, p. 10; Malakar, 2017, p. 6). Also, our findings regarding the factors of its decline support previous studies. We found that lack of official recognition, educational system, lack of governmental awareness, influences of dominant language, multilingualism caused by diasporic community are the important reasons of this language decline (Ayan, 2015, p. 1-2, 13; Simard et al. 2020, p. 2, 4, 10-11; Winstanley, 2025, p. 5). However, in case of Border division and nationalism, our findings are different from previous studies. Simard et al. (2020, p. 2)) said that one of the major reasons of Sylheti language decline is border division of 1947. But, in our data and result, it is indicated that border division has influences in this case but it's very minimal and considered negligible (Winstanley, 2025, p. 13; Malakar, 2017, p. 3) said that one nation one language (nationalism) theory is one of the significant reason for making Sylheti language disappeared. But, our finding said that nationalism has not that much influences in this issue.

These findings highlight the importance of Sylheti language regarding saving the cultural identity of the Sylheti people. It indicates that if Sylheti language disappeared, the identity and culture of this community will also be disappeared. In this article, we mentioned that this language is declining and there are some factors which are responsible for this. So, this article can help this community to find out the way to save

their language by solving those factors. We also mentioned that how government is the main factor for this decline. So, this article will help the people to understand that if they want to solve this problem, they should target the government first as most of the factor will be solved automatically if they solve the matter of the government.

The limitations of this study should be the small size of the data, as this research was based on interviews with only 20 participants. Also, all the participants were young Sylheti people which may not fully represent the perspective of older generation. Additionally, we only took interviews from the Sylheti community living in Bangladesh. As there are also a Sylheti community living in India and we did not take their interviews, the findings may have limited generalizability across the entire Sylheti population. Furthermore, as the study is based on self reported data from semi structured interviews, there is a possibility of subjective bias in participant's responses.

Future research can expand this study in many important directions to decrease the limitations. First of all, future studies can include a large number of data sample including big number of participants, different age groups, different professions. Also, data can be collected from the Sylheti community living in both Bangladesh and India. Secondly, cross regional studies can be conducted to examine actual status of Sylheti language in India, Bangladesh and Diasporic Community as government and educational system differ across regions. Thirdly, future studies can adopt mix method research a combination of qualitative and quantitative methods for better result and understandings. Finally, future studies can be based on finding out the way of preserving this language by mitigating the factors responsible for this language decline.

Conclusion

This study demonstrates that Sylheti Nagri language and its script are not only a tool of communication but also a fundamental pillar of cultural identity for the Sylheti community. Despite this language being spoken by millions of people, it is declining day by day because of several reasons. Among these, the main reasons are the lack of official recognition, lack of governmental awareness and absence in educational system. Also, influence of dominant language and multilingualism caused by diasporic community are the moderate factors in this issue. Additionally, border division and nationalism still have some influences but it can be considered negligible.

This finding highlights a critical reality that this language loss is directly connected with the erosion of cultural identity for the Sylheti community. As Sylheti community continues to loss their functional space in education, media and everyday uses, the tradition, culture and value of this community are also at risk.

Therefore, urgent and coordinated actions are needed to preserve the cultural identity of the Sylheti people through preserving their language. In this case, government should play the main role as official recognition and inclusion in the educational system are mainly depends on the government. Also, the community itself should be aware of their language and should raise their voice strongly for preserving their own language and cultural identity. Without such actions, Sylheti language will slowly move from declining to endangered situation. Ultimately, saving Sylheti Nagri is not only about saving a language, it also about saving a cultural identity of the Sylheti people.

References

1. Amit, S. (2025). *Transnational connections and religious change: How UK Bangladesh diaspora networks shape religious practices in Sylhet*. *Research in Globalization*, 10, Article 100286. <https://doi.org/10.1016/j.resglo.2025.100286>
2. Ahmed, A.S.M.M. (2021–2022). *Phonology of Sylheti: An overview*. *Aligarh Journal of Linguistics*, 11, p. 189-206. https://www.researchgate.net/publication/381314754_Phonology_of_Sylheti_an_overview
3. Ayan, E. (2015). *Minority language loss: Socio-cultural and linguistic causes*. *European Journal of English Language, Linguistics and Literature*, 2(1), p. 62-88. <https://www.idpublications.org/wp-content/uploads/2015/05/MINORITY-LANGUAGE-LOSS-SOCIO-CULTURAL-AND-LINGUISTIC-CAUSES-Full-Paper.pdf>
4. Bhattacharya, J. (2023). *Partition, politics, and the quest for Bengali identity: A case of Barak Valley in South Assam*. *Refugee Watch: A South Asian Journal on Forced Migration*, p. 123-139. https://www.researchgate.net/publication/373453672_Partition_Politics_and_the_Quest_for_Bengali_Identity_A_Case_of_Barak_Valley_in_South_Assam
5. Hossain, A. (2013). The making and unmaking of Assam-Bengal borders and the Sylhet referendum. *Modern Asian Studies*, 47(1), p. 250-287. <https://doi.org/10.1017/S0026749X1200056X>

6. Islam, T., Omur, S.K.H., Nahid, N., Chowdhury, L., Roy, G., Mojumder, M.A.N., Soeb, M.J.A., & Jubayer, M.F. (2025). Optical character recognition for ancient scripts: A case study on Syloti Nagri using deep learning models. *Journal of Computer Sciences Institute*, 34, p. 98-107. <https://doi.org/10.35784/jcsi.6785>
7. Malakar, P. (2017). The Erosion of Sylheti Cultural Identity: Cross-cultural Influences and Globalisation in Northeastern India. *International Journal of Creative Research Thoughts*, 5, p. 305-312. <http://www.ijert.org/papers/IJCRT1135905.pdf>
8. Murillo, L.A., & Smith, P.H. (2011). I will never forget that”: Lasting effects of language discrimination on language-minority children in Colombia and on the U.S.-Mexico border. *Childhood Education*, 87(3), p.147-153. <https://doi.org/10.1080/00094056.2011.10521714>
9. May, S. (2012). *Language and minority rights: Ethnicity, nationalism and the politics of language* (2nd ed.). Routledge. <https://www.routledge.com/Language-and-Minority-Rights-Ethnicity-Nationalism-and-the-Politics-of-Language/May/p/book/9780805863062>
10. Raychoudhury, P., & Mahanta, S. (2022). Sound change and tonogenesis in Sylheti. *Linguistics Vanguard*, 8(s5), p. 715-731. <https://doi.org/10.1515/lingvan-2021-0098>
11. Simard, C., Dopierala, S.M., & Thaut, E.M. (2020). Introducing the Sylheti language and its speakers, and the SOAS Sylheti Project. *Language Documentation and Description*, 18, p. 1-22. <https://doi.org/10.25894/ldd83>
12. Singha, S.J. (2025). Exploring the historical roots of the Indo-Bangladesh border: The Assam perspective. *International Journal of Social Science Research*, 2(3), p. 405-411. https://www.ijssr.com/wp-content/uploads/journal/published_paper/volume-2/issue-3/IJSSR30424.pdf
13. Schmidt, U. (2008). *Language loss and the ethnic identity of minorities* (ECMI Issue Brief No. 18). *European Centre for Minority Issues*. <https://www.ecmi.de/publications/issue-briefs/language-loss-and-the-ethnic-identity-of-minorities>
14. Wouters, J.J.P., & Subba, T.B. (Eds.). (2023). *The Routledge companion to Northeast India*. Routledge. <https://doi.org/10.4324/9781003285540>
15. Winstanley, B. (2025). *Sylheti repertoires and sociolinguistic place-making in Tower Hamlets* [Doctoral dissertation, SOAS University of London]. *SOAS Research Online*. <https://doi.org/10.25501/SOAS.00043369>

EMPLOYEE MOTIVATION STRATEGIES AT MCDONALD'S

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Keywords: employee motivation, financial incentives, non-financial incentives, flexible working hours, McDonald's.

Abstract

This article analyses employee motivation measures at UAB 'McDonald's' with the aim of determining which factors – financial incentives or flexible working hours – are more effective in motivating employees. The study employed methods of scientific literature analysis, secondary data analysis and a questionnaire survey. The results of the empirical study showed that the majority of employees prefer flexible working hours, which allow for a better work-life balance. It was found that, although financial incentives remain important, non-financial motivational measures are of greater significance for employee engagement and job satisfaction in the modern work environment. The results of the study may be useful to organisations seeking to improve their employee motivation systems.

Introduction

Relevance of the article's topic. In modern organisational activities, employee motivation is one of the most important factors that significantly influence the organisation's operational effectiveness, employee productivity and job satisfaction (Robbins, Judge, 2017). Consequently, increasing competition in the labour market and changing employee expectations are driving organisations to constantly seek ever more effective employee motivation measures. Organisations aim not only to attract qualified employees but also to retain them, and for this reason, they place great emphasis on improving motivation systems (Armstrong, 2020). Traditionally, financial incentives, such as bonuses or salary supplements, were considered one of the most important ways of motivating employees. However, in recent years, increasing attention has been paid not only to financial but also to non-financial motivational measures, such as flexible working hours, which allow employees to better balance their professional and personal lives (Armstrong, 2020). R. Ryan and E. Deci (2020) emphasise that modern employee motivation is increasingly linked not only to external incentives but also to internal factors, such as autonomy, a sense of competence and social connection. M. Armstrong and S. Taylor (2023) also stress that in modern organisations, motivation systems must be complex and geared towards long-term employee engagement.

Justification of the scientific problem. Employee motivation is defined as a process that explains the intensity, direction and persistence of an individual's efforts in pursuing a specific goal. Maslow's hierarchy of needs theory, originally proposed in 1943, is one of the best-known theories of motivation. Despite being one of the earliest motivation theories, it remains a widely discussed topic in contemporary academic literature (Robbins & Judge, 2017; Armstrong, 2020). This theory states that human behaviour is determined by different needs, which are arranged in a hierarchical order: physiological, safety, social, esteem and self-actualisation needs. In an organisational context, this means that employee motivation can be driven both by financial incentives, such as salary or financial bonuses, and by measures that satisfy needs, such as ensuring a work-life balance through flexible working hours. Therefore, in light of the issues discussed, this study aims to answer the main research question of the article: what motivates McDonald's employees more – financial bonuses or a flexible work schedule? According to recent research, flexible work arrangements are becoming an increasingly important motivational factor, particularly among young employees and students (Lee et al., 2024). This suggests that, in certain cases, non-financial measures may be no less important than financial incentives.

The aim of this article is to assess which factors motivate McDonald's employees more: financial bonuses or a flexible work schedule.

The subject of the study is employee motivation at McDonald's.

Objectives of the article:

1. To analyse the concept of employee motivation and the main motivation theories in the academic literature.
2. To determine the significance of financial and non-financial motivational tools for employee motivation.
3. To assess the factors influencing employees' attitudes towards financial incentives and flexible working hours as motivational tools at McDonald's.

Data collection methods:

- Analysis of academic literature.
- Analysis of secondary data.
- Survey.

Data analysis methods:

- Comparative analysis

Practical significance of the article. This is evident in that the research findings can help McDonald's staff better understand which employee motivation tools – financial incentives or flexible working hours – are most effective in motivating staff. The study's conclusions may also assist in making decisions regarding pay systems and work flexibility, thereby improving employees' working conditions.

Theoretical analysis of employee motivation measures. The concept and essence of employee motivation

Employee motivation is one of the most important factors determining the effectiveness of an organisation's operations, influencing employee productivity, engagement and work performance. In the academic management literature, motivation is defined as a set of factors or a process that encourages employees to pursue the organisation's goals, directs their behaviour and determines the intensity of their efforts (Alymurat, Muhai, Sparrow, 2021; Bevins, 2018; Aithal, Kumar, 2016). Various authors emphasise that motivation is linked to both internal and external factors that encourage employees to act, achieve results and sustain their efforts. This suggests that employee motivation is a complex process involving both personal needs and the motivational measures applied by the organisation.

Table 1

Concept of motivation

Author (year)	Concept
Alymurat, M., Muhai, T. Sparrow (2021)	Employee motivation is understood as a set of incentives and factors that encourage employees to pursue the organisation's goals and improve their work performance.
Ryan, R., Deci, E. (2020)	Motivation is linked to the fulfilment of intrinsic psychological needs (autonomy, competence, relatedness).
Bevins, D. (2018)	A combination of internal and external factors that encourages a person to act, pursue goals and make efforts to achieve a specific result.
Aithal, P. S., Kumar, P. M. (2016)	The process that motivates a person to act, directs their behaviour and determines the intensity of their efforts in pursuit of specific goals.
Gagné et al. (2015)	Motivation – the process that drives employee behaviour – is closely linked to the fulfilment of employees' psychological needs.

**Source: compiled by the authors of the article based on scientific literature*

The data in Table 1 show that, according to researchers (Gagné et al., 2015), employee motivation within an organisation is closely linked to the fulfilment of employees' psychological needs. R. Ryan and E. Deci (2020) identify three further fundamental needs – autonomy, competence and relatedness – which have a significant influence on intrinsic motivation.

An overview of motivation theories

Employee motivation is one of the most important factors determining an organisation's operational effectiveness. Maslow's hierarchy of needs theory (1943) is one of the best-known theories of motivation, explaining human behaviour through the fulfilment of various needs. According to this theory, human needs are arranged in a hierarchical order from the lowest to the highest, and higher-level needs only become important to a person once the lower-level needs have been satisfied. There are five identified basic levels of needs. The first level consists of physiological needs, which encompass the basic needs necessary for human survival, such as food, water and rest. The second level comprises safety needs; this level relates to physical and economic stability, as well as job security. The third level covers social needs, such as communication and relationships with other people, whilst the fourth level covers esteem needs, which are linked to a person's self-worth, recognition and respect. The fifth and highest level consists of self-actualisation needs, related to personal potential, self-improvement and self-expression. For organisations, this theory helps to understand

that motivation depends not only on financial incentives but also on the opportunity to satisfy higher-level needs (Maslow, 1943, as cited in Alymurat, Muhai, & Sparrow, 2021).

Another very important theory of motivation was developed by the psychologist Frederick Herzberg (1959). His two-factor theory states that employee motivation is determined by two distinct groups of factors: hygiene factors and motivational factors. Hygiene factors, such as pay, working conditions and safety, do not in themselves motivate employees, but their absence leads to job dissatisfaction. Motivational factors, such as recognition, responsibility and career opportunities, encourage employee engagement, increase satisfaction and motivate employees to strive for better results (Herzberg (Herzberg in Bevins, 2018).

Another highly significant theory was developed by the social psychologist Douglas McGregor (1960). This X and Y theory explains different approaches to employee motivation. Theory X asserts that people generally avoid work and require strict control and external incentives. Theory Y, on the other hand, argues the opposite: that employees are responsible, motivated and self-reliant if provided with the right conditions. This theory demonstrates that a manager's attitude towards employees has a significant influence on their motivation and work performance (McGregor (McGregor) in Aithal, Kumar, 2016). An overview of motivation theories is presented in Table 2.

Table 2

Overview of key motivation theories and their authors

Theory developers	Theory title
Abraham Maslow (1943)	Hierarchy of needs
Frederick Herzberg (1959)	Two-factor theory of motivation
Douglas McGregor (1960)	Theory X and Theory Y
Ryan, Deci (1985)	Self-determination theory
Colquitt et al. (2001)	Theory of organisational justice

**Source: compiled by the authors of the article based on academic literature*

As shown in Table 2, contemporary management literature is placing increasing emphasis on self-determination theory. R. Ryan and E. Deci (2020) argue that employee motivation is strongest when employees feel a sense of autonomy and have the opportunity to control their work process. Similarly, J. A. Colquitt et al. (2019) emphasise the importance of fairness within an organisation – employees' perception of fairness in remuneration and working conditions has a direct impact on their motivation and engagement.

Employee motivation measures

Employee motivation measures are a very important part of organisational management, influencing employee productivity, job satisfaction and loyalty to the organisation. In the academic literature, they are most commonly divided into financial and non-financial motivation tools, and can also be classified as economic, organisational and socio-psychological (Dudėnaitė, Radzevičienė, 2023).

Financial incentives, such as wages, bonuses and allowances, help to meet employees' material needs and are usually effective in the short term. Meanwhile, non-financial measures, such as flexible working hours, career opportunities, the working environment or employee recognition, are linked to the fulfilment of higher-level needs and are of greater significance for long-term employee motivation.

Based on F. Herzberg's two-factor theory and A. Maslow's hierarchy of needs theory, it can be argued that financial measures reduce employee dissatisfaction, whilst non-financial measures foster their engagement and intrinsic motivation. It is therefore important for organisations to combine different motivational measures in order to ensure the most effective employee motivation and better work performance.

M. Armstrong and S. Taylor (2023) emphasise that the most effective incentive schemes are those that combine financial and non-financial measures. Furthermore, J.A. Colquitt et al. (2019) argue that employee job satisfaction depends not only on the level of remuneration, but also on working conditions, leadership style and organisational culture.

Flexible working hours as a motivational tool

A flexible work schedule is one of the most important non-financial employee motivation tools, enabling employees to balance their professional and personal lives more effectively. Research shows that the ability to

plan one's own working hours increases job satisfaction, reduces stress and improves emotional well-being (Saxena, 2018). Furthermore, flexible work arrangements strengthen employees' sense of freedom, which is considered one of the most important factors in intrinsic motivation. Recent research indicates that a flexible work schedule is one of the most significant factors in increasing employee engagement and job satisfaction. S.H. Lee et al. (2024) found that employees who have the opportunity to choose their working hours exhibit higher levels of motivation. The CIPD (2023) also emphasises that flexible work arrangements reduce stress and increase employee loyalty to the organisation.

Academic literature on economics and management also highlights that flexible working hours can increase employee engagement and productivity, as employees can work at the times when they are most productive (Omondi, K'Obonyo, 2018). However, it is noted that flexibility alone does not guarantee high levels of motivation – organisational factors such as leadership style, communication and employee recognition play an important role.

An analysis of the hybrid working model has found that flexible work arrangements give employees greater freedom and trust, but can also pose challenges related to maintaining social connections and employee engagement (Ksenavičius, Černikovaitė, 2022). Therefore, organisations must balance flexibility with active measures to promote employee engagement and collaboration.

For these reasons, flexible working hours are increasingly being used as a non-financial motivational tool, rather than traditional financial incentives. With this in mind, this study analyses which measure – financial bonuses or flexible working hours – is more effective in motivating McDonald's employees.

To summarise the theoretical aspects, it can be stated that flexible working hours are a significant motivational tool that has a positive impact on employee satisfaction, however, it has the greatest impact on employee motivation only when combined with appropriate organisational support, effective communication and employee involvement.

A Study of Motivational Tools at UAB „McDonalds“

UAB „McDonalds“ is one of the largest and best-known fast-food restaurant chains in the world, operating in many countries, including Lithuania. In Lithuania, McDonald's operates in major cities such as Vilnius, Kaunas, Klaipėda, as well as Šiauliai and Marijampolė. The company focuses on fast service, standardised food quality and meeting customer needs. McDonald's operations are based on clearly defined work processes and teamwork. The majority of the company's employees are young people, often combining work with their studies, so flexible work arrangements are important within the company. Furthermore, McDonald's aims to provide staff training, career opportunities and various motivational measures to help retain staff and increase their engagement at work.

Research objective. To analyse the motivation of McDonald's employees and determine which motivational tool – financial incentives or flexible working hours – motivates employees more.

Type of research. A quantitative research design has been chosen, which allows for the objective analysis of data and the presentation of research results in a statistical, numerical form.

Data collection method. The data required for the study is collected using a survey.

Research sample: The sample consists of 26 McDonald's employees who participated in the study. The respondents were selected using convenience sampling because the survey was distributed through an internal employee communication group. This method was chosen due to ease of access and time constraints. Participation was voluntary, allowing for the collection of data from employees willing to share their opinions on motivation measures. However, it should be noted that this sampling method may limit the generalisability of the results.

Survey structure. In order to analyse the motivation of UAB „McDonalds“ employees, a questionnaire was developed, divided into 5 sections. The questionnaire contains 10 questions designed to assess employee motivation, financial and non-financial motivational measures, and their importance.

Employee motivation is an important part of an organisation's operations; therefore, respondents were asked a question aimed at determining what motivates them most to work. The survey results are presented in Figure 1.

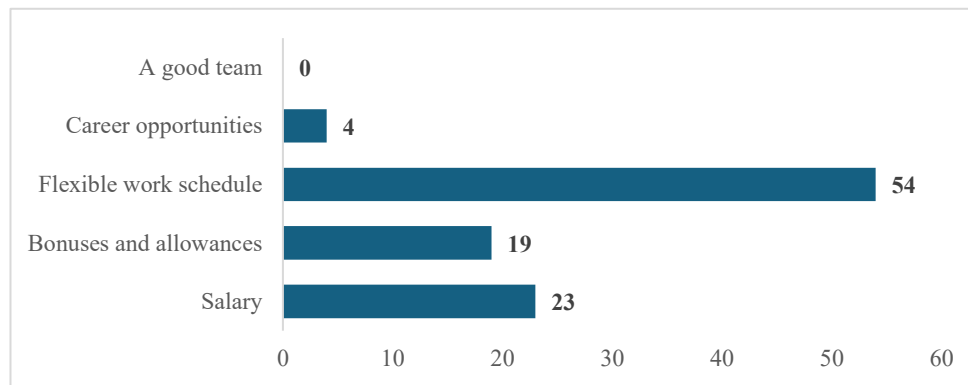


Fig. 1. Factors motivating employees (per cent)

**Source: compiled by the authors of the article based on survey data*

The survey data in Figure 1 show that respondents' views on what motivates them most to work were unevenly distributed. 54 per cent of respondents indicated that a flexible work schedule motivates them most. This indicates that it is very important for employees to be able to balance work with their personal lives. As a flexible work schedule is the dominant motivational factor, this may be linked to the demographic structure of the respondents (young employees, students). Meanwhile, 23% of respondents cited salary as the main motivational factor, whilst 19% chose bonuses and allowances. This indicates that financial incentives are also very important, but less significant than flexibility. The smallest proportion of respondents chose career opportunities, accounting for just 4% of all respondents, whilst a good team was not selected by a single respondent.

It is important to assess the significance of individual motivational factors, so respondents were asked to rate the importance of financial allowances on a scale of one to five. The survey results are presented in Figure 2.

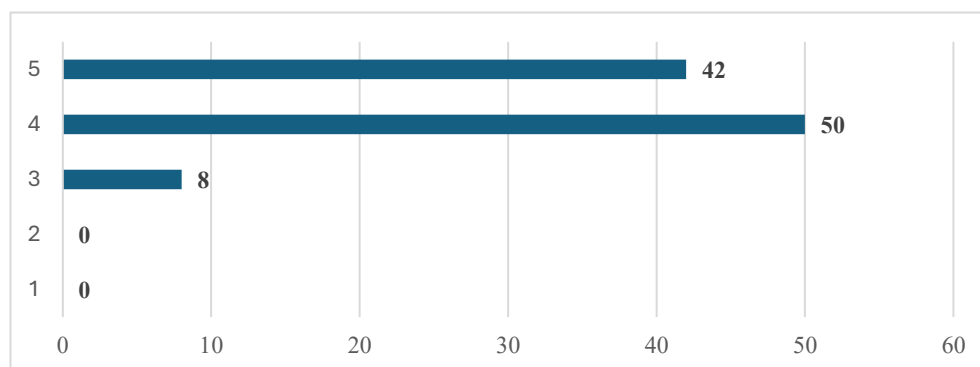


Fig. 2. Importance of financial incentives (per cent)

**Source: compiled by the authors of the article based on survey data*

The survey data presented in Figure 2 reveal how respondents rate the importance of financial incentives. 50 per cent of respondents rated financial incentives as 4 out of 5, whilst 42 per cent rated their importance as 5 out of 5. This indicates that the majority of respondents view financial incentives as an important motivational tool. Meanwhile, 8 per cent of respondents rated the importance of financial incentives as average, giving them 3 points, whilst no respondent selected the lowest ratings, i.e. 1 or 2 points.

It is also important to assess the significance not only of financial but also of non-financial motivational tools, therefore, respondents were asked a question aimed at determining how important a flexible work schedule is to them. The results of this question are presented in Figure 3.

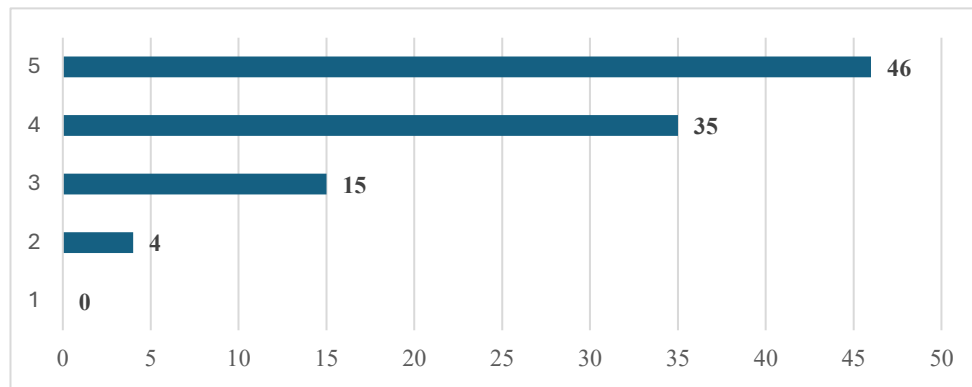


Fig. 3. Importance of a flexible schedule (per cent)

**Source: compiled by the authors of the article based on survey data*

The survey results analysed and systematised in Figure 3 show how respondents rate the importance of a flexible work schedule. 46 per cent of respondents gave this measure the highest rating – 5 points – whilst 35 per cent of respondents gave it 4 points. This indicates that the majority of respondents consider flexible working hours to be a very important motivational tool, as the combined total of 4 and 5 marks accounts for 81 per cent of all respondents. Meanwhile, a smaller proportion of respondents rated the importance of a flexible work schedule as average: 15 per cent gave it 3 points, 4 per cent gave it 2 points, and per cent gave it 1 point, whilst no respondent chose the lowest rating. Compared to the assessment of financial incentives, it can be seen that flexible working hours are rated even higher, as more respondents gave them the maximum rating.

In order to directly compare the importance of financial and non-financial motivational measures, respondents were asked the final question in the survey, which sought to determine which measure they would choose – financial incentives or a flexible work schedule. The results of this question are presented in Figure 4.

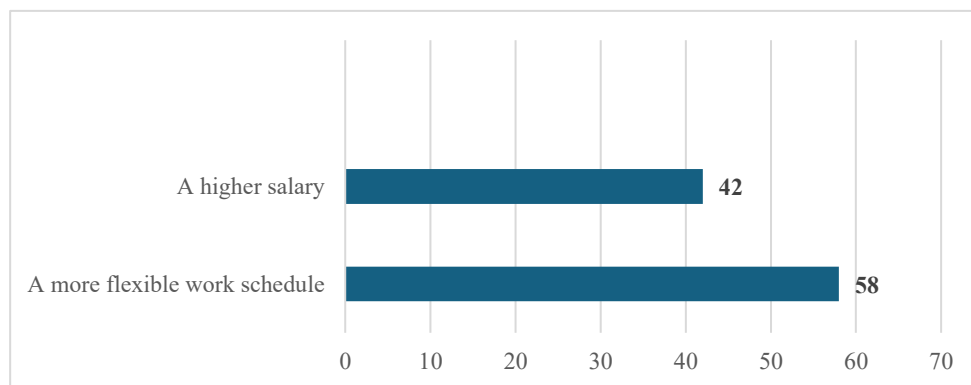


Fig. 4. Employees' choice: financial incentives or flexible working hours (per cent)

**Source: compiled by the authors of the article based on survey data*

The survey data presented in Figure 4 show the respondents' choice between financial incentives and a flexible work schedule. 58 per cent of respondents indicated that they would choose a more flexible work schedule, whilst 42 per cent would choose a higher salary. These results indicate a clear trend that employees prioritise non-financial incentives.

It can be observed that, although financial incentives are important, a flexible work schedule is of greater value to employees, as it allows for a better work-life balance and provides greater autonomy. This confirms that, in the modern working environment, employee motivation is increasingly linked not only to financial remuneration but also to the flexibility of working conditions.

Conclusions

Employee motivation is one of the most important factors determining the effectiveness of an organisation's operations, influencing employee productivity, job satisfaction and engagement. A properly

selected and implemented motivation system not only encourages employees to strive for better results, but also helps to retain them within the organisation and increases their loyalty.

An analysis of scientific management and economic literature has shown that employee motivation is determined by both financial and non-financial motivational measures, but their impact differs – financial measures more often satisfy material needs, whilst non-financial measures are linked to the fulfilment of higher-level needs and long-term motivation. It is therefore important for organisations to apply a balanced system of motivational measures.

The results of the study revealed that the majority of McDonald's employees (54 per cent) value a flexible work schedule most highly, whilst financial incentives such as salary (23 per cent) and bonuses (19 per cent) are also important, but less significant. It was found that flexible working hours are rated higher by employees than financial bonuses, as the majority of respondents gave them the highest rating.

Furthermore, the majority of employees (58 per cent) would choose a more flexible work schedule over a higher salary, which highlights the clear importance of non-financial motivational tools. This suggests that, in order to effectively motivate employees, organisations should focus more on work flexibility and meeting employees' needs.

The survey results confirm the claims of self-determination theory (Ryan and Deci, 2020) that autonomy and the ability to control working hours are important factors in intrinsic motivation.

References

1. Armstrong, M., Taylor, S. (2023). *Armstrong's handbook of human resource management practice* (16th ed.). Kogan Page.
2. Bevins, Daniel T. (2018). Herzberg's Two Factor Theory of Motivation: A Generational Study. *Honors Theses*. 530. Available at: https://encompass.eku.edu/honors_theses/530
3. CIPD. (2023). Flexible and hybrid working practices in 2023. Chartered Institute of Personnel and Development. Available at: <https://www.cipd.org>
4. Colquitt, J. A., LePine, J. A., Wesson, M. J. (2019). *Organizational behaviour: Improving performance and commitment in the workplace* (6th ed.). McGraw-Hill Education.
5. Dar, S. A. The Relevance of Taylor's Scientific Management in the Modern Era. *Journal of Psychology and Political Science (JPPS)* ISSN 2799-1024, vol. 2, no. 06, 2022, 1-6. *Researchgate*, Available at: <http://dx.doi.org/10.55529/jpps.26.1.6>
6. De Menezes, L. M., Kelliher, C. (2017). Flexible working, individual performance, and employee attitudes: Comparing formal and informal arrangements. *Human Resource Management*, 56(6), 1051-1070. Available at: <https://doi.org/10.1002/hrm.21822>
7. Gagné, M., Forest, J., Gilbert, M. H., Aubé, C., Morin, E., Malorni, A. (2015). The motivation at work scale: Validation evidence in two languages. *Educational and Psychological Measurement*, 75(4), 628-646. Available at: <https://doi.org/10.1177/0013164414568666>
8. Ksenavičius, E. J., Černikovaitė, M. (2022). Personalo motyvacija taikant hibridinį darbo modelį. *Verslo ir teisės aktualijos*, 2, 38-47.
9. Lee, S. H., Kim, J., Kim, M. (2024). The impact of flexible working arrangements on employee engagement and job satisfaction. *Cogent Business & Management*, 11(1), 2309705. Available at: <https://doi.org/10.1080/23311975.2024.2309705>
10. Omondi, D. A. A., Kobonyo, P. (2018). FLEXIBLE WORK SCHEDULES: A CRITICAL REVIEW OF LITERATURE. *Strategic Journals*. Available at: <https://doi.org/10.61426/SJBCM.V5I4.1002>
11. Robbins, S. P., Judge, T. A. (2017). *Organizational behaviour* (17th ed.). Pearson, 201-214.
12. Ryan, R. M., Deci, E. L. (2020). Intrinsic motivation and self-determination in human behaviour: Contemporary perspectives. Springer. Available at: <https://doi.org/10.1007/978-3-030-29016-8>
13. Aithal, P. S., Kumar, P. M. (2016). Comparative Analysis of Theory X, Theory Y, Theory Z, and Theory a for Managing People and Performance. *Ssrn.com*. Available at: papers.ssrn.com/sol3/papers.cfm?abstract_id=2822997
14. Saunders, M., Lewis, P., Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.
15. Saxena, Ritu. (2018). Achieving Work Life Balance through Flexible Work Schedule: A Conceptual Study. *Asian Journal of Management*, 9, 307. Available at: 10.5958/2321-5763.2018.00046.X

ANALYSIS OF THE TROLLEYBUS DRIVER SELECTION PROCESS IN THE "TROLLEYBUS DEPOT OPERATION DEPARTMENT" OF THE MUNICIPAL ENTERPRISE "RĪGAS SATIKSME" AND OPPORTUNITIES FOR IMPROVEMENT

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Keywords: personnel selection, artificial intelligence, public transport, Rīgas satiksme, trolleybus drivers.

Abstract

The aim of this scientific article is to analyze the trolleybus driver recruitment process within the structural unit "Trolleybus Operations Department" of the municipal company "Rīgas satiksme", identifying key challenges and developing proposals for process improvement. The article examines the theoretical development of personnel recruitment, emphasizing the shift towards a strategic, data-driven, and technology-oriented approach, including the role of artificial intelligence in modern human resource management. The research methodology is based on secondary data analysis, including the examination of the company's internal documentation, personnel statistics, and CV application records, as well as a quantitative employee survey involving 61 respondents. The main findings of the study indicate that the company receives an average of 186 applications annually for the trolleybus driver position, however, only approximately 19,82% of candidates are hired, suggesting either high selection standards or insufficient candidate understanding of the job's specific requirements. While the company has successfully integrated digital tools, it does not yet fully utilize specialized applicant tracking systems. Employee turnover is also observed, with the primary reasons for termination of employment being health-related issues and the demanding nature of the job. The author recommends introducing standardized psychological suitability tests, increasing training capacity by allocating resources for additional training groups, and improving candidate awareness of the specific daily job requirements already at the initial stage of the recruitment process.

Introduction

Relevance of the Article. In the first quarter of 2025, the employment rate in Latvia was 63,2%, while among young people aged 15-24 it was only 28,1% (Centrālā statistikas pārvalde, 2025). These factors also affect the transport sector, which requires specialized technical and operational employees. According to data from the European Employment Services (EURES, 2025), the job vacancy rate in the transport and storage sector in Latvia is 2,9%, indicating a high demand for workers.

According to the 2025 report by the International Labour Organization, economic recovery following the COVID-19 pandemic has slowed. Significant issues and a range of challenges persist in the labour market, including youth unemployment, gender inequality, and a shortage of skilled labour (International Labour Organization, 2025). The 2025 Employment Outlook by the Organization for Economic Co-operation and Development highlights that population ageing and low labour mobility hinder productivity growth and limit companies' ability to adapt to rapid changes in the labour market (Fluchtmann, Hijzen & Puymoyen, 2025).

The municipal company "Rīgas satiksme" faces similar challenges, including an ageing workforce and a shortage of young specialists. In 2023, a report was submitted to the State Labour Inspectorate, compiling information on violations of employment regulations within the company "Rīgas satiksme". More than 550 employees have recorded overtime hours, and over 100 employees are affected by violations of the Labour Law. The Chairperson of the Board has acknowledged this situation, explaining it because of staff shortages (Neatkarīgā rīta avīze, 2025). Therefore, the analysis and improvement of the recruitment process have become a strategically important task for human resource management at "Rīgas satiksme" to promote sustainability and service quality.

As a result of the study, the author provides specific recommendations for improving the personnel recruitment process for trolleybus drivers, therefore, the research will be beneficial for the "Rīgas satiksme".

Problem of the Article:

1. How is the recruitment of trolleybus drivers currently carried out in the company's structural unit?
2. How does the company's recruitment practice align with current trends in human resource management?
3. What improvements are necessary for the recruitment of trolleybus drivers in the company?

Object of the Article: The Trolleybus Operations Department of the municipal company "Rīgas satiksme".

Goal of the Article: To analyze the recruitment process of trolleybus drivers in the Trolleybus Operations Department of the municipal company “Rīgas satiksme”, by identifying key challenges and shortcomings, as well as developing proposals for improving the process.

Objectives of the Article:

1. To analyze scientific and professional literature on the importance of the personnel recruitment process in the public transport sector.
2. To conduct an empirical study on the recruitment process of trolleybus drivers within the company’s structural unit.
3. To summarize the findings and develop proposals for improving the personnel recruitment process, based on the results of the analysis and examples of best practice.

Methods of research:

1. Theoretical method: analysis of theoretical and professional literature, as well as other relevant sources.
2. Empirical methods:
 - 2.1. Data collection methods:
 - 2.1.1. Secondary data analysis based on the use of the company’s internal documents, personnel statistics and publicly available data.
 - 2.1.2. An employee survey conducted to obtain quantitative data on experiences related to recruitment process for the “trolleybus driver” position at “Rīgas satiksme” since 1 April 2022. A total of 61 respondents participated in the survey.
 - 2.2. Data processing methods:
 - 2.2.1. Quantitative data analysis.
 - 2.2.2. Content analysis.
 - 2.2.3. Summarization of survey results using descriptive statistical methods.

Development and transformation of personnel recruitment.

Personnel recruitment is one of the most critical processes in any organization, as it directly affects the quality, efficiency and sustainability of organizational performance (Tarique & Schuler, 2010). Contemporary labour market challenges, including demographic changes, digitalization, and evolving employee expectations, require organizations to reassess and improve their approaches to recruitment. This is particularly relevant in the public transport sector, where labour shortages, high workload and working conditions create additional challenges.

In this article, the author analyses the definition of personnel recruitment, the significance of the recruitment process within the organizational context, as well as current trends in these processes, including artificial intelligence (hereinafter referred to as AI), and experience of best practice.

To analyze the theoretical aspects of the personnel recruitment process, it is first necessary to understand its nature and significance within organizational operations. Human resource management (hereinafter referred to as HRM) theorist Dave Ulrich defines personnel recruitment as the process of selecting the most suitable candidates from a pool of applicants based on specific criteria. Recruitment should be strategically oriented, considering not only candidates’ professional skills, but also their values, motivation and ability to integrate into the organizational culture (Ulrich et al., 2012). The concept of personnel recruitment has evolved significantly over time, transitioning from simple, intuitive decision-making to a systematic and strategically oriented approach. One of the earliest theoretical foundations was established in the early 20th century by the American engineer Frederick Taylor in his work *The Principles of Scientific Management* (1911), where he introduced the approach emphasized work efficiency and the selection of employees based on specific skills, measurements, and testing methods. Taylor’s perspective marked a shift from subjective judgement to the use of objective criteria in the selection process. In the 1920s and 1930s, Elton Mayo shifted attention towards the psychological and social factors influencing productivity. His research demonstrated that employee motivation and a sense of belonging significantly affect work performance. Mayo emphasized that recruitment processes should consider personality traits and an individual’s ability to integrate into a team (Rotich, 2015). From the 1970s onwards, HRM began to develop as a strategic function, within which personnel recruitment became a purposefully planned process. Organizations started to apply structured interviews, psychometric tests and competency-based assessment methods to improve the quality of selection. In the 1990s, strategic HRM emerged, linking recruitment processes to long-term organizational goals and promoting the evaluation of candidate suitability within a strategic context (Rotich, 2015). After 2000, HRM processes continued to evolve in a strategic direction, driven by digitalization, the use of Applicant Tracking Systems (ATS) (Sinha, 2015),

data-driven recruitment and a candidate-oriented approach, emphasizing candidate experience and inclusive recruitment. Additionally, economic factors have contributed to the increased use of short-term and outsourced labour, altering traditional recruitment models. These developments have created new opportunities, but also challenges, such as data privacy concerns, algorithmic bias and ethical issues in recruitment processes (Sinha, 2015).

In the study *The Impact of Human Resource Management on the Competitiveness of Transport Companies*, Lithuanian researcher Nijolė Batarlienė (2017) analyses the impact of human resource management on the competitiveness of transport companies in Lithuania. The aim of the study was to determine how HRM strategies and practical approaches influence companies' ability to compete in the market. The research is based on theoretical literature on the concepts of competitiveness and strategic management, as well as on empirical data collected from transport sector companies in Lithuania. The study evaluates contemporary HRM models and their relationship with employee retention, innovation capacity and organizational effectiveness. The findings confirm that effective HRM processes are closely linked to a company's competitiveness, innovation capacity and employee retention (Batarlienė, 2017).

The leading professional body in the field of HRM in the United Kingdom and internationally, the Chartered Institute of Personnel and Development (2024), emphasizes that organizations must implement recruitment strategies in a way to be not only effective, but also ethically and legally sound, ensuring equality of candidates.

Overall, personnel recruitment processes in modern organizations have become multidimensional and strategically significant mechanisms that extend beyond the simple filling of vacancies. They influence not only employee quality and retention, but also an organization's ability to adapt to changing market conditions, foster an environment of innovation, and maintain long-term competitiveness. As demonstrated by the study of Nijolė Batarlienė (2017), effectively implemented human resource management – integrating recruitment with organizational strategic objectives – is a key factor in organizational growth and sustainability (Batarlienė, 2017). At the same time, as emphasized by Dave Ulrich (2012), the HRM function must be capable of responding to external environmental challenges by ensuring flexibility, inclusiveness, and data-driven decision-making. Thus, the quality of recruitment reflects how effectively an organization can engage with the labour market. Recruitment is no longer perceived as a technical or administrative task, but rather as a purposeful instrument that contributes to shaping the organization's future.

In the 21st century, personnel recruitment processes have undergone rapid transformation. While in the early 2000s the main emphasis was placed on structured interviews, competency assessment, and employer branding, today these processes are increasingly shaped by technological development, globalization, and changes in labour market structures. Although the use of technology in recruitment processes began as early as the 1990s, a significant turning point and catalyst for rapid change occurred during the COVID-19 pandemic in 2020, which effectively forced organizations to adopt digital solutions in recruitment processes. As a result of these changes, organizational flexibility, social responsibility, and workplace culture have become increasingly important to candidates when deciding whether to accept a job offer (Rotich, 2015).

Today, artificial intelligence (AI) has become one of the central tools in personnel recruitment. HRM researcher Wael Albasam (2023) emphasizes that different tools are used in recruitment processes (see Table 1).

Table 1

AI tools in recruitment processes and their key features

AI tool	Description
Automated CV Screening	Algorithms automatically analyze and filter candidate CVs by identifying keywords, skills, and experience that match the job requirements, reducing manual workload.
Candidate–Job Matching	Machine learning and semantic search tools compare candidate profiles with job requirements to determine the level of suitability and prioritize the most relevant candidates.
Video Interview Analysis	AI analyses recorded or live interviews by evaluating both content and non-verbal communication, providing additional insights into candidate suitability.
Chatbots	Virtual assistants that automate initial communication with candidates, respond to frequently asked questions, provide information about recruitment stages, and coordinate interview scheduling.
Predictive Analytics	Data analysis and machine learning models that predict candidate performance and retention based on historical data and profiles of similar employees.

**Source: Albasam (2023)*

The tools presented in the table have become part of everyday recruitment practices in many organizations. AI-based recruitment strategies continue to evolve through the integration of advanced technologies such as natural language processing and machine learning, which significantly enhance the accuracy and efficiency of candidate screening and suitability assessment. Data-driven recruitment represents another important trend in modern selection processes. Organizations analyze recruitment performance indicators such as time-to-hire and quality of hire, utilize candidate behavioral data, and apply predictive models to forecast employee retention and potential performance (Albassam, 2023). Such innovations accelerate recruitment processes and improve candidate quality, while simultaneously reducing costs and risks associated with their implementation. However, these developments also present challenges, particularly in relation to algorithmic bias and data privacy concerns. Organizations must establish guidelines to ensure that the use of AI in recruitment processes remains transparent.

In 2023, researcher Wael Albassam, in his study on the impact of AI tools in recruitment and selection processes, refers to the views of several AI researchers - Tianlun Chen, Edward Hogg, and Emre Kazim - who argue that although organizational interest in the use of AI in personnel recruitment has increased in recent years, there is still a lack of comprehensive studies that critically evaluate the effectiveness and limitations of these strategies. Most existing research focuses on the development and validation of individual AI tools but does not provide a holistic understanding of the overall use of AI in recruitment processes. This fragmented approach limits understanding of how different AI solutions - ranging from automated candidate screening and matching to predictive analytics - function as an integrated strategy. Therefore, more in-depth and comprehensive research is required to identify both the benefits and risks of AI, as well as to define directions for its further development and the establishment of ethical guidelines (Albassam, 2023).

Thus, the author concludes that AI has become an integral and strategically important component of personnel recruitment. While the technical capabilities of AI continue to develop, its current application is more often based on the implementation of individual tools rather than a unified, integrated strategy. AI tools significantly accelerate processes and reduce costs, but their overall effectiveness and limitations have not yet been examined.

In the 21st century, and particularly following the pandemic, personnel recruitment processes have developed rapidly, becoming technologically advanced, data-driven, and strategically oriented mechanisms. Future trends indicate that virtual recruitment and remote onboarding will become increasingly important.

To analyze the recruitment process in practice in greater depth, the author will conduct an empirical study of trolleybus driver recruitment in the Trolleybus Operations Department of the municipal company “Rīgas satiksme”. The author will compare how theoretical insights are applied within the recruitment process of a specific organization, as well as identify opportunities for its improvement.

Characteristics of the trolleybus driver recruitment process at “Rīgas satiksme” and opportunities for its improvement.

Based on the analyzed insights into contemporary trends in recruitment, the empirical part of the study is conducted using RP SIA “Rīgas satiksme” as the research base. The company is a municipal enterprise owned by the city of Riga and is one of the largest organizations in its sector. It directly faces the shortage of public transport drivers and the associated challenges. The organization was established on 20 February 2003 through the gradual consolidation of previous public transport service providers operating in Riga (Rīgas satiksme, n.d.). The company’s significance at both the national and city level, its reputation, and the challenges within the public transport sector related to ensuring enough drivers provide a strong rationale for examining the recruitment process for the trolleybus driver position in the Trolleybus Operations Department.

Methodology of Empirical Study. The author uses two empirical methods - secondary data analysis and a survey. Secondary data analysis enables the acquisition of objective and structured information about the organization’s workforce composition, structure, and trends, providing a broad context necessary for understanding recruitment challenges, including the shortage of public transport drivers. This method is effective as it relies on existing data that are accurate, up-to-date, and representative. Secondary data for the study were obtained from the organization’s internal documents and information management systems, including the workforce planning and time-tracking system “Mobis”, the CV application register, and the employee termination records database. In addition, it is essential to examine employees’ opinions and experience regarding recruitment processes; therefore, the author also conducted a survey of employees who have been hired within the last three years. This method is significant and effective, as it provides practical insights into processes and related issues, complementing previously obtained qualitative information with

quantitative data. The survey utilized a standardized set of questions, allowing for the analysis of trends in evaluations, attitudes, experiences, and perceptions based on numerical data. The questionnaire consisted of 16 closed-ended questions with predefined response options, developed based on the theoretical framework and adapted to the context of “Rīgas satiksme”, as well as one open-ended question to gather additional recommendations. The survey was conducted online. In November 2025, a total of 122 respondents were invited to participate, of whom 61 provided responses within 9 days of the survey period, which can be considered a representative sample for the interpretation of results.

The empirical study was conducted during the period from 10 October 2025 to 30 November 2025. The study analyses recruitment data covering the period from 1 April 2022 to 31 October 2025. This time frame is justified by the complete lifting of COVID-19 pandemic-related restrictions. On that date, amendments to Cabinet of Ministers Regulation No. 662, “Epidemiological Safety Measures for the Containment of the Spread of COVID-19 Infection”, came into force (lvportals.lv, 2022). All previously imposed epidemiological safety restrictions were abolished, COVID-19 certificates were no longer required, the use of face masks was discontinued, and normal service provision and the organization of events were resumed.

Results of the Empirical study. Based on the analysis of the organization’s internal documents and a presentation by the Human Resource Management Department on digital innovations, the author concludes that the use of AI and digital solutions in daily operations has significantly increased in recent years, including to a limited extent in recruitment processes. The integration of technologies has improved process efficiency, accuracy, and data security, while also reducing the volume of manual work. The organization utilizes several digital platforms, including the AI tool “HeyGen” (used for translating onboarding and training materials), MS Power Automate, MS Power BI, MS Data Warehouse solutions, as well as SharePoint and MS Teams (Rīgas satiksme, 2025). The last three are also related to the recruitment process, supporting communication among HR employees and enabling the automation of HR-related administrative actions (such as employee onboarding procedures). It can be concluded that, within the organization, digital technologies in recruitment and selection processes are no longer perceived as auxiliary tools, but rather as integral components of the system. They enable a targeted, standardized, and data-driven recruitment approach, while simultaneously strengthening the employer’s reputation and improving the candidate experience throughout the recruitment process.

To fully assess the effectiveness of the recruitment process, it is essential to analyze its outcomes. The analysis of recruitment process (see Table 2) is based on recruitment data for the trolleybus driver position obtained from the company’s CV register, including the number of recruitment cycles, the volume of applications, and the number of selected candidates, as well as cases where trainees or employees terminate their employment relationship with the organization.

Table 2

Analysis of the recruitment process for the trolleybus driver position

Year	Recruitment cycles	Number of applications	Selected for training		Training dropouts		Reasons for dropout	Successfully completed training		Employees who left	
			No.	%	No.	%		No.	%	No.	%
2022	3	116	31	26,7%	2	6,45%	other job opportunities	29	93,54%	4	13,79%
2023	4	202	36	17,8%	6	16,66%	positive alcohol test, other job opportunities, withdrawal due to lack of understanding	30	83,33%	11	36,67%
2024	4	257	41	15,9%	2	4,87%	other job opportunities	39	95,12%	3	7,69%
2025	3	169	32	18,9%	3	9,37%	positive alcohol test, other job opportunities	29	90,62%	-	

**Source: compiled by author from various sources of RP SIA “Rīgas satiksme” (2025)*

The results of the empirical study indicate that recruitment for the trolleybus driver position takes place 3 to 4 times per year, corresponding to the capacity for forming training groups. This number not only reflects the intensity of recruitment but also limits the number of employees that can be hired, regardless of the volume of applications. Analysis of data from the company's CV register shows that, on average, 186 applications are received annually for the trolleybus driver position. This figure indicates a high level of interest in the vacancy and reflects the organization's growing reputation. However, only a relatively small portion of these candidates proceed to training and enter employment relationships - on average 19.82% per year. This indicator suggests the presence of high selection standards and criteria. It may also be associated with candidates' insufficient understanding of the job responsibilities and the level of accountability required. Each year, there are also trainees who discontinue their participation during the training period - on average 16.47% of trainees. The main reasons for termination during training include alternative employment opportunities and positive alcohol test results. During the period analyzed, 127 trainees successfully completed the training process (on average 90.59% of selected candidates) and commenced work independently as trolleybus drivers. As of 2025, 109 employees continue their employment, while 18 employees have terminated their employment relationships. An analysis of the reasons for employee turnover has been conducted and is presented in Table 3.

Table 3

Reasons for Termination of Employment and Their Frequency (n) among Trolleybus Drivers Hired after 01 April 2022

Reason	Number (n)
Long-term incapacity for work (more than 6 months)	6
Positive alcohol test result	2
Employee-initiated termination due to multiple violations	2
Employee-initiated termination due to job difficulty	2
Employee-initiated termination for other reasons	3
Unfit occupational health examination result	1
Failure to pass the probation period	2
Total	18

**Source: Rīgas satiksme (2025)*

Employees most frequently terminate their employment due to health-related issues – specifically, six cases where incapacity for work lasted more than six months. The second most common reason is employee-initiated termination, related to job difficulty or other personal considerations – five cases in total. In two cases, employment was terminated due to a positive alcohol test result, indicating the need to further develop preventive measures and support mechanisms. Additionally, two employees failed to pass the probation period, which may suggest insufficient preparation or a mismatch with job requirements. Overall, the data indicates that although most trainees successfully begin independent work, several factors affect employee retention in the position. These factors should be considered when improving both the recruitment and training processes.

To gain a deeper understanding of the recruitment data analyzed for trolleybus drivers and to examine practical experience within the recruitment process, an employee survey was conducted. The demographic characteristics of respondents – gender distribution and age groups – are presented in Figure 1 (see Figure 1).

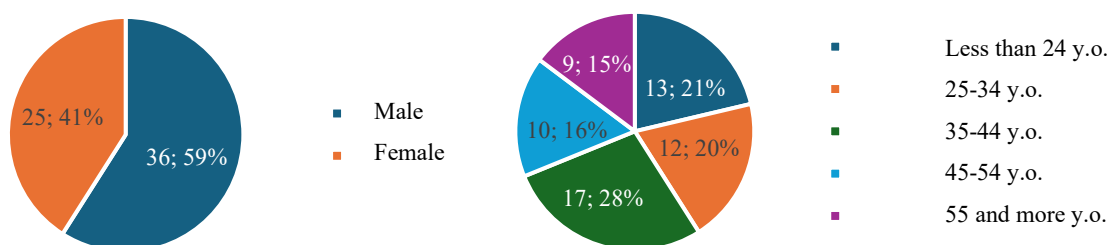


Fig. 1. Demographic characteristics of respondents: distribution by gender and age groups (n, %)

**Source: compiled by the author*

Based on gender distribution, 59% of respondents are male, while 41% are female. In terms of age structure, the largest proportion of respondents falls within the 35–44 age group (28%), followed by respondents aged up to 24 years (21%), those aged 25–34 years (20%), respondents aged 45–54 years (16%), and those aged 55 years and above (15%). This distribution of age groups indicates that the company can attract employees from a wide range of age categories for the trolleybus driver position; however, representatives of the economically active middle-age group predominate.

Information on respondents' levels of education has also been compiled (see Figure 2).

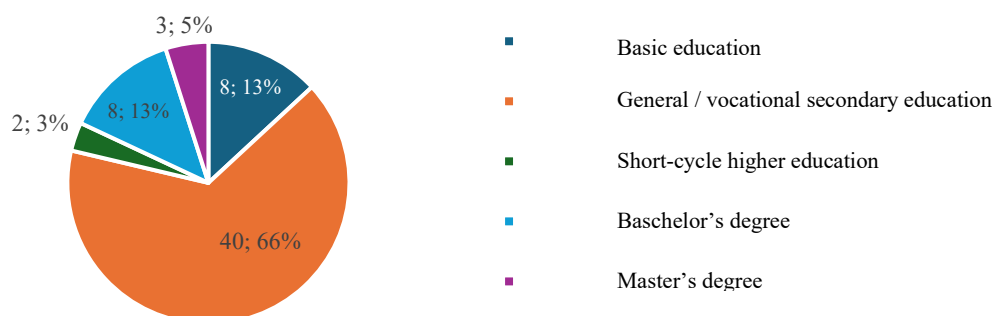


Fig. 2. Respondents' levels of education (n, %)

**Source: compiled by the author*

In terms of educational attainment, most respondents have general or vocational secondary education, accounting for 66% of respondents. A total of 13% have basic education, 13% hold a bachelor's degree, 5% have a master's degree, and 3% possess short-cycle higher education qualifications. This confirms that the trolleybus driver position is accessible to individuals with a wide range of educational backgrounds.

Respondents were also asked to rank factors according to their importance (where 1 represents the most important and 7 the least important) that influenced their decision to apply for the trolleybus driver position advertised by the company (see Figure 3).

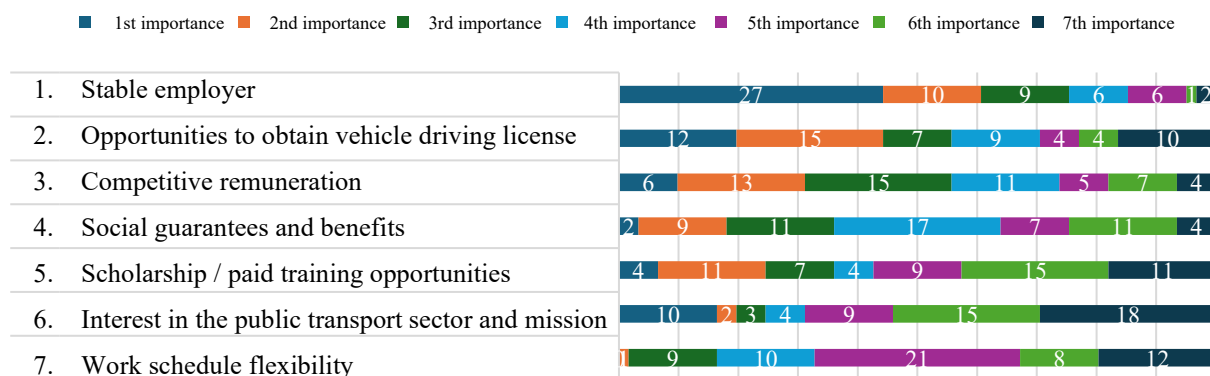


Fig. 3. Most important reasons for applying for the position (n, %)

**Source: compiled by the author*

The ranking obtained indicates that the most important factor for respondents is a stable employer. This suggests that job security and long-term stability are of primary importance to employees. The second most important factor is the opportunity to obtain transport vehicle driving categories, demonstrating that respondents highly value professional development and qualification opportunities offered by the company. Competitive remuneration ranked third, indicating that while salary is an important motivating factor, it is not the sole or primary reason for choosing employment with the organization. Factors considered less important by respondents include social guarantees and benefits, scholarships and paid training opportunities, interest in the public transport sector and its mission, as well as work schedule flexibility. This may suggest that respondents base their career choices primarily on considerations of security and stability rather than ideological factors or aspects.

Respondents were also asked to indicate which communication tools were used during the recruitment process (see Figure 4).

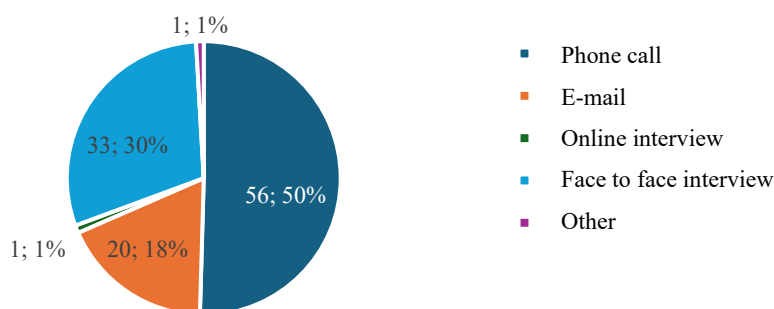


Fig. 4. Communication instruments used in recruitment process (n, %)

**Source: compiled by the author*

Half of the respondents indicated that the primary communication channel was a telephone call. This suggests that recruitment communication is dominated by direct, fast, and personalized interaction, enabling prompt information exchange and agreement on further steps. The second most common communication method was face-to-face interviews, reported by 30% of respondents. Despite the availability of digital solutions, in-person meetings remain an essential component of the recruitment process and are used in most cases. Email communication was indicated by 18% of respondents, suggesting that electronic communication is mainly used as a supplementary tool for confirming information and sending documents. Remote interviews and other communication methods were each mentioned by only one respondent. This indicates that digital remote interview solutions are rarely used in the recruitment of trolleybus drivers, likely due to the practical nature of the job and the need to assess candidates in person. The response time from application submission to initial contact is also appropriate, with 98.3% of respondents evaluating it positively or partially positively. Respondents were also asked to evaluate whether the recruitment interview was conducted professionally, in a structured manner, and focused on assessing employee competencies and clarifying unclear issues. The survey results indicate an overall high level of perceived professionalism in the interview process. Most respondents (93.4%) provided positive or partially positive responses. Meanwhile, 4.9% of respondents “rather disagreed” and 1.6% completely disagreed with the statement. Negative evaluations therefore represent a relatively small proportion of the total sample. These results suggest that the recruitment interview process for the trolleybus driver position is generally conducted professionally, ensuring a structured approach and targeted assessment of candidate competencies. At the same time, the small proportion of negative responses indicates potential areas for improvement in interview practices.

Respondents were also asked to assess their current level of job satisfaction and whether they see themselves continuing in this position after one year (see Figure 5).

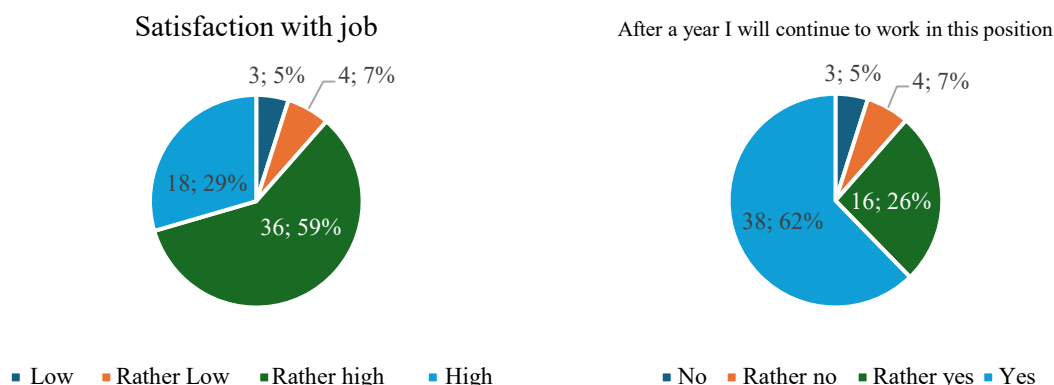


Fig. 5. Respondents' level of job satisfaction

**Source: compiled by the author*

Respondents also report a relatively high level of job satisfaction. A total of 59% of respondents evaluate their job satisfaction as rather high, 29% as high, while only 12% indicate low or rather low levels of satisfaction. Correspondingly, in response to the question regarding future employment, 62% of respondents stated that they would “definitely” continue working in the position, 26% responded “rather yes”, while 12% were uncertain about long-term employment. This indicates strong potential for employee retention.

In response to the open-ended question regarding improvements to the recruitment and training process, 20 respondents (32.7% of the total sample) provided answers. This proportion may suggest that most respondents did not experience significant issues; however, the responses highlight several important aspects that should be considered in improving recruitment, selection, and training for the trolleybus driver position. Respondents suggested introducing psychological testing during the recruitment process. The duration of the training program - up to four months without the possibility of combining it with other employment - was identified as a significant drawback. Within the same context, respondents expressed the view that the duration of contractual obligations following training is too long, which may discourage candidates from committing. Additionally, there were suggestions to promote values such as mutual tolerance and respect for company property during the training process.

In conclusion, the author determines that the organization's overall approach to trolleybus driver recruitment aligns with the best practices described in the theoretical section. Professional guidelines regarding structured interviews, candidate evaluation, and onboarding processes are observed. This is also supported by empirical findings, as most respondents positively evaluate the clarity of the recruitment process and the professionalism of interviews, report satisfaction with their work, and express willingness to continue employment for at least one year. This indicates purposeful and professional work by the HRM department in cooperation with other organizational units in achieving the company's strategic objectives. This cooperation should be maintained and further improved to ensure the continued achievement of organizational goals.

Conclusions

1. The use of AI and digital solutions in HRM, including recruitment processes, has significantly increased within the organization, improving the efficiency of certain processes such as document management and candidate data administration within existing HR systems. However, advanced candidate management systems are not currently implemented, indicating that full integration has not yet been achieved. Therefore, the company should assess the potential for acquiring and implementing such systems to reduce the administrative burden on HR specialists and enhance the efficiency of application processing and recruitment activities.

2. The recruitment process for trolleybus drivers is organized in several stages, ranging from initial candidate screening to individual interviews; however, it lacks psychological suitability assessments, as also indicated by survey respondents. Improvements in this area could be achieved by introducing additional evaluation measures, such as standardized (potentially free) psychological tests or by considering outsourcing options for conducting such assessments.

3. Recruitment for the trolleybus driver position within the structural unit takes place up to four times per year, with an average selection rate of 19.82%. This indicates high selection standards and criteria; however, the unit still faces a shortage of trolleybus drivers. To improve recruitment capacity and effectiveness, the company should ensure the availability of technical and training personnel resources, enabling the training of more than four groups of trolleybus drivers annually.

4. Recruitment communication is characterized by direct, fast, and individual interaction, primarily through telephone calls and face-to-face interviews. The response time from application submission to initial contact is considered appropriate, as indicated by 98.3% of respondents. This result confirms that the company's practices align with current HRM trends.

5. Overall, recruitment processes for the trolleybus driver position correspond to best practices; however, partial shortcomings have been identified in informing candidates about the training process and daily job requirements. This suggests that several factors influence subsequent employee retention. In improving the recruitment process, the company should clearly communicate key job conditions to candidates - particularly emphasizing zero tolerance for alcohol, regular testing procedures, as well as the high level of responsibility and specific workload associated with the position.

References

1. Albassam, W. A. (2023). The power of artificial intelligence in recruitment: An analytical review of current AI-based recruitment strategies. *International Journal of Professional Business Review*, 8(6). [Accessed 2026-03-10] Available at: <https://doi.org/10.26668/businessreview/2023.v8i6.2089>
2. Batarlienė, N., et al. (2017). *The Impact of Human Resource Management on the Competitiveness of Transport Companies*. *Procedia Engineering*, 187, 770-777. [Accessed 2026-03-10] Available at: <https://www.sciencedirect.com/science/article/pii/S1877705817318866>
3. Centrālā statistikas pārvalde. (2025). 1. ceturksnī Latvijā bija nodarbināti 63,2 % iedzīvotāju. [Accessed 2026-03-10] Available at: <https://stat.gov.lv/lv/statistikas-temas/darbs/nodarbinatiba/preses-relizes/22931-nodarbinatiba-2025-gada-1-ceturksni?themeCode=NB>
4. Chartered Institute of Personnel and Development. (2024). *Inclusive recruitment: Guide for employers*. [Accessed 2026-03-10] Available at: <https://www.cipd.org/uk/knowledge/guides/inclusive-employers>
5. European Employment Services. (2025). *Informāciju par darbu: Latvija*. [Accessed 2026-03-10] Available at: https://eures.europa.eu/living-and-working/labour-market-information-europe/labour-market-information-latvia_lv
6. Fluchtmann, J., Hijzen, A., & Puymoyen, A. (2025). Reviving growth in a time of workforce ageing: The role of job mobility. *OECD*. [Accessed 2026-03-10] Available at: https://www.oecd.org/en/publications/oecd-employment-outlook-2025_194a947b-en/full-report/reviving-growth-in-a-time-of-workforce-ageing-the-role-of-job-mobility_6fdecf3a.html
7. International Labour Organization. (2025). *World employment and social outlook trends 2025*. [Accessed 2026-03-10] Available at: https://www.ilo.org/sites/default/files/2025-01/WESO25_Trends_ExecSum_EN.pdf
8. LV portāls. (n.d.) No 1. aprīļa tiek atcelta lielākā daļa Covid-19 drošības pasākumu [Accessed 2026-03-10] Available at: <https://lvportals.lv/skaidrojumi/339545-no-1-aprila-tiek-atcelta-lielaka-dala-covid-19-drosibas-pasakumu-2022>
9. Neatkarīgā rīta avīze. (2025). Darba inspekcijā ierosināta lieta par virsstundu pārstrādi šoferiem Rīgas satiksmē. [Accessed 2026-03-10] Available at: <https://nra.lv/politika/492702-darba-inspekcija-ierosinata-lieta-par-virsstundu-parstradi-soferiem-rigas-satiksme.htm>
10. Rīgas satiksme (n.d.), About us. [Accessed on: 2026-04-01] Available at: <https://www.rigassatiksme.lv/en/about-us/>
11. Rīgas satiksme (2025), *PPD CV reģistrs*, noraksts.
12. Rīgas satiksme (2025), *PPD inovācijas*, prezentācija.
13. Rīgas satiksme (2025), *PPD TPED uzteikumu iemeslu reģistrs*.

14. Rotich, K. J. (2015). History, Evolution and Development of Human Resource Management: A Contemporary Perspective. *Global Journal of Human Resource Management*. [Accessed 2026-03-10] Available at: <https://ejournals.org/wp-content/uploads/History-Evolution-and-Development-of-Human-Resource-Management-A-Contemporary-Perspective.pdf>
15. Sinha, G. (2015). Evolution Of Recruitment and Selection Practices: A 2015 perspective. *International Journal of Creative Research Thoughts*. [Accessed 2026-03-10] Available at: <https://ijcrt.org/papers/IJCRT1135870.pdf>
16. Tarique, S., & Schuler, R. S. (2010). Global Talent Management: Literature Review, Integrative Framework, and Suggestions for Further Research. *Journal of World Business*, 45(2), 122-133. [Accessed 2026-03-10] Available at: <https://doi.org/10.1016/j.jwb.2009.09.019>
17. Ulrich, D., Younger, J., Borckbank, W., & Ulrich, M. (2012). HR from the Outside In: Six Competencies for the Future of Human Resources. McGraw-Hill. [Accessed 2026-03-10] Available at: <https://archive.org/details/hrfromoutsideinn0000unse>

OVERTOURISM IN PARIS AND BARCELONA: ECONOMIC BENEFITS AND SOCIAL CHALLENGES

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Keywords: Overtourism, Economic Impact, Social Impact, Sustainable Tourism.

Abstract

This article analyzes overtourism in Paris and Barcelona, highlighting both its economic benefits and negative impacts. While tourism generates jobs and revenue, it also causes overcrowding, housing pressure, and loss of local identity. The study explores how excessive tourist flows affect urban life and residents' well-being. It reveals the growing imbalance between economic gains and social sustainability. The article emphasizes the need for effective and sustainable tourism management strategies. Such measures are essential to balance development with the quality of life for local communities.

Introduction

Tourism in Europe continues to grow, particularly in major cities like Paris and Barcelona. In 2025, Greater Paris welcomed 37.4 million visitors, confirming its status as a top global destination. Barcelona also receives around 13 million visitors each year for only 1.6 million residents, generating significant economic benefits. In both cities, tourism supports jobs, commerce, local crafts, infrastructure improvements, and urban development, including sustainability initiatives.

Relevance of the Article. Understanding the economic benefits and social impacts of mass tourism is essential for policymakers, urban planners, and local communities. Studying Paris and Barcelona provides insights into how cities can manage tourism growth while preserving residents' quality of life and promoting sustainable development.

Problem of the Article. Despite the economic advantages, overtourism creates social, environmental, and urban challenges. Cities face pressures such as rising housing costs, changes in local culture, and strain on public services, highlighting the need for careful planning and management.

The object of the article is the phenomenon of overtourism in major European cities, focusing specifically on Paris and Barcelona.

Goal of the article is to explore the economic, social, and environmental impacts of mass tourism in Paris and Barcelona and to discuss strategies for sustainable tourism management.

Objectives of the article:

1. Define the concept of overtourism and explain its main characteristics in major tourist destinations.
2. Assess the economic benefits and social impact of tourism in Paris and Barcelona.
3. Evaluate sustainable strategies to balance tourism growth with residents' quality of life and environmental protection.

Methods of research: analysis of scientific literature, data analysis of tourism statistics, case studies of specific neighbourhoods in Paris and Barcelona affected by overtourism, and review of policy documents and sustainability plans. These methods combine qualitative and quantitative approaches, allowing to define key concepts and theoretical frameworks, identify and interpret tourism trends over time, analyse the concrete local impacts of overtourism on urban environments and residents' quality of life, and evaluate the effectiveness of public policies and strategies implemented by local authorities.

A Conceptual Approach to Overtourism

Overtourism refers to the negative effects caused by excessive tourist traffic in certain areas, whether at the site, neighbourhood, or city level. While debates regarding the negative effects of tourism are not new (Doxey, 1975), these criticisms have now reached an unprecedented scale. This term, which was not in use prior to 2017, has since enjoyed enormous media attention and is now commonly used in scientific discourse and public policy discussions. Although several definitions have been proposed, they all agree that overtourism refers to visitor numbers “deemed excessive” due to their impact on the environment, residents, and/or the tourist experience (Knafo, 2023).

Thus, in France, the Directorate General for Enterprise (2024) defines overtourism as: “visitor numbers at a destination or tourist site deemed excessive for at least one of the following three reasons:

- damage to the environment, biodiversity, or the natural and/or historical heritage of the destination or site.

- a decline in the quality of life of the local population, resulting in a significant increase in the number of residents who view tourism as unacceptable.
- visitor conditions that detract from the quality of the tourist experience.

However, the growing popularity of the concept of overtourism has also been met with significant criticism, primarily due to a certain conceptual vagueness. The highly general nature of the definition makes the concept vague and difficult to apply in practice. As a result, the term “overtourism” is now used in very different contexts to describe a wide range of quantitative and qualitative issues, which are not always exclusively caused by tourism (Koens et al., 2018). Added to this is the difficulty of determining the thresholds at which visitor numbers are considered excessive, and who is responsible for defining them. Thus, while overtourism “reflects more the limits of acceptable change as expressed by a reference population, which is most often that of permanent residents” (Gravari-Barbas, 2021), it should be noted that within a single population, views on tourism and its effects are rarely uniform. Several studies show that, among residents, the assessment of the effects of tourism on quality of life is not uniform but depends on several factors, such as the correlation between their income and tourism activity (Uysal et al., 2016).

Finally, others voice even more radical criticism of the concept, accusing it of being the latest manifestation of a long-standing fear of tourism (Gay, 2023). Its growing media coverage is thus seen as an expression of “class contempt” that tends to stigmatize the tourist practices of the working classes, who are unable to adopt the norms of the “good tourist” – a concept mobilized by economic and social actors to maintain distinctions and protect an elitist insularity (Knafou, 2023). Around these debates, several positions have emerged: some researchers, while acknowledging the need for conceptual clarification, consider the term still relevant (Mihalic, 2020), while others, on the contrary, prefer to employ other concepts (tourist gentrification, touristification) to analyze the economic, social, and environmental inequalities that shape tourist mobility (López-Gay et al., 2021).

Indeed, beyond the debates over the validity of the concept of overtourism, it remains undeniable that, in certain destinations, tourism has transformed housing, commerce, and public spaces to meet the needs of visitors at the expense of residents’ quality of life. The historic center of Venice, one of the world’s most famous and visited tourist destinations, is a prime example of these dynamics. Due to the pressures that tourism places on residents, the city has frequently been described as the “worst-case scenario” in the literature on tourism planning and a prime example of “overtourism.” (Giordano, 2025)

Contrary to what the term might suggest, mass tourism is not (or not merely) a form of herd-like tourism involving huge crowds flocking periodically to the same destinations. On the contrary, each tourist expects a unique, personalized experience, tailored services, and a sense that their travel habits set them apart from those of other tourists.

Thus, while industrial tourism was concentrated in a relatively limited list of destinations, mass tourism encompasses every corner of the world and every season: on a global scale, few places escape being turned into tourist destinations, through an almost infinite variety of processes and internal dynamics, ranging from whale watching in Iceland (Delmas and Guillaume, 2018) to urban exploration in declining cities (Le Gallou, 2021), from morbid tourism along the Korean Demilitarized Zone (Mazzero and Oulkebous, 2023) to luxury lodges in Antarctica (Knafou and Fournier, 2023).

This illustration highlights the key indicators of overtourism on a global scale. It shows, first of all, that tourist flows are concentrated in certain countries such as France, Spain, and the United States, as well as in major cities like Bangkok, Istanbul, and London. It also highlights that certain destinations, such as the Maldives or Macau, are highly dependent on tourism, making them particularly vulnerable. Other regions face intense tourist pressure, with a very high number of visitors relative to their population, such as Zakynthos or Istria. Finally, the high tourist density observed in cities like Paris or Barcelona illustrates the problems of visitor concentration in limited spaces.

Thus, this infographic shows that overtourism depends not only on the number of tourists, but also on their concentration and their impact on the regions.

Figure 1 shows the trend in tourism in Paris between 2019 and 2025. Before the COVID-19 crisis, visitor numbers were very high, at around 50 million, mostly international visitors. In 2020, visitor numbers dropped sharply, then gradually recovered to 23 million in 2021. The recovery accelerates in 2022 (44 million) and continues in 2023 (47 million).

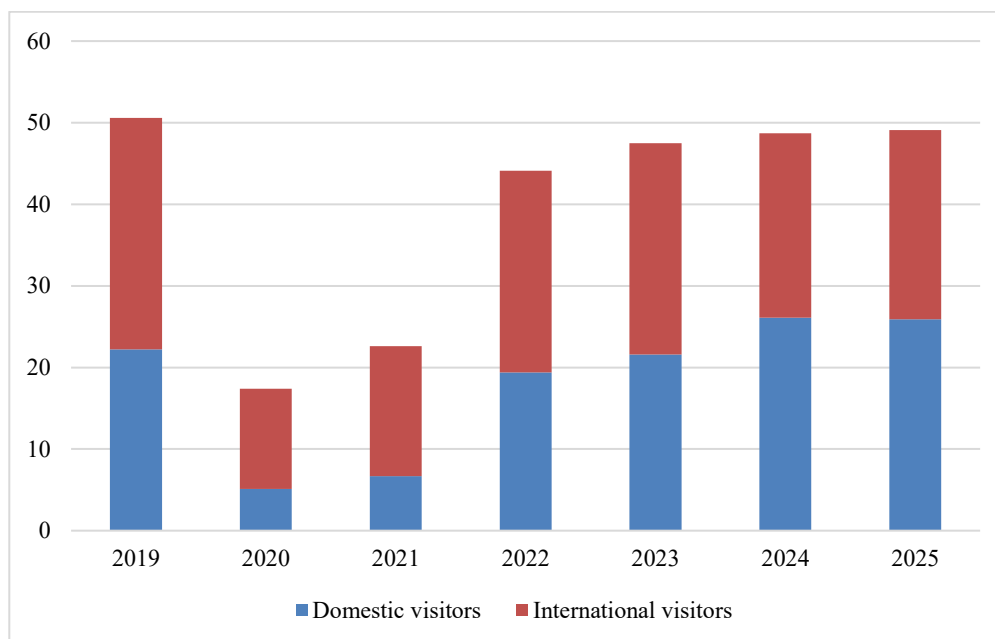


Fig. 1. Tourism Statistics (in millions) in Paris

**Source compiled by the authors [27,30]*

By 2024, Paris is expected to have welcomed approximately 48.7 million tourists, with a majority of domestic visitors (Visit Paris Region). In 2025, the city returns to its pre-crisis level with approximately 50 millions tourists (Le Parisien).

	2024	2025	Var. 25/24 (%)
Domestic tourists (millions)	2,7	2,6	-0,1
	5,2	5,1	-2,8
	7,9	7,7	-1,9
International tourists (millions)	12,9	13,4	3,5
	5,3	5	-5,3
	18,2	18,4	0,9
Universe of total tourists (millions)	15,6	16	2,9
	10,5	10,1	-4,1
	26,1	26,1	0,1



Fig. 2. Tourism Statistics in Barcelona

**Source compiled by the authors [26]*

The graphic illustrates the evolution of tourism in Barcelona in recent years. Following a sharp decline during the COVID-19 pandemic, visitor numbers dropped significantly before beginning a recovery from 2021 onward. By 2024, tourism levels had largely rebounded, with both domestic and international visitors contributing to the increased data for 2025.

Economic Benefits and Overtourism Trends in Paris and Barcelona

Tourism in Paris generates major economic benefits, particularly through revenue, employment, and infrastructure investment, as highlighted in the provided documents.

First, in terms of revenue, tourism represents a key source of income at both the national and local levels. In 2025, France recorded 77.5 billion euros in international tourism receipts, an increase of +9% compared to 2024. This confirms the strong economic weight of tourism, largely driven by major destinations such as Paris. More broadly, the tourism sector generated around 200 billion euros in total turnover in 2024 and accounted for 8% of national GDP (16). These figures show that tourism is a central pillar of economic activity, with Paris playing a leading role due to its global attractiveness.

Second, tourism is a major source of employment. In the Paris region alone, the sector represents approximately 400,000 salaried jobs, or 12.4% of total employment, with nearly 40,000 businesses depending directly on tourism demand (27). At the national level, tourism supports around 2 million jobs direct and indirect (16). This highlights the importance of tourism not only for economic output but also for job creation and local livelihoods, particularly in sectors such as hospitality, transport, and cultural services.

Finally, tourism drives significant infrastructure investments in Paris. The city has implemented a tourism development plan composed of 59 measures, aimed at improving visitor experience, modernizing facilities, and strengthening transport and accommodation capacity (27). For example, investments include expanding hotel capacity with 14,000 additional rooms planned, upgrading major sites and congress facilities, and improving transport connectivity. These developments are designed to support growing tourist numbers while enhancing the city's long-term attractiveness and competitiveness.

Overall, tourism in Paris provides substantial economic benefits by generating high revenues, supporting a large share of employment, and encouraging continuous investment in infrastructure, reinforcing its position as a leading global destination.

As for the case of Barcelona, tourism represents a central pillar of its economy, generating substantial revenue, employment, and investment. According to the Barcelona City Council, tourism accounts for approximately 14% of the city's GDP and supports more than 150,000 direct and indirect jobs, making it one of the main drivers of local economic activity (Barcelona City Council, 2025). In recent years, the sector has shown strong resilience, with tourism-related spending reaching around €10 billion annually, reflecting both direct and indirect economic contributions (26)

Barcelona City Council, 2025). This revenue supports a wide range of sectors, including hospitality, retail, transport, and cultural industries, creating a multiplier effect across the urban economy.

Tourism also plays a key role in public finances through taxes and fees. The implementation of tourist taxes has contributed to earn a significant income for regional and municipal budgets, with tens of millions of euros collected annually and reinvested in infrastructure, urban services, and cultural heritage preservation (Barcelona City Council, 2025). In addition, the growth of tourism has stimulated major infrastructure investments, particularly in transport, urban regeneration, and international connectivity, reinforcing Barcelona's position as a global destination.

Furthermore, tourism contributes to employment, not only in traditional sectors such as accommodation and food services but also in emerging areas such as events, conferences, and creative industries. This diversification strengthens the city's economic structure and enhances its global competitiveness. Overall, tourism in Barcelona functions as a dynamic economic ecosystem, generating wealth, supporting jobs, and driving urban development, while also reinforcing the city's role within both the national and global tourism economy.

Overtourism in Paris is now a major issue, both socially and in terms of urban planning. The high concentration of tourists in certain areas can lead to "tourismophobia" that is, a rejection of visitors by residents. In Paris, this phenomenon can be explained by the gradual decline in quality of life: noise, overcrowding in the streets and on public transportation, as well as certain acts of incivility, fuel a sense of exasperation. Residents sometimes feel that their city is designed more for tourists than for them, which exacerbates social tensions.

Moreover, overtourism is profoundly transforming certain Parisian neighbourhoods through a process of “touristification”. Iconic areas such as Montmartre and the Marais are seeing their identities shift with the proliferation of short-term rentals, particularly through platforms like Airbnb (Le Monde 2025). This shift is accompanied by the gradual disappearance of local shops, which are being replaced by souvenir shops and tourist restaurants. As a result, these neighbourhoods are gradually losing their authenticity and their residential character.

Furthermore, overtourism is putting significant pressure on the housing market, leading to a genuine displacement phenomenon. Certain neighbourhoods, such as Montmartre, are now heavily touristed, to the point of being compared to amusement parks (Devaux, 2024). Residents, particularly those from the middle and working classes, are gradually being forced to leave central neighbourhoods due to rising rents and the conversion of housing into tourist accommodations. In Paris, the average price now exceeds €10,000 per square meter, further exacerbating this residential exclusion. (Foucart, T. 2026)

This phenomenon is also accompanied by a spatial mismatch—that is, a disconnect between where people live and where they work (John F. Kain 1968). Residents forced to move away from the city center must travel greater distances to work or access services, which exacerbates socio-spatial inequalities and dependence on transportation.

Finally, this high volume of tourists puts a strain on urban infrastructure and services. Public transportation is often overcrowded, public spaces are congested, and cleaning and security services are under greater pressure. This strain not only degrades residents’ quality of life but also the experience of the visitors themselves.

Thus, overtourism in 2024–2025 reveals significant imbalances between tourist appeal and urban quality of life, making it necessary to implement regulatory policies to preserve a sustainable balance.

Regarding overtourism in Barcelona, it has been identified as a structural urban issue, particularly in relation to residents’ quality of life and the use of public space. Recent research highlights a growing gap between the economic importance of tourism and its social acceptance, with Barcelona frequently cited as a case where tourism intensity exceeds local tolerance levels (Marco-Gardoqui, 2025). This imbalance is reflected in rising dissatisfaction among residents. Academic studies emphasize that these perceptions are linked to measurable increases in density and the overuse of shared urban resources (Milano, 2024).

One of the main effects of overtourism in Barcelona is the restructuring of inner-city neighbourhoods. In areas such as Ciutat Vella and El Raval, tourism-related activities have increasingly taken over, leading to important social and spatial changes. Areas surrounding major attractions like La Sagrada Família illustrate how high visitor concentrations reshape commercial landscapes, with local businesses progressively replaced by visitor-oriented services. Recent research describes this process as a form of “tourism monoculture,” in which economic and social diversity declines as tourism becomes the dominant urban function (Elorrieta et al., 2022).

Housing pressure is also a key mechanism through which overtourism reshapes Barcelona. The expansion of short-term rental platforms, particularly Airbnb, has reduced housing availability in central districts. In 2025, the city recorded over 20,000 short-term rental listings, heavily concentrated in tourist areas, intensifying competition between residential and tourist uses (Gyódi, 2025). Studies estimate that such rentals can increase rents by up to 7% in highly touristic neighbourhoods, contributing to displacement and limiting access to long-term housing. As residents move to peripheral areas, inequalities deepen— a dynamic that reflects the spatial mismatch framework developed by John F. Kain (1968) (Gyódi, 2025; Kain, 1968). At the same time, overtourism places sustained pressure on urban infrastructure and public services. High visitor densities in central areas contribute to congestion in transport systems and public spaces, while increasing demand for waste management, sanitation, and security services. These pressures affect both the functioning of the city and residents’ daily practices, as many avoid heavily touristed areas due to overcrowding.

Overall, the case of Barcelona demonstrates that overtourism extends beyond visitor numbers to encompass deeper transformations in urban structure, housing systems, and social relations.

Balancing tourism and sustainability in Paris and Barcelona

Sustainable tourism strategies in Paris aim to reconcile economic growth with residents’ quality of life and environmental protection. This challenge is particularly acute due to overtourism in central districts, where high visitor density contributes to rising housing costs, loss of local identity, and pressure on public spaces (1).

A first key strategy is the regulation of short-term tourist rentals, such as Airbnb. These accommodations reduce the availability of long-term housing and accelerate gentrification processes. In response, local

authorities have introduced stricter regulations, including registration requirements and limits on rental duration. However, some analysts argue that these measures remain insufficient to significantly curb the phenomenon in central Paris (1).

Secondly, tourist flow management is a central pillar of sustainable tourism policy in France. The national strategy emphasizes the need to better distribute visitors across time and space to reduce overcrowding in major destinations (25). This includes promoting off-season travel, encouraging visits to less crowded areas, and developing alternative destinations beyond iconic sites. In the Paris context, this translates into efforts to decentralize tourism activities and valorised peripheral neighbourhoods.

Environmental protection is another major component. Tourism contributes significantly to greenhouse gas emissions, particularly through transportation. Sustainable strategies therefore promote low-carbon mobility, such as public transport, cycling, and walking, as well as environmentally responsible practices within the tourism sector (25). These measures aim to reduce the ecological footprint of tourism while maintaining its economic benefits.

In addition, sustainable tourism policies seek to support local communities and economic structures. This involves protecting local businesses from displacement by tourist-oriented commerce, as well as ensuring that tourism revenues benefit residents. Participatory governance, where inhabitants are involved in tourism planning, is also increasingly emphasized to improve social acceptance of tourism (1).

Overall, these strategies are relevant, but their effectiveness depends on consistent implementation and enforcement. While flow management and environmental initiatives show promise, stronger regulatory measures, particularly regarding short-term rentals, may be necessary to fully mitigate the negative impacts of tourism. A comprehensive and integrated approach combining regulation, redistribution of tourist flows, environmental action, and community involvement is essential to achieving a sustainable balance.

In Barcelona, recent tourism policy has increasingly focused on mitigating the negative externalities of visitor concentration while maintaining the sector's economic importance. The main objective is to reduce pressure on densely visited areas and improve the balance between tourism activity and residents' quality of life, particularly in central districts affected by overcrowding (2).

One of the main policy responses concerns the regulation of short-term tourist accommodation. The local government has strengthened licensing systems, increased inspections, and intensified action against illegal tourist rentals in order to protect the residential housing stock. These interventions aim to limit the conversion of housing into tourist accommodation and reduce displacement in high-demand neighborhoods, although results vary depending on enforcement capacity and district characteristics (2).

Another important line of action focuses on the redistribution of tourism across urban space and time. Throughout the Tourism Sustainability Plan for Destination Barcelona, authorities promote the diversification of visitor flows, encouraging tourism beyond the most saturated districts and outside peak seasons. This approach seeks to reduce spatial concentration effects, ease congestion in iconic areas, and distribute economic benefits more evenly across the city and metropolitan region (3).

Environmental sustainability has also become a central pillar of tourism governance. Policies encourage low-carbon mobility, including public transport, cycling infrastructure, and pedestrianization, while tourism businesses are increasingly encouraged to adopt environmental certification schemes. These measures are designed to reduce the ecological footprint of tourism and improve overall urban liveability, particularly in high-density tourist zones (4).

In addition, governance strategies increasingly emphasize the involvement of local communities in tourism planning. Residents are more frequently included in consultation processes, reflecting an effort to improve social acceptance and align tourism development with local needs. This participatory approach reflects a broader shift toward integrating tourism policy into general urban governance rather than treating it as a separate sector (5).

Overall, Barcelona's strategy reflects a transition from growth-oriented tourism policies toward a model based on regulation, redistribution, and sustainability. However, the success of these measures depends on consistent enforcement and long-term coordination across institutions. Achieving a stable balance between tourism activity, environmental protection, and residents' well-being remains a central challenge for the city.

Conclusions

In conclusion, the study confirms that overtourism in Paris and Barcelona is a multidimensional phenomenon that must be understood through its economic, social, and environmental impacts. The analysis

has clarified the concept of overtourism and highlighted its key characteristics, particularly the imbalance between tourist flows and urban capacity.

The findings demonstrate that while tourism generates significant economic benefits, it also creates strong pressures on housing, public space, and residents' quality of life. The case studies further reveal how these impacts are concentrated in specific neighbourhoods, leading to spatial and social transformations.

Finally, the review of policies shows that although both cities are implementing strategies to promote more sustainable tourism, challenges remain in ensuring their effectiveness. Overall, achieving a better balance between tourism development and urban sustainability requires stronger regulation, improved management of tourist flows, and greater consideration of local communities.

References

1. ADRAQH. (2023). *Pour un tourisme vraiment plus durable à Paris centre* [viewed 2026-03-30]. Internet access: <https://www.adraqh.fr/pour-un-tourisme-veritablement-plus-durable-a-paris-centre/>
2. *Barcelona City Council*. (2024). [viewed 2026-03-30]. Internet access: <https://www.barcelona.cat/promocioeconomica/en/what-we-do/tourism-and-promoting-city/tourism>
3. *Barcelona City Council*. (2025a). [viewed 2026-04-12]. Internet access: <https://ajuntament.barcelona.cat/turisme/en/tourism-barcelona/projects/tourism-sustainability-plan-destination-barcelona-tspdb>
4. *Barcelona City Council*. (2025b). [viewed 2026-04-12]. Internet access: <https://www.meet.barcelona/en/visit-and-love-it/responsible-and-sustainable-tourism>
5. *European Commission*. (2025). [viewed 2026-04-12]. Internet access: https://reforms-investments.ec.europa.eu/projects/projection-sustainable-tourism-barcelona_en?
6. Delmas, A., & Guillaume, J. (2018). La chasse des cétacés est révélatrice des rapports multiples de l'Humanité avec la Planète océane. *Géoconfluences*.
7. Devaux, F. (2024). Les habitants temporaires dans l'espace métropolitain: une approche du sujet à travers l'hébergement touristique, la représentation des acteurs publics et la régulation spatiale dans la métropole parisienne. *Doctoral dissertation, Université Panthéon-Sorbonne-Paris I*.
8. Doxey, G. V. (1975). A causation theory of visitor-resident irritants: Methodology and research inferences. *In Travel and tourism research associations sixth annual conference proceedings*, 3, 195-198.
9. Elorrieta, B., Cerdan Schwitzguébel, A., & Torres-Delgado, A. (2022). From success to unrest: The social impacts of tourism in Barcelona. *International journal of tourism cities*, 8(3), 675-702.
10. *European Commission, Projection of a sustainable tourism in Barcelona*. (2026). [viewed 2026-03-30]. Internet access: https://commission.europa.eu/projects/projection-sustainable-tourism-barcelona_en
11. *Euromonitor, which, UNWTO, Wellness Retreats Magazine, WorldData, US Department of State*. (2025). [viewed 2026-03-30]. Internet access: <https://www.altexsoft.com/blog/overtourism/>
12. Foucart, T. (2026). Pour une nouvelle politique du logement. *Commentaire*, 193(1), 113-122.
13. Giordano, E. (2025). (Sur) vivre dans une ville touristique: les effets socio-spatiaux du surtourisme dans le centre historique de Venise. *Géoconfluences*.
14. Gravari-Barbas, M. (2021). Du surtourisme aux nouvelles formes de tourisme? *Cahiers français*, 423(5), 38-47.
15. Gyódi, K. (2024). The spatial patterns of Airbnb offers, hotels and attractions: are professional hosts taking over cities? *Current Issues in Tourism*, 27(17), 2757-2782.
16. Info.gouv. (2025). *La France, toujours première destination touristique mondiale en 2025*. [viewed 2026-03-30]. Internet access: <https://www.economie.gouv.fr/actualites/video-la-france-toujours-premiere-destination-touristique-mondiale-en-2025>
17. Kain, J. F. (1968). Housing segregation, negro employment, and metropolitan decentralization. *The quarterly journal of economics*, 82(2), 175-197.
18. Knafou, R. (2023). La surmédiation du surtourisme: ce qu'elle nous dit du tourisme (et de ceux qui en parlent). *Fondation Jean Jaurès*, 27.
19. Koens, K., Postma, A., & Papp, B. (2018). Is overtourism overused? Understanding the impact of tourism in a city context. *Sustainability*, 10(12), 4384.
20. Le Gallou, A. (2021). Explorer les lieux abandonnés à Détroit et à Berlin: tourisme de l'abandon et trajectoires patrimoniales. *Géoconfluences*.
21. López-Gay, A., Cocola-Gant, A., & Russo, A. P. (2021). Urban tourism and population change: Gentrification in the age of mobilities. *Population, Space and Place*, 27(1), e2380.
22. Marco-Gardoqui, M., García-Feijoo, M., Eizaguirre, A., & Laka Mugarza, J. P. (2025). Understanding Residents' Perceptions of Tourism in Major Spanish Cities. *Sustainability*, 17(22), 10314.
23. Mihalic, T. (2020). Conceptualising overtourism: A sustainability approach. *Annals of Tourism Research*, 84, 103025.

24. Milano, C., Novelli, M., & Russo, A. P. (2024). Anti-tourism activism and the inconvenient truths about mass tourism, touristification and overtourism. *Tourism Geographies*, 26(8), 1313-1337.
25. Ministry of Economy, Finance and Industrial and Digital Sovereignty. (2023). *Une stratégie nationale pour gérer les flux touristiques* [viewed 2026-03-30]. Internet access: <https://www.economie.gouv.fr/actualites/tourisme-une-strategie-nationale-pour-gerer-les-flux-touristiques>
26. *Observatori del Turisme a Barcelona*. (2025). [viewed 2026-03-30]. Internet access: https://observatoriturisme.barcelona/wp-content/uploads/2026/02/2025_Capsula-1-IAOTB-1.pdf
27. Paris.fr. (2022). *Un plan en 59 mesures pour le tourisme parisien*. [viewed 2026-03-30]. Internet access: <https://www.paris.fr/pages/un-plan-en-59-mesures-pour-le-tourisme-parisien-4196>
28. Road Genius. (2024). *statistiques du tourisme à Paris*. [viewed 2026-03-30]. Internet access: https://roadgenius.com/fr/statistics/tourism/france/paris/#Combien_de_touristes_visitent_Paris_chaque_annee
29. Uysal, M., Sirgy, M. J., Woo, E., & Kim, H. L. (2016). Quality of life (QOL) and well-being research in tourism. *Tourism management*, 53, 244-261.
30. VisitParisRegion. (2025). *Bilan de l'année touristique 2024 à Paris Île-de-France*. [viewed 2026-03-30]. Internet access: <https://pro.visitparisregion.com/chiffres-du-tourisme/conjoncture/bilans/bilan-de-l-annee-touristique-2024-a-paris-ile-de-france-mars-2025>

TURKEY'S POLITICAL ECONOMY IN TRANSITION: POWER, POLICY, AND ECONOMIC DYNAMICS

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Keywords: Political Economy, Presidential Government System, Central Bank Independence.

Abstract

This article provides a comprehensive political economy analysis of Turkey's transition from a parliamentary system to the Presidential Government System and its profound implications for economic governance, institutional autonomy, and macroeconomic stability. The study first establishes the conceptual foundations of political economy as an interdisciplinary field that examines the mutual interaction between political institutions and economic processes. It then applies this framework to the Turkish case, tracing the institutional restructuring that followed the 2017 constitutional referendum and 2018 elections, which concentrated executive authority in the presidency and fundamentally altered the policy advisory apparatus, budgetary processes, and regulatory governance. The article documents the erosion of the Central Bank of the Republic of Turkey's de facto independence through informal mechanisms of political pressure, culminating in the heterodox "New Economic Model" of 2021–2023 and its destabilizing macroeconomic consequences, including exchange rate volatility, chronic inflation, and a shift in the growth regime toward credit-financed domestic consumption. The analysis further examines the post-2023 return to orthodox monetary policy and its partial stabilization effects, while highlighting the persistent institutional vulnerabilities that render these gains fragile and reversible. The Turkish experience illustrates a distinctive post-liberal governance mode in which neoliberal market rules are stretched rather than abandoned, institutional safeguards are subordinated to political loyalty, and economic policymaking becomes articulated with personalized executive decision-making. The article concludes that the ultimate guarantor of monetary and economic stability lies not in formal statutory provisions but in the broader institutional and political environment within which policy is conducted.

Introduction

This article examines the transformation of Turkey's political economy following the transition from a parliamentary system to the Presidential Government System, a shift formalized through the April 2017 constitutional referendum and operationalized after the June 2018 elections. The analysis is situated within the broader interdisciplinary framework of political economy, which posits that economic processes are not autonomous technical phenomena but are continuously shaped by political institutions, power relations, and legal structures. From this vantage point, the article investigates how the centralization of executive authority under the presidency has fundamentally reconfigured economic governance, state-business relations, and monetary policy autonomy in Turkey. The article is structured in two main sections. The first section outlines the conceptual foundations of political economy, emphasizing its analytical utility in understanding the interplay between markets and political decision-making. The second section applies this framework to the Turkish case, tracing the institutional erosion of regulatory agencies and the Central Bank of the Republic of Turkey, the implementation and consequences of the heterodox "New Economic Model" between 2021 and 2023, and the partial return to orthodox policies under the post-2023 stabilization program. By synthesizing empirical findings, econometric analyses, and institutional assessments, the article argues that Turkey's experience illustrates a distinctive mode of post-liberal governance in which neoliberal market rules are stretched rather than abandoned, institutional safeguards are subordinated to political loyalty, and economic policymaking becomes increasingly articulated with personalized decision-making concentrated within the executive. The Turkish case thus offers critical insights into the vulnerabilities of emerging market economies facing the tension between political centralization and institutional credibility.

Relevance of the Article. This article is relevant to comparative political economy and emerging market studies as it provides a systematic case study of how executive centralization reshapes economic governance, erodes central bank autonomy, and generates macroeconomic instability in a major developing economy, offering critical insights into the vulnerabilities created when political centralization overrides technocratic independence.

Problem of the Article. The central problem is the paradox of institutional erosion under formal statutory continuity: despite the preservation of legal frameworks guaranteeing central bank independence, Turkey experienced a dramatic deterioration in monetary policy credibility, chronic inflation, and exchange rate volatility following the transition to the Presidential Government System. The article explains how informal political pressures circumvented formal protections to produce outcomes equivalent to direct political control.

Object of the Article. The object of this study is the political economy of Turkey's Presidential Government System and its impact on economic governance structures, with a specific focus on the Central

Bank of the Republic of Turkey, regulatory agencies, state-business relations, and macroeconomic outcomes during the 2017–2026 period.

Goal of the Article. The goal is to synthesize academic literature, empirical data, and institutional reports to construct a coherent explanatory account of the causal mechanisms linking political system transformation to the erosion of economic institutional credibility and macroeconomic instability in Turkey.

Objectives of the Article:

1. To define political economy as an interdisciplinary analytical framework that examines the mutual interaction between political institutions and economic processes, thereby establishing the conceptual foundation for the study.
2. To analyze the institutional erosion of the Central Bank of the Republic of Turkey under the Presidential Government System, examining the mechanisms of de facto independence loss and its macroeconomic consequences.
3. To evaluate the heterodox "New Economic Model" of 2021–2023 and the subsequent return to orthodox monetary policy, assessing their impacts on inflation, exchange rate stability, and growth dynamics.

Methods of research. This study employs a systematic literature review and qualitative synthesis methodology. It integrates peer-reviewed academic studies, NBER working papers, IMF Article IV Consultation reports, credit rating agency assessments, and official Turkish statistical data from TÜİK and TCMB. The analysis is guided by a political economy framework examining the interplay between political institutions, power relations, and economic outcomes, using narrative synthesis to integrate qualitative institutional analyses with quantitative empirical findings.

Definition of Political Economy

Political economy is an interdisciplinary field within the social sciences that argues that the economy is not merely a technical process but is continuously shaped by political institutions, legal systems, power relations, and social preferences; unlike classical economics, it takes as a fundamental premise that markets do not operate independently of the state or politics, and that economic outcomes cannot be fully understood without examining the political and institutional context in which they are embedded (Weingast & Wittman, 2008). In its most comprehensive definition, political economy is the branch of science that examines the mutual interaction between the production, distribution, and consumption of goods and services in a society and the political decision-making mechanisms that regulate these processes; in answering the questions of "who produces what, when, how, and for whom," it draws not only on supply-demand mechanisms but also on property rights, tax policies, regulatory institutions, and social power dynamics (Elkin, 2009). Political economy can therefore be reduced neither to pure economic theory nor to pure political science; rather, it seeks answers to both normative and positive questions at their intersection, investigating not only what is but also what ought to be in the organization of economic life, and it recognizes that economic policies inevitably create winners and losers whose fortunes depend as much on political influence as on market efficiency (Weingast & Wittman, 2008; Elkin, 2009). The field traces its intellectual origins to classical thinkers such as Adam Smith, David Ricardo, and Karl Marx, who analyzed the relationship between wealth creation, labor, and state power; in the twentieth century, the rise of neoclassical economics temporarily narrowed the discipline's focus to mathematical modeling, but the limitations of purely technical approaches in explaining phenomena such as financial crises, rising inequality, and institutional failure have prompted a resurgence of political economy as an essential analytical lens (Weingast & Wittman, 2008). The significance of political economy manifests itself in three main contributions: first, it demonstrates that complex social problems such as economic crises, income inequality, trade wars, and climate change are not merely technical issues but also outcomes of political choices and power struggles; second, it helps us understand how institutions that shape the functioning of markets – including central banks, legislatures, and international trade agreements emerge, evolve, and sometimes fail under the weight of competing interests; and third, by raising the question of who gains and who loses in the distribution of welfare, political economy offers policymakers not only growth but also normative goals such as justice, equity, and sustainability (Policy Exchange, 2023). Today, a political economy perspective is indispensable for understanding the tension between capitalism and democracy, the pressure of globalization on national sovereignty, the transformation of welfare states, and the new power centers created by the digital economy and platform capitalism (Policy Exchange, 2023). In summary, political economy is a research field that analyzes economic phenomena without detaching them from their political and social

context, thereby providing a profound understanding both theoretically and practically; its enduring importance lies in moving beyond mere efficiency calculations to make visible the underlying power relations, institutional arrangements, and value choices that fundamentally shape economic life and the distribution of its benefits (Weingast & Wittman, 2008; Elkin, 2009).

In summary, political economy is a research field that analyzes economic phenomena without detaching them from their political context, thereby providing a profound understanding both theoretically and practically. Its importance lies in moving beyond mere efficiency calculations to make visible the underlying power relations and value choices in economic life.

Political System Transformation in Turkey

The political economy of Turkey's transition from a parliamentary to a presidential system offers a critical case study for understanding how institutional restructuring reshapes economic governance, state-business relations, and policy-making autonomy in emerging markets. Following the April 2017 constitutional referendum and the June 2018 elections that operationalized the Presidential Government System, Turkey abandoned the parliamentary model that had been in place since 1876; this change was legitimized by citing the prolonged political instability, economic crises, and coalition governments that had afflicted the country during the 1990s and early 2000s (Kildaci, 2024). The new system concentrated executive authority in the presidency, abolished the prime ministry, and restructured the policy advisory apparatus around the Office of the Presidency, fundamentally altering the institutional architecture of economic decision-making processes (Policy Advisory System in Türkiye, Taylor & Francis, 2025; Oyan, 2019).

The transition to the presidential system was not merely a procedural adjustment but signified a radical transformation in the neoliberal trajectory that the state had followed since the 1980s. Whereas earlier neoliberal reforms emphasized depoliticization, decentralization, and institutionalization as guiding principles, the post-2018 period witnessed a decisive shift toward politicized, centralized, and personalized management practices in the economic sphere (Economic Management under the Presidential System of Government in Turkey, METU, 2021). This shift was accompanied by the erosion of checks and balances and the replacement of merit-based governance with a system prioritizing loyalty and alignment with presidential preferences; the dismissal of experts who resisted presidential directives and the appointment of politically aligned advisors to key positions became concrete indicators of this transformation (Policy Advisory System in Türkiye, Taylor & Francis, 2025). The RANE case study on economic policymaking under increased political centralization documents that the 2017 constitutional reform consolidated power in the presidency and correspondingly increased executive influence over central bank policies, a process that coincided with high and rising inflation and the deterioration of Turkey's international financial position (Jaeger, 2024).

The political economy of budgeting under the new system reflects a pronounced autocratization effect. Analysis of data from Turkey's Ministry of Treasury and Finance demonstrates that executive aggrandizement has rendered budgeting more centralized, with spending patterns shifting toward institutions directly controlled by the incumbent. The parliament's role in fiscal oversight has diminished, while the presidential office and its associated directorates have gained a larger share and greater discretion over budgetary expenditures. Furthermore, spending on judicial and military institutions exhibits a volatile trend, influenced by the executive's political control and the broader dynamics of democratic backsliding (Kimya & Savage, 2025). This centralization of fiscal authority represents an under-investigated dimension of how regime dynamics reshape the political economy of public finance.

Institutional transformation has extended deeply into regulatory governance. The Presidential Government System has redefined the role and functioning of regulatory and supervisory agencies, with centralized practices in appointments and budgetary control significantly weakening their institutional autonomy. While these agencies maintain a legal framework that emphasizes independence, their de facto dependence on the executive has intensified, highlighting the tension between administrative efficiency and democratic accountability (Karataş, 2025). This pattern is consistent with broader findings indicating that dependence on foreign capital flows for economic growth creates an unstable macroeconomic policy environment, incentivizing ruling coalitions to expand executive powers to control monetary policy and banking regulation, resulting in a dramatic decay of bureaucratic autonomy since 2013 (Navigating Financial Cycles, SOAS). The 2021–2023 heterodox crisis, characterized by unorthodox monetary policy and state capitalist features, has

been interpreted in the scholarly literature as a direct reflection of a fragile and unconsolidated presidential system and its associated mode of economic governance (Öniş & Kutlay, 2021).

The transformation of state-business relations constitutes a fundamental pillar of the new political economy. The AKP government has systematically built a loyal business class through an elaborate system of rewards and punishment since 2002, but this process intensified and became institutionalized following the transition to the presidential system. Politically motivated interventions in domestic markets aimed at restructuring underlying power dynamics have become institutionalized features of executive takeovers. The AKP politicized state institutions, including debt collection, tax authorities, privatization, and public procurement and eroded the rule of law to distribute rents and resources to its supporters, transfer capital from its opponents, and discipline dissidents in business circles. These mechanisms allowed the party to skew the political playing field in its favour through access to private resources and disproportionate media control, underpinning the consolidation of competitive authoritarian rule (Esen & Gumuscu, 2017). Empirical analysis of 867,260 public procurement deals between 2010 and 2019 reveals that the level of competitiveness, measured by the effective number of companies receiving public procurement contracts, decreased substantively, particularly after 2013 a trend that has continued and intensified under the presidential system (Kutlay & Yıldırım, 2024).

The political economy literature demonstrates that the transition to the presidential system in Turkey has fundamentally transformed state-market relations and resource allocation mechanisms. Under the new system, the executive branch has centralized economic decision-making processes within the Presidency, eroded the autonomy of regulatory institutions, shaped budget allocations according to political priorities, and converted public procurement and privatization processes into loyalty-based resource transfer mechanisms. The executive leadership under Erdoğan, while managing structural economic problems such as rising debt burdens and chronic inflation, has utilized infrastructure investments and social expenditures as instruments to consolidate political support; simultaneously, it has restructured capital accumulation processes through clientelist networks, reinforcing the formation of a state-dependent business class (Džihic & Beraia, 2025). The Turkish experience reveals a post-liberal mode of economic governance that stretches neoliberal market rules without fully abandoning them and selectively intensifies state intervention. In this hybrid model, institutional safeguards such as central bank independence are eroded in favour of political loyalty, fiscal discipline is subordinated to electoral cycles, and economic policymaking is increasingly articulated with personalized decision-making processes concentrated within the Presidential Complex (What Türkiye reveals about post-liberal governance, ECPR, 2025).

Central Bank Independence and Macroeconomic Instability in Turkey

The institutional erosion of the Central Bank of the Republic of Turkey (CBRT) over the past decade presents a striking case study of the vulnerabilities of central banking in emerging market economies. Following the 2001 crisis, legal reforms granted the CBRT instrument independence and an inflation-targeting regime, achieving a relatively high legal independence score among developing countries according to the Cukierman, Webb, and Neyapti index (Cukierman et al., 1992; Eroğlu, 2005). However, from the mid-2010s onward, systematic political pressure from the executive branch significantly eroded the CBRT's de facto independence through informal mechanisms rather than statutory changes, as evidenced by six gubernatorial changes between 2016 and 2025, nearly all following policy disagreements over interest rates (Reuters, 2024; Semantic Scholar, 2018). This erosion is further substantiated by Akarsu's (2021) econometric analysis demonstrating that the transition to the presidential system constitutes a significant factor increasing exchange rate volatility, with recurring exchange rate shocks after 2018, including August 2018, March 2021, December 2021, and the post-2023 election period reflecting institutional rather than purely external determinants. The USD/TRY exchange rate consequently rose from 4.8 in 2018 to 44.8 by April 2026 (P.A. Turkey, 2025; TCMB, 2026).

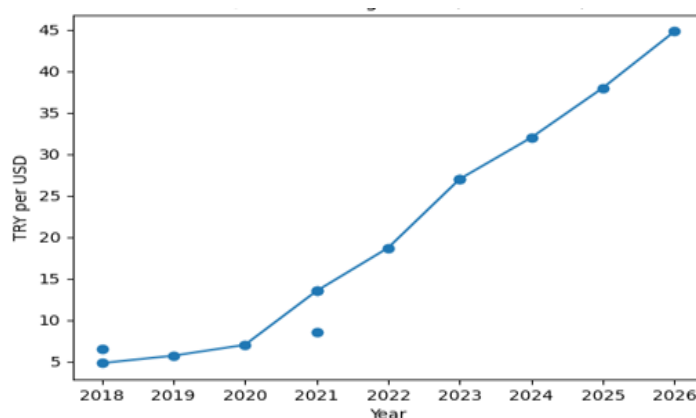


Fig. 1. USD/TR Exchange Rate (2018–2026)

Source: CBRT (policy rate) and TURKSTAT (inflation data)

Trading Economics, 2026). Öge's (2018) econometric analysis reveals a pronounced asymmetry in the CBRT's reaction function, wherein the Bank systematically delays raising rates in response to inflationary pressures while reacting far more swiftly to political demands for rate cuts, and during the 2021–2023 period the Bank's rhetoric-action consistency deteriorated severely as the policy rate was reduced from 19 percent to 8.5 percent even as inflation accelerated toward 85 percent.

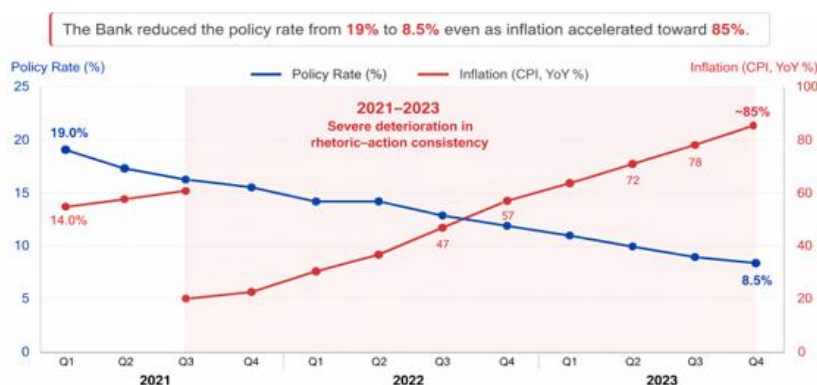


Fig. 2. Deterioration in Rhetoric-Action Consistency (2021–2023)

Source: Central Bank of the Republic of Turkey (CBRT); Turkish Statistical Institute (TurkStat)

This erosion of credibility measurably amplified exchange rate pass-through, with structural VAR analyses confirming that as the CBRT's commitment to inflation targeting weakened under political pressure, exchange rate uncertainty increased and the transmission of currency movements to domestic prices intensified, particularly affecting producer prices (Gayaker, n.d.; Revisiting the Exchange Rate Pass-Through in Turkey Economy, 2022; Price Rigidities, Central Bank Credibility, and Exchange Rate Pass-Through, Doğuş University).

The culmination of institutional erosion was the heterodox "New Economic Model" implemented between 2021 and 2023, which aimed to achieve current account surplus, employment growth, and economic expansion through interest rate cuts based on a theoretical framework that inverted the conventional relationship between interest rates and inflation, an approach situated by critical scholarship within the neoliberal development trajectory of peripheral economies (Turkey in Turbulence, 2023). Kara and Simsek's (2025) NBER working paper models this episode as an interconnected destabilizing chain reaction – political pressure for low interest rates generating inflation, widening the current account deficit, triggering exchange rate depreciation, and producing further inflation – that ultimately compelled a return to orthodox monetary policy and imposed substantial costs on the real economy. Inflation peaked at 85 percent in October 2022, remained at 65 percent in 2023 and 44.4 percent in 2024, and closed 2025 at 30.9 percent, with services inflation exhibiting particular rigidity at 44 percent in 2025 while goods inflation declined to 25 percent, constituting a primary obstacle to the disinflation process (TCMB, 2026; TCMB Blog, 2026; Kara & Simsek, 2025). GDP growth followed an

unstable trajectory, averaging 3-5 percent during 2018–2024 but largely financed by credit expansion and public spending, while the growth regime shifted from the export-oriented and productivity-driven model of 2002–2013 toward a pattern reliant on domestic consumption, construction, and credit expansion, raising serious concerns regarding sustainability (P.A. Turkey, 2025; Repression and Growth in the Periphery of Europe, Universitat Pompeu Fabra, 2024). According to TÜİK data, the Turkish economy grew by 3.6 percent in 2025, with fourth-quarter growth at 3.4 percent year-on-year, GDP per capita reaching 712,200 TL, and the budget deficit-to-GDP ratio declining from 4.7 percent in 2024 to 3.6 percent in 2025 (TÜİK, 2026; Ministry of Trade, 2026).

The labor market registered a notable performance, with the unemployment rate falling by 0.4 percentage points to 8.3 percent in 2025, the lowest level in 21 years and standing at 8.5 percent in February 2026, although the persistently high underutilized labor force and a labor force participation rate of 49.0 percent, well below OECD averages, indicate continuing structural weaknesses (TÜİK, 2026; AA, 2026; SBB, 2026). The heterodox experiment also necessitated heavy foreign exchange interventions that depleted central bank reserves and the introduction of the exchange rate-protected deposit scheme, which shifted substantial currency risk to the public balance sheet; the analysis in Kathimerini (2025) empirically documents how the stabilization program initiated in September 2023 was derailed by political interventions and how interventions aimed at suppressing the exchange rate ahead of the 2023 elections drove net reserves excluding swaps into negative territory.

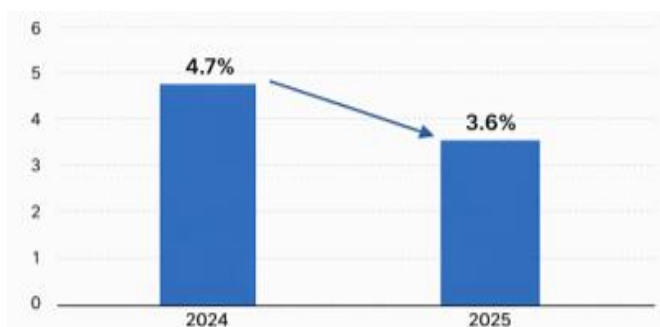
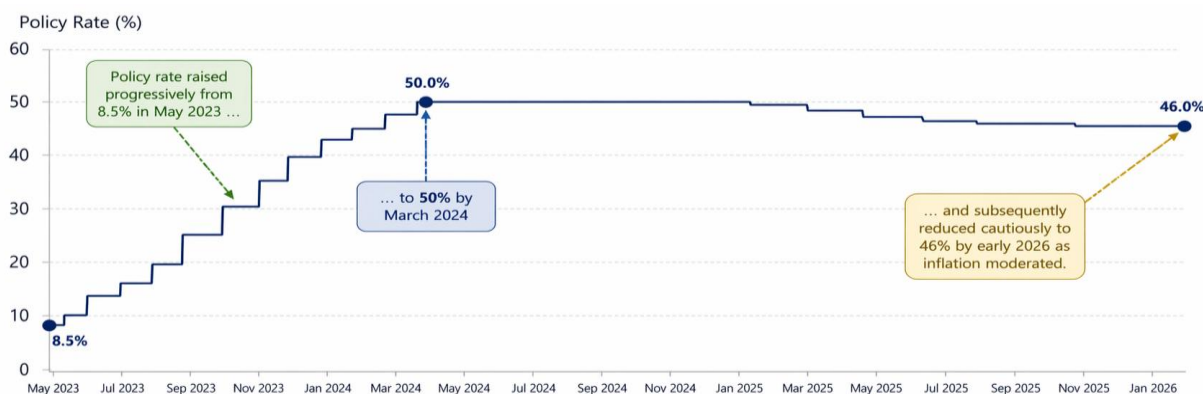


Fig. 3. Budget Deficit-to-GDP (%)

Source: Turkish Statistical Institute (TÜİK, 2026)

The post-2023 period witnessed a decisive policy reversal under the economic management of Mehmet Şimşek, with the policy rate raised progressively from 8.5 percent in May 2023 to 50 percent by March 2024 and subsequently reduced cautiously to 46 percent by early 2026 as inflation moderated, while the CBRT's gross reserves reached \$196.1 billion by January 2026 and net reserves excluding swaps exceeded \$70 billion before experiencing a sharp \$23 billion weekly decline to \$20.2 billion during market turbulence in late March 2026, exposing the fragility of the reserve buffer to political shocks (TCMB, 2026; Bloomberg HT, 2026; QNB Invest, 2026).



Source: Central Bank of the Republic of Türkiye (CBRT)
Note: Policy rate refers to the one-week repo auction rate.

Fig. 4. Policy Rate (%)

Source: Central Bank of the Republic of Türkiye (CBRT)

The IMF's 2025 Article IV Consultation commended Turkey's disinflation program for achieving "significant successes," with inflation projected to decline to approximately 33 percent by end-2025 and continue its downward trend into 2026, while growth was forecast at approximately 4.1 percent in 2025 and 4.2 percent in 2026; the IMF Executive Board confirmed these findings in February 2026 and emphasized the importance of maintaining a tight monetary policy stance, fiscal discipline, and structural reforms (IMF, 2025; IMF, 2026). Credit rating agencies Moody's and Fitch upgraded Turkey's outlook and credit rating, citing the central bank's return to policy credibility and the restoration of confidence in the lira among domestic depositors and foreign investors, although IMF reports maintained cautious language regarding institutional independence and policy predictability (Moody's, 2025; Fitch, 2026). Özel's (2025) analysis of the erosion of economic institutions in the context of democratic backsliding systematically examines how the politicization of appointments, the hollowing out of technocratic autonomy, and the centralization of policy coordination within the Presidency have intersected with the broader dynamics of institutional decay under successive AKP governments. The Turkish experience thus demonstrates unequivocally that the ultimate guarantor of central bank independence lies not in statutory texts but in the broader institutional and political environment within which monetary policy is conducted; the legal and de facto powers of the executive over the central bank persist, and the political dynamics that produced the 2021–2023 heterodox experiment have not been renounced but merely suspended under conditions of extreme macroeconomic distress, rendering the restoration of credibility slow, easily disrupted, and reversible in the absence of deeper institutional reforms (Arslantaş, 2025; Kara & Simsek, 2025; Özel, 2025; OSW, 2025; TCMB, 2026).

Conclusions

This article has provided a political economy analysis of Turkey's transition from a parliamentary system to the Presidential Government System and its profound implications for economic governance, institutional autonomy, and macroeconomic stability. The Turkish case demonstrates that the formal concentration of executive authority under the 2017–2018 constitutional reforms did not merely alter the procedural mechanics of government but fundamentally transformed the relationship between political power and economic decision-making. The centralization of policy coordination within the Presidency, the erosion of checks and balances, the politicization of regulatory agencies and public procurement, and the systematic undermining of central bank independence collectively produced a distinctive mode of post-liberal governance in which neoliberal market rules were stretched rather than abandoned and institutional safeguards were subordinated to political loyalty (Kildaci, 2024; Policy Advisory System in Türkiye, 2025; Karataş, 2025). The heterodox "New Economic Model" of 2021–2023 represented the culmination of this institutional erosion, generating a destabilizing chain reaction of inflation, currency depreciation, and reserve depletion that imposed substantial costs on the real economy before compelling a return to orthodox monetary policy (Kara & Simsek, 2025; Turkey in Turbulence, 2023). While the post-2023 stabilization program under Mehmet Şimşek has achieved notable progress in reducing inflation and rebuilding reserves, the underlying institutional vulnerabilities – including the President's unchecked authority over central bank appointments and the persistence of personalized decision-making structures – render these gains fragile and reversible in the absence of deeper institutional reforms (IMF, 2026; OSW, 2025; Özel, 2025). The Turkish experience thus offers a cautionary tale for emerging market economies: the ultimate guarantor of monetary stability and sustainable growth lies not in the formal architecture of statutes but in the broader institutional and political environment within which economic policy is conducted. When that environment is characterized by hyper-centralization, the erosion of technocratic autonomy, and the subordination of economic rationality to short-term political imperatives, even robust legal frameworks prove insufficient to prevent institutional decay and macroeconomic instability (Arslantaş, 2025; What Türkiye reveals about post-liberal governance, ECPR, 2025).

References

1. AA. (2026). Türkiye'de işsizlik oranı son 21 yılın en düşük seviyesine indi. *Anadolu Ajansı*.
2. Adar, S., & Seufert, G. (2021). Turkey's presidential system after two and a half years: An overview of institutions and politics. *SWP Research Paper*.
3. Akarsu, M. Z. (2021). The Impact of the Turkish Presidential System on the Turkish Lira. *Journal of Banking and Financial Economics*, 15(1), 14-24.

4. Arslantaş, D. (2025). Authoritarian Technocracy in Turkey: Presidentialism, Accountability, and Executive Power. *POLS Seminar*, Bilkent University.
5. Bakir, C. (2025). Policy Advisory System in Türkiye. In *Policy Advice in an Authoritarian Context*. Taylor & Francis.
6. Bloomberg, H.T. (2026). Swap hariç rezerv bir haftada 23 milyar dolar geriledi. *Bloomberg HT*.
7. Cukierman, A., Webb, S. B., & Neyapti, B. (1992). Measuring the Independence of Central Banks and Its Effect on Policy Outcomes. *The World Bank Economic Review*, 6(3), 353-398.
8. Džihic, V., & Beraia, T. (2025). The Political Economy of Contemporary Populist Authoritarianism: The Examples of Poland, Serbia and Turkey. *OIIP Policy Brief*.
9. eKathimerini. (2025). Turkey: When domestic politics intervene. *eKathimerini*.
10. Economic Management under the Presidential System of Government in Turkey: Beyond the Depoliticization versus Repoliticization Dichotomy. (2021). *Journal of Balkan and Near Eastern Studies*. METU Open Access.
11. Elkin, S. L. (2009). Political Economy. In *The Oxford Handbook of Political Science*. Oxford University Press.
12. Eroğlu, N. (2005). *CWN bağımsızlık ölçütlerinin TCMB'ye uygulanması*. Doğu Üniversitesi.
13. Esen, B., & Gumuscu, S. (2017). Building a Competitive Authoritarian Regime: State-Business Relations in the AKP's Turkey. *Journal of Balkan and Near Eastern Studies*.
14. Fitch Ratings. (2026). Fitch Upgrades Outlook on Turkey to Positive. *Fitch Ratings*.
15. Gayaker, S. (n.d.). The deterioration in credibility, destabilization of exchange rate and the rise in exchange rate pass-through in Turkey. *FBU Academic Repository*.
16. IDEAS/RePEc. (2025). Consistency of the Central Bank of the Republic of Türkiye's Monetary Policy Stance. *IDEAS/RePEc*.
17. IMF. (2025). Republic of Türkiye: Staff Concluding Statement of the 2025 Article IV Mission. *International Monetary Fund*.
18. IMF. (2026). IMF Executive Board Concludes 2025 Article IV Consultation with Türkiye. *International Monetary Fund*.
19. Jaeger, M. (2024). Turkey: A Case Study in Economic Policymaking Under Increased Political Centralization. *RANE/Stratfor*.
20. Kara, A. H., & Simsek, A. (2025). Türkiye's Homemade Crises. *NBER Working Paper*.
21. Karataş, A. (2025). Analysis of Institutional Independence and Autonomy of Regulatory and Supervisory Agencies in the Context of the Presidential Government System. *Kırıkkale Hukuk Mecmuası*, 5(2), 845-872.
22. Kildaci, G. (2024). *Transformation of the governance system in Turkey – from a parliamentary system to a presidential system*. University of Warsaw.
23. Kimya, F., & Savage, J. (2025). Political Economy of Budgeting Under Autocratization. *British Journal of Middle Eastern Studies*.
24. Kutlay, M., & Yıldırım, K. (2024). Authoritarian populist turn and market capture in Turkey: The political economy of public procurement. *Competition & Change*, 28(3).
25. Ministry of Trade. (2026). *Ekonomik Görünüm*. T.C. Ticaret Bakanlığı.
26. Moody's. (2025). Moody's Raises Turkey's Sovereign Debt Rating. *Moody's Investors Service*.
27. *Navigating Financial Cycles: Economic Growth, Bureaucratic Autonomy, and Regulatory Governance in Emerging Markets*. (n.d.). SOAS University of London.
28. Öge, P. (2018). Asymmetries in Monetary Policy Reaction Function and The Role of Uncertainties: The Case of Turkey. *Routledge Journals*, Taylor & Francis.
29. Öniş, Z., & Kutlay, M. (2021). The anatomy of Turkey's new heterodox crisis: the interplay of domestic politics and global dynamics. *Turkish Studies*, 22(3).
30. OSW (Centre for Eastern Studies). (2025). Turbulent Stabilisation: Turkey's Economy Under Şimşek's Supervision. *OSW*.
31. Oyan, O. (2019). The Transformation in Public Finance Administration. In *34th International Public Finance Conference*. Istanbul University Press.
32. Özel, I. (2025). *Erosion of economic institutions in the age of democratic backsliding: an analysis of the Turkish case*. Universidad Carlos III de Madrid.
33. P.A. Turkey. (2025). *Turkey's Economic Decline Under the Presidential Government System: A Data-Driven Analysis*. P.A. Turkey.
34. Policy Exchange. (2023). The Importance of Political Economy. *Policy Exchange Research Note*.
35. *Price Rigidities, Central Bank Credibility, and Exchange Rate Pass-Through*. (n.d.). Doğu University.
36. QNB Invest. (2026). TCMB Rezervleri 192,2 Milyar Dolara Yükseldi. *QNB Invest*.
37. *Repression and Growth in the Periphery of Europe: The Politics of Changing Growth Regime in Turkey*. (2024). Universitat Pompeu Fabra.
38. Reuters. (2024). Turkey's revolving door: Five years, six central bank chiefs. Reuters.
39. *Revisiting the Exchange Rate Pass-Through in Turkey Economy*. (2022).

40. SBB. (2026). *İstihdam. Strateji ve Bütçe Başkanlığı*.
41. Semantic Scholar. (2018). *Erosion of Central Bank Independence in Turkey*. Semantic Scholar.
42. TCMB. (2026). Günlük Döviz Kurları. *Türkiye Cumhuriyet Merkez Bankası*.
43. TCMB. (2026). TÜİK verileri: Tüketici Fiyat Endeksi-Yıllık (%). *Türkiye Cumhuriyet Merkez Bankası*.
44. TCMB Blog. (2026). 2026 Yılı Tüketici Fiyat Endeksindeki Güncellemeler. *TCMB Blog*.
45. Trading Economics. (2026). Türk Lirası - Fiyat - Grafik - Tarihsel veriler. *Trading Economics*.
46. TÜİK. (2026). GSYH Büyüme Hızı-Yıllık (%) 2025/4 (Çeyrek). *Türkiye İstatistik Kurumu*.
47. TÜİK. (2026). İşsizlik Oranı (%) 2026/2 (Ay). *Türkiye İstatistik Kurumu*.
48. Turkey in Turbulence: Heterodoxy or a New Chapter in Neoliberal Peripheral Development? (2023). *Development and Change, Wiley Online Library*.
49. Turkey's monetary policy shows inertia, regime shifts. (2025). IDEAS/RePEc.
50. University of Texas. (n.d.). *A Tale of Two Central Banks: Turkey and the United States*. University of Texas.
51. Weingast, B. R., & Wittman, D. A. (Eds.). (2008). *The Oxford Handbook of Political Economy*. Oxford University Press.
52. What Türkiye reveals about post-liberal governance. (2025). *The Loop, ECPR*.

CHALLENGES AND RISKS OF APPLYING FINTECH SOLUTIONS IN BUSINESS

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Keywords: FinTech, cybersecurity, regulation, digital transformation, legacy systems, organisational preparedness, business risk.

Abstract

This article examines the main risks and implementation challenges that emerge when businesses adopt FinTech solutions. The study is theoretical-analytical in nature and is based on recent peer-reviewed literature on FinTech, digital transformation, regulation, cybersecurity, and organisational readiness. The analysis shows that the most persistent risk groups are cybersecurity and data-protection exposure, regulatory and compliance complexity, technological dependence on legacy and external systems, and gaps in competencies and organisational preparedness. The reviewed literature also indicates that these risks rarely appear in isolation. Instead, they interact and strengthen one another, especially in smaller firms with limited resources. The article argues that FinTech implementation should be treated not only as a technology decision, but also as a broader managerial challenge requiring coordinated attention to governance, infrastructure, compliance, and employee capability.

Introduction

The relevance of this topic is related to the fast expansion of digital financial technologies in business practice. FinTech is no longer limited to startups or consumer payment apps. It increasingly affects payment systems, lending, compliance, and data-intensive service delivery. Academic books on the subject likewise emphasise that FinTech should be understood as a broader transformation of financial services, market infrastructure, and regulation rather than only as a collection of isolated tools (Buckley et al., 2023; Liaw, 2021).

The problem of the article is that FinTech is often discussed through the language of speed, innovation, convenience, and improved customer experience, whereas the main implementation risks are still not always integrated into business decision-making. In practice, businesses must deal not only with the opportunities created by digital finance, but also with cybersecurity threats, regulatory obligations, infrastructure limitations, and capability gaps that affect the actual success of implementation (Hughes et al., 2024; Javaheri et al., 2024; Liu et al., 2025).

The object of the article is the application of FinTech solutions in business.

The aim of the article is to examine the main challenges and risks related to the application of FinTech solutions in business.

Objectives of the article:

1. to identify the main risk groups discussed in recent FinTech literature;
2. to examine how cybersecurity, regulation, technological dependence, and competency gaps influence FinTech implementation in business;
3. to compare the implications of these risks for SMEs, startups, and incumbent financial institutions;
4. to assess the managerial implications of FinTech-related risks for sustainable business implementation.

Research questions:

1. What risks are most consistently associated with FinTech implementation in business?
2. How do these risks differ across types of organisations?
3. Why should FinTech implementation be treated as a strategic management issue rather than only as a technical innovation?

Methods used in the article: scientific literature analysis, comparative analysis, synthesis, and structured secondary-source analysis.

Research Methodology

This article does not present an original empirical field study. It is a theoretical-analytical paper based on a structured review of recent academic literature. Such an approach is appropriate because the aim of the article is not to measure a single company case, but to identify recurring risk patterns and compare their implications across different organisational contexts.

The methodological design combines four linked methods. First, scientific literature analysis was used to identify the main concepts, recurring risk themes, and debates in peer-reviewed FinTech research. Second, comparative analysis was applied to compare how the same risk categories affect SMEs, startups, and incumbent financial institutions. Third, synthesis was used to combine findings from different studies into one

integrated framework. Fourth, secondary-source analysis helped to interpret recent evidence from empirical journal articles dealing with regulation, cybersecurity, digital transformation, and financial risk.

The source base was intentionally limited to academically reliable publications, mainly peer-reviewed journal articles, review studies, and academic books. This choice was made in order to ensure correct citation practice and to avoid unsupported claims based on weak or purely promotional sources.

Literature Review

Academic research on FinTech has expanded considerably over the last decade. Gomber et al. (2018) argue that FinTech should be understood not only as a set of new tools, but also as a broader transformation of financial intermediation, service design, competition, and institutional structures. This broader perspective is also reflected in academic book-length treatments, which present FinTech as an interconnected field shaped by innovation, market structure, and regulation (Buckley et al., 2023; Liaw, 2021). Barroso and Laborda (2022) likewise identify digital transformation, regulation, and collaboration as central strands in the modern FinTech literature.

More recent reviews confirm that the field has become more diverse and more risk-oriented. Salem and Shahimi (2025) show that FinTech scholarship has evolved from early discussions of digital banking and innovation toward broader themes such as trust, adoption, cybersecurity, regulation, inclusion, and business performance. Kou and Lu (2025) also emphasise that the growing role of artificial intelligence, machine learning, blockchain, and related technologies creates not only opportunities, but also implementation challenges that affect how organisations manage risk and change.

The literature also shows that risk in FinTech is multidimensional. Liu et al. (2025) note that digital finance changes the risk profile of financial institutions through operational, market, liquidity, and insolvency-related channels. Betancourt et al. (2026) add that financial digitalization generates strategic risks linked to governance, dependency, resilience, and the speed of technological change. This means that FinTech risk should not be reduced to one technical problem such as cybersecurity alone.

Cybersecurity is nevertheless one of the most visible and frequently discussed themes. Javaheri et al. (2024) systematise the main FinTech cyber threats by highlighting data breaches, phishing, ransomware, insider threats, and distributed denial-of-service attacks. AlBenJasim et al. (2024) reach a similar conclusion in their case-based study of FinTech cybersecurity and regulation, showing that cyber risk is intertwined with data protection, legal compliance, and trust in digital services.

Another major theme is regulation. Hutukka (2024) demonstrates that FinTech regulation differs substantially across the European Union, the United States, and China, creating uncertainty for firms operating across jurisdictions. Buckley et al. (2023) similarly emphasise that FinTech regulation must balance innovation, systemic stability, data governance, and market integrity, which means that regulation may function both as a constraint and as an adaptive governance mechanism.

Finally, the literature increasingly connects successful FinTech implementation with organisational readiness. Hughes et al. (2024) emphasise that digital transformation in finance is shaped by legacy systems, governance structures, cultural resistance, and capability gaps. Albuainain and Ashby (2025) similarly show that FinTech adoption is affected by knowledge constraints, perceived risk, trust, and the quality of institutional support. Taken together, these studies suggest that FinTech implementation is a strategic and organisational issue as much as a technological one.

Comparative Assessment of FinTech Risk Implications for Business

1. Cybersecurity and Data Protection Risks

Cybersecurity is consistently presented in the academic literature as one of the most serious risks associated with FinTech implementation. The reason is straightforward: FinTech solutions rely on the continuous processing, storage, and transfer of sensitive financial and personal data. This makes them attractive targets for cybercriminals and raises the business consequences of technical failure. Javaheri et al. (2024) show that FinTech cyber threats are not limited to one attack type, but include a wider ecosystem of phishing, ransomware, insider threats, service disruption, and data leakage.

The business relevance of this risk is that cyber incidents do not remain purely technical. They can quickly become legal, financial, and reputational events. Case-based evidence from Bahrain shows how cybersecurity, data protection, and regulatory compliance intersect in FinTech practice, especially where digital financial services depend on interconnected systems and evolving oversight requirements (AlBenJasim et al., 2024).

This risk is particularly acute for smaller firms and startups. They often depend on outsourced cloud services, payment infrastructure, and external authentication systems, yet they may have limited internal security capacity. Incumbent financial institutions usually have stronger compliance structures, but they often manage larger and more complex digital environments, which increases the scope of exposure. In both cases, the literature supports the same conclusion: cyber resilience must be treated as a governance issue embedded in broader risk management, not as an isolated technical control (Javaheri et al., 2024; AlBenJasim et al., 2024).

Table 1

Cybersecurity risk dimensions in FinTech implementation

Risk dimension	Typical manifestation	Business implication
Data breaches	Unauthorised access to financial and personal data	Legal exposure, loss of trust, reputational damage
Service disruption	DDoS attacks, platform outages, interrupted payment flows	Operational disruption and customer dissatisfaction
Fraud and phishing	Credential theft, social engineering, account compromise	Direct financial loss and weaker consumer confidence
Third-party vulnerabilities	Weaknesses in outsourced cloud, API, or authentication providers	Extended attack surface and governance complexity

*Source: compiled by the author based on Javaheri et al. (2024), AlBenJasim et al. (2024), and Betancourt et al. (2026)

2. Legal Regulation and Compliance Challenges

Regulation is frequently described as a barrier to FinTech development, but the literature suggests a more balanced interpretation. Regulation also performs a stabilising role by protecting consumers, reducing systemic risk, and structuring market trust. Hutukka (2024) shows that FinTech law differs substantially across major jurisdictions, especially in relation to licensing, payments, digital assets, data protection, and supervisory scope. This creates additional complexity for firms that operate across borders or across several financial functions.

From a business perspective, the main challenge is not regulation as such, but regulatory fragmentation and the speed of legal change. A company may need to comply simultaneously with rules on payments, privacy, anti-money-laundering obligations, customer due diligence, and cybersecurity. Buckley et al. (2023) show that adaptive and innovation-sensitive regulatory approaches may strengthen oversight while still supporting market development, but they also confirm that the governance environment matters for how firms organise their digital activity.

The implications differ across organisational types. Startups and SMEs often experience regulation as a heavy cost because they have limited legal capacity and fewer specialised compliance resources. Incumbent financial institutions are generally more experienced in dealing with regulators, yet they may struggle with the volume and rigidity of internal controls required for digital change. The literature therefore suggests that regulation should be interpreted as both a business constraint and a legitimacy-building mechanism that affects market entry, scalability, and trust (Hutukka, 2024; Buckley et al., 2023; Gomber et al., 2018).

Table 2

Regulatory challenges and business implications

Challenge	Why it arises	Implication for firms
Jurisdictional differences	FinTech law varies across countries and regulatory bodies	Higher compliance costs in cross-border operations
Overlapping obligations	Payments, privacy, AML, and cyber rules may apply simultaneously	Need for integrated governance and legal coordination

Regulatory uncertainty	Innovation often moves faster than legal adaptation	Delays in scaling and product development
Compliance asymmetry	Small firms face similar obligations with fewer internal resources	Competitive disadvantage for startups and SMEs

**Source: compiled by the author based on Hutukka (2024), Buckley et al. (2023), and Gomber et al. (2018)*

3. Technological Dependence and Integration Problems

A large part of the literature on FinTech implementation points to the tension between innovation and technological dependence. Businesses often adopt new digital services while still relying on legacy systems, fragmented databases, and old operating routines. Hughes et al. (2024) show that digital transformation in finance is repeatedly constrained by legacy infrastructure, weak alignment between business and technology goals, and uneven organisational support for change.

The problem is not limited to internal infrastructure. FinTech implementation can also create new dependence on external technology vendors, cloud providers, data intermediaries, and embedded service platforms. In strategic terms, this means that the adoption of a flexible digital solution may reduce one type of limitation while increasing another. Betancourt et al. (2026) explicitly connect digitalization with strategic dependency and resilience challenges, while Barroso and Laborda (2022) stress that the transformation of financial services is shaped by the broader architecture of collaboration and inter-organisational integration.

This challenge affects firms differently. Startups often have more flexible systems and can scale faster, but they may depend heavily on external platforms. Large institutions usually have more resources and stronger control structures, yet the cost of integration is higher because legacy systems are deeply embedded. The comparative assessment therefore suggests that technological dependence should be analysed not only as an IT problem, but as a business continuity and strategic flexibility issue (Hughes et al., 2024; Betancourt et al., 2026).

Table 3

Comparative characteristics of legacy and modern FinTech environments

Characteristic	Legacy-oriented environment	Modern FinTech-oriented environment
Architecture	Monolithic and difficult to modify	Modular, API-based, and more flexible
Integration	Slow connection to new tools and services	Higher interoperability and faster adaptation
Governance burden	Heavy maintenance and technical debt	More agility, but stronger vendor-management needs
Strategic effect	Reduced innovation speed	Higher flexibility, but also platform dependency risk

**Source: compiled by the author based on Hughes et al. (2024), Barroso and Laborda (2022), and Betancourt et al. (2026)*

4. Competency Gaps and Organisational Preparedness

FinTech implementation depends not only on technology, but also on the ability of organisations to understand, govern, and use that technology effectively. This includes digital literacy, financial knowledge, regulatory awareness, cybersecurity competence, and the ability to coordinate change across departments. Academic handbook evidence likewise shows that FinTech adoption requires interdisciplinary capabilities that connect innovation, operations, finance, and governance (Liaw, 2021).

Recent review evidence also indicates that trust and security are central to FinTech adoption in banking contexts (Jafri et al., 2024). Albuainain and Ashby (2025) identify perceived risk, privacy concerns, trust, and knowledge-related barriers as central issues in customer-side FinTech adoption. These findings are useful for

explaining why adoption difficulties are not limited to technology alone, but also depend on users' confidence and organisational ability to communicate and manage digital risk.

The managerial implications are significant. SMEs may struggle because the same people often manage operations, vendor relations, and compliance at the same time. Startups may innovate rapidly but underestimate process discipline and governance maturity. Incumbent institutions usually possess more formal control structures, yet they may encounter internal inertia and skills mismatches during transformation. For this reason, competency gaps should be treated as a core implementation risk rather than as a secondary human-resource issue (Hughes et al., 2024; Salem & Shahimi, 2025).

Table 4

Key competency gaps and organisational implications

Capability area	Typical weakness	Implementation implication
Digital and financial literacy	Weak understanding of FinTech tools and risks	Slower adoption and poor decision-making
Compliance capability	Limited ability to interpret regulatory obligations	Higher legal and operational exposure
Managerial coordination	Weak alignment between technology and business goals	Fragmented implementation outcomes
Change readiness	Resistance to new routines and low trust in digital systems	Reduced long-term integration success

**Source: compiled by the author based on Hughes et al. (2024), Salem and Shahimi (2025), and Kou and Lu (2025)*

Discussion

The reviewed literature shows that the main FinTech risks are interconnected rather than independent. Cybersecurity weaknesses become more severe when organisations rely on fragmented systems or weak vendor governance. Compliance pressures become more difficult when internal competencies are limited. Legacy dependence slows down adaptation not only technically, but also organisationally, because it makes coordinated change harder. This interdependence is one reason why FinTech projects may look promising at the product level but still fail at the implementation level.

Another important point is that the same risk does not affect all businesses in the same way. Review-based evidence indicates that FinTech changes organisational risk exposure through multiple channels, including operational dependence, regulatory pressure, and technological capability gaps (Liu et al., 2025). More focused empirical studies also suggest that FinTech may alter corporate risk-taking behaviour, although these findings should be interpreted within their specific national and institutional context (Liang et al., 2025).

The discussion also suggests that the strongest academic basis for analysing FinTech in business comes from combining broad reviews, academic books, and more focused empirical research. Broad sources such as Gomber et al. (2018), Buckley et al. (2023), Liaw (2021), Salem and Shahimi (2025), and Kou and Lu (2025) help define the field and its evolution. More specific studies such as Javaheri et al. (2024), Hutukka (2024), AlBenJasim et al. (2024), and Liang et al. (2025) provide sharper evidence on the mechanisms through which risks emerge and are managed.

Conclusions

1. The analysis of academic literature confirmed that the main FinTech risk groups discussed in recent research are cybersecurity and data-protection risks, legal and compliance challenges, technological dependence and integration problems, and competency gaps linked to organisational preparedness.

2. The study showed that these risks directly influence FinTech implementation in business. Cybersecurity failures can escalate into legal, operational, and reputational problems, regulatory complexity can increase compliance burdens, technological dependence can reduce flexibility, and competency gaps can weaken the effective use of digital solutions.

3. The comparative assessment revealed that the implications of FinTech-related risks differ across organisational types. SMEs are more exposed to limited resources and skill shortages, startups are more

vulnerable to external dependency and governance immaturity, while incumbent financial institutions face stronger constraints related to legacy systems and slower organisational adaptation.

4. The analysis demonstrated that the managerial implications of FinTech adoption are broader than technology implementation alone. Sustainable use of FinTech requires integrated risk governance, regulatory readiness, investment in employee competencies, and strategic alignment between digital innovation and long-term business capabilities.

References

1. AlBenJasim, S., Dargahi, T., Takruri, H., & Al-Zaidi, R. (2024). FinTech cybersecurity challenges and regulations: Bahrain case study. *Journal of Computer Information Systems*, 64(6), 835-851.
2. Albuainain, A., & Ashby, S. (2025). Enablers and barriers in FinTech adoption: A systematic literature review of customer adoption and its impact on bank performance. *FinTech*, 4(3), 49. Available at: <https://doi.org/10.3390/fintech4030049>
3. Barroso, M., & Laborda, J. (2022). Digital transformation and the emergence of the FinTech sector: Systematic literature review. *Digital Business*, 2(2), 100028. Available at: <https://doi.org/10.1016/j.digbus.2022.100028>
4. Betancourt, C., Aranda, V., Garcia, C., & Villanueva, E. (2026). Strategic risks and financial digitalization: Analyzing the challenges and opportunities for fintech firms and neobanks. *Journal of Risk and Financial Management*, 19(1), 66. Available at: <https://doi.org/10.3390/jrfm19010066>
5. Buckley, R. P., Arner, D. W., & Zetsche, D. A. (2023). *FinTech: Finance, technology and regulation*. Cambridge: Cambridge University Press.
6. Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the FinTech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of Management Information Systems*, 35(1), 220-265.
7. Hughes, L., Seddon, J. J. M., & Dwivedi, Y. K. (2024). Disruptive change within financial technology: A methodological analysis of digital transformation challenges. *Journal of Information Technology*, 39(4), 756-783.
8. Hutukka, P. (2024). Fintech law in the European Union, the United States and China: Regulation of financial technology in comparative context. *Maastricht Journal of European and Comparative Law*, 31(5), 559-594.
9. Jafri, J. A., Mohd Amin, S. I., Abdul Rahman, A., & Mohd Nor, S. (2024). A systematic literature review of the role of trust and security on FinTech adoption in banking. *Heliyon*, 10(1), e22980. Available at: <https://doi.org/10.1016/j.heliyon.2023.e22980>
10. Javaheri, D., Fahmideh, M., Chizari, H., Lalbakhsh, P., & Hur, J. (2024). Cybersecurity threats in FinTech: A systematic review. *Expert Systems with Applications*, 241, 122697.
11. Kou, G., & Lu, Y. (2025). FinTech: a literature review of emerging financial technologies and applications. *Financial Innovation*, 11, 1. Available at: <https://doi.org/10.1186/s40854-024-00668-6>
12. Liaw, K. T. (Ed.). (2021). *The Routledge Handbook of FinTech*. London: Routledge.
13. Liang, T., Chen, Z., Zhou, C., & Lu, H. (2025). The impact of fintech on corporate risk-taking. *International Review of Economics & Finance*, 103, 104599.
14. Liu, Y., Abdul Rahman, A., Mohd Amin, S. I., & Ja'afar, R. (2025). Navigating fintech and banking risks: Insights from a systematic literature review. *Humanities and Social Sciences Communications*, 12, 717. Available at: <https://doi.org/10.1057/s41599-025-04780-4>
15. Salem, M. R. M., & Shahimi, S. A. (2025). A comprehensive analysis of FinTech (1968-2025): A bibliometric approach. *Future Business Journal*, 11, 233. Available at: <https://doi.org/10.1186/s43093-025-00652-1>

THE MIDDLE CORRIDOR AND AZERBAIJAN'S ECONOMIC DIVERSIFICATION: CHALLENGES AND STRATEGIC PROSPECTS

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Abstract

In the face of shifting global trade dynamics and geopolitical instability, the need for alternative and resilient supply chain routes has become a top priority for international markets. Against this backdrop, the Trans-Caspian International Transport Route, commonly known as the 'Middle Corridor,' has emerged as a strategic pathway connecting Asia and Europe. This paper examines the role of the Middle Corridor in Azerbaijan's economic diversification, while critically analyzing the infrastructure challenges and strategic prospects that lie ahead.

Introduction

In the face of shifting global trade dynamics and geopolitical instability, the need for alternative and resilient supply chain routes has become a top priority for international markets. Against the backdrop of the 2025 geopolitical landscape, characterized by great power rivalries and supply chain disruptions, the Trans-Caspian International Transport Route, commonly known as the 'Middle Corridor,' has transitioned from an alternative route to a strategic necessity. By bridging Asia and Europe through the Caspian Sea, Azerbaijan functions as the critical node in this multimodal logistics framework, transforming geographical proximity into systemic economic interdependence. This paper examines the role of the Middle Corridor in Azerbaijan's economic diversification, while critically analyzing the infrastructure challenges and strategic prospects that lie ahead. To this end, the study first evaluates the logistical advantages of the route, addresses the existing operational bottlenecks, and finally proposes policy recommendations to enhance the corridor's long-term competitive efficiency.

Relevance of the Article. The relevance of this study is underscored by the Middle Corridor's rapid evolution from a secondary transit option to a vital strategic necessity due to the disruption of traditional Northern trade routes and heightened global geopolitical instability. As international supply chains seek secure and efficient multimodal alternatives, understanding Azerbaijan's role as a central node in the East-West logistics framework is essential for predicting future Eurasian trade patterns. Furthermore, this research is timely as it provides a scientific justification for Azerbaijan's systemic transition from an energy-centric model to a logistics-driven economy, offering insights into how geographical proximity can be leveraged for long-term fiscal resilience amidst global decarbonization trends.

Problem of the Article. Azerbaijan's heavy reliance on fossil fuel revenues has created a structural vulnerability, making the transition toward a logistics-driven economy a fiscal necessity in the face of global decarbonization. While the Middle Corridor offers a strategic alternative for economic diversification, its multimodal complexity and existing infrastructure bottlenecks pose significant hurdles to achieving long-term sustainability. This research addresses the critical need to evaluate how intensified transport investments can effectively substitute oil dependency with a high-value, resilient transit hub.

Object of the Article. Azerbaijan's heavy reliance on fossil fuel revenues has created a structural vulnerability, making the transition toward a logistics-driven economy a fiscal necessity in the face of global decarbonization. While the Middle Corridor offers a strategic alternative for economic diversification, its multimodal complexity and existing infrastructure bottlenecks pose significant hurdles to achieving long-term sustainability. This research addresses the critical need to evaluate how intensified transport investments can effectively substitute oil dependency with a high-value, resilient transit hub.

Goal of the Article. The primary goal of this research is to evaluate the strategic role of the Middle Corridor in Azerbaijan's non-oil economic development and to identify the necessary infrastructural and digital transformations required to transition the route from a simple transport corridor into a high-value economic zone.

Objectives of the Article:

1. To examine the global strategic significance and comparative advantages of the Middle Corridor as a reliable multimodal alternative to traditional Eurasian transit routes in the context of current geopolitical shifts.
2. To assess the impact of transport infrastructure investments on Azerbaijan's transition toward a non-oil economy, identifying how the corridor serves as a catalyst for national economic diversification.

3. To identify critical structural and digital bottlenecks that hinder the corridor's efficiency and to propose integrated solutions for enhancing regional cooperation and seamless transit operations.

Methods of research: This study employs a quantitative and comparative research design to evaluate the impact of the Middle Corridor on Azerbaijan's economic diversification. The analysis applies trend analysis to transport sector investment data from the State Statistical Committee of Azerbaijan covering the 2018–2024 period to verify the strategic focus on non-oil growth. To assess long-term potential, the research incorporates predictive modeling based on EBRD container traffic estimates reaching 2040, specifically focusing on the Aktau-Baku maritime link. The scientific validity of the findings is ensured through data triangulation, cross-referencing national statistics with reports from the World Bank and EBRD. Finally, the study acknowledges certain limitations, such as regional geopolitical volatility and the dependency on multilateral cooperation, which may influence the ultimate precision of long-term logistics projections.

A Conceptual Approach to Role of Middle Corridor

The Trans-Caspian International Transport Route (TITR), globally recognized as the “Middle Corridor,” has evolved from a secondary transit option into a vital multimodal logistics framework connecting Western China and Europe. Spanning approximately 6,500 to 7,000 km, this route integrates rail, maritime, and road networks, offering a strategic alternative to the traditional Northern Corridor – which traverses Russia – and the maritime route via the Suez Canal. The route begins in China, where goods are loaded onto rail freight services originating in industrial hubs like Xi'an, Chongqing, and Urumqi. These shipments are transported westward through Kazakhstan, utilizing an extensive railway network that connects key transit hubs such as Dostyk, Altynkol, and Khorgos. Upon reaching the Kazakh Caspian Sea ports of Aktau and Kuryk, cargo is transferred onto maritime vessels that cross the Caspian Sea, a crucial yet challenging segment of the corridor. The ports of Aktau and Kuryk play a significant role in facilitating trade between Central Asia and the South Caucasus. Once across the Caspian Sea, goods arrive at Baku/Alat in Azerbaijan, where they continue their overland journey toward Europe.



Fig 1. Middle Corridor Project Map

* Source: Baku Research Institute

In recent years major International organizations such as the World Bank, EBRD, OECD analyzed the geopolitical relevance of this route has escalated significantly in light of the protracted war in Ukraine and the resulting global instability. According to the World Bank's 2023 report, 'Middle Trade and Transport Corridor: Policies and Investments to Triple Freight Volumes', before 2022, the Northern Corridor carried more than 86 percent of transport between Europe and China, while the Middle Corridor constituted less than 1 percent. Following the full-scale Russian invasion of Ukraine, the Northern Corridor became a financial and political liability, especially for Western countries aiming to counter Russian control over trade routes. Shipping volumes of the Northern Corridor dropped by half in 2023 compared to 2022. Part of this traffic moved to the Middle Corridor, with increases of 89 percent and 70 percent in 2023 and 2024 respectively.

Furthermore the Middle Corridor has many advantages. It is a relatively safer route, especially given the disruptions along the Northern Corridor due to Western sanctions on Russia and those in accessing the Suez Canal through the Bab el-Mandeb Strait due to increased Houthi attacks on vessel. The Middle Corridor's ability to integrate rail, maritime, and road transport networks offers a degree of flexibility, allowing cargo to

be rerouted based on demand fluctuations, seasonal disruptions, and shifting geopolitics. Logistics hubs, customs coordination, and trade facilitation initiatives are being actively developed to improve efficiency and enhance the competitiveness of the corridor (Aguiar, 2025). The Middle Corridor exemplifies multimodality through its integration of various transport modes, enhancing its efficiency and connectivity across Eurasia. At its core, ports along the Caspian Sea connect to railways like The Baku-Tbilisi-Kars (BTK), offering direct access to markets in Europe and Asia. The BTK Railway, which connects Azerbaijan, Georgia, and Turkey, is itself a crucial link in rail connectivity, enabling the swift movement of goods into Turkey and beyond into European networks (Mukhigulishvili, 2024). This multimodal approach not only reduces transit times but also optimizes logistical routes, promoting economic growth and regional cooperation along the corridor. In addition to providing economic revenues to corridor countries, some define the Middle Corridor as a “crossroads of peace,” echoing the “peace pipelines” strategy of the past (Valansi, 2025).

The viability of this strategic vision is fundamentally anchored in the corridor’s superior operational efficiency. As a practical manifestation of this advantage, transport time between China and Europe through the Middle Corridor is reduced to just 12 to 15 days. This stands in sharp contrast to traditional maritime routes, which typically require 40 to 60 days (World Bank, 2023). This connectivity reduces transit times considerably, making it ideal for time-sensitive cargo and leading to cost savings for shippers and businesses. According to the World Bank, by 2030, the Middle Corridor can further reduce travel times, while freight volumes could triple to 11 million tonnes, with a 30 percent increase in trade between China and the EU. As traditional supply chains face severe disruptions, the Middle Corridor serves as a critical “hedging strategy” against global shockwaves. By bypassing high-risk transit zones, the corridor provides an essential buffer for landlocked Central Asian states, shielding them from the volatility of single-vector transport dependency.

Among other opportunities, the Middle Corridor is becoming a more important route for the transportation of energy, and its significance is projected to increase in the years to come as the EU’s demand for energy resources rises and the transportation infrastructure along the corridor keeps growing. The corridor makes it possible to transport a variety of energy resources, including liquefied natural gas (LNG), natural gas, oil, green electricity, and renewable hydrogen, thereby accelerating the EU’s green transition (Mukhigulishvili, 2024). Exporting these resources to the EU can contribute to it achieving its target for renewable energy share in the total energy mix of 42.5% by 2030 and to increasing the union’s energy security (European Commission 2023). This positions the corridor not just as a trade route, but as a vital component of the global environmental agenda.

Aligned with the ascending global importance of the Middle Corridor, Azerbaijan’s emergence as a key transit hub in the South Caucasus has become increasingly pivotal. Strategically situated at the crossroads of Europe and Asia, the country shares land borders with Russia, Georgia, Armenia, Iran, and Turkey, while the Caspian Sea defines its eastern frontier. Historically an essential link on the ancient Silk Road, Azerbaijan continues to leverage its unique geographic position and vast energy resources to enhance its significance in regional and transcontinental trade. Within this framework, Azerbaijan plays a prominent role in the corridor’s development. As the strategic weight of this route grows, Azerbaijan has solidified its position as an indispensable anchor, making its multifaceted role foundational to translating the corridor’s potential into tangible global advantages. This role encompasses several key dimensions, including various economic, geopolitical, and infrastructural structures.

1. Energy sector: Azerbaijan has significant reserves of oil and natural gas, through the exploitation of which it represents an important energy supply area. The Azeri-Chirag-Guneshli (ACG) and Shah Deniz fields stand out among the fields from where energy can be exported through the route, strengthening Azerbaijan’s role in the energy markets. The transit of Azerbaijan’s oil and gas in the region also plays a key role in the relations between the energy-producing and energy-consuming countries. Through the energy resources offered by Azerbaijan and their transit, Europe can reduce its dependence on traditional energy suppliers such as Russia. This is of strategic importance in diversifying the European energy supply and increasing the security of energy source.

2. Railway connections: Azerbaijan has part of the Baku-Tbilisi-Kars (BTK) railway line, which connects the country with Georgia and Turkey. This rail link is an integral part of the Middle Corridor trade route, enabling the efficient transport of goods between Asian Countries and Europe. conditions that detract from the quality of the tourist experience.

3. Sea ports: Azerbaijan has ports that connect to the Caspian Sea, for example, the Baku Sea Port. These ports play an important role in the transportation of goods as well as maritime trade to and from Azerbaijan.

4. Economic development: Through its economic role in the Middle Corridor, Azerbaijan can also promote its own economic development. The transit opportunities can increase employment, as well as boost the logistics and trade sectors.

5. Geopolitical importance: Azerbaijan is becoming a strategically important player on the geopolitical map of the region through the trade Route of the Middle Corridor. Azerbaijan tries to maintain geopolitical balance both politically and economically. Through the transportation of energy resources and economic cooperation, the country maintains close relations not only with its traditional allies, but also with countries in other regions.

6. Peace-building role: Azerbaijan's role in the Middle Corridor can contribute to regional peace and stability, as the country actively participates in cooperation initiatives and regional economic development. Economic integration and joint projects promote good neighbourly relations with neighbouring countries. Economic recovery in the Karabakh region involves many challenges, but Azerbaijan has the opportunity to support the economic development of the region with a range of measures. Some of these measures include (Karacsony, 2023):

- Infrastructural development. Through infrastructure investments, Azerbaijan can contribute to the growth of the Karabakh economy. The development of new roads, bridges, and energy and water supply systems makes it possible to transport goods more efficiently and boost economic activity.

- Investments and financial support. Azerbaijan can provide financial support and investments to Karabakh. This can create opportunities for the development of businesses and industries, as well as create jobs.

- Labor market development. Azerbaijan can support labour market development in the Karabakh region. Through training programs, educational initiatives, and professional courses, employees' skills and competitiveness can be improved.

Economic impact on Azerbaijan's Non-Oil Sector

While Azerbaijan's pivotal role within the Middle Corridor is undeniable, the corridor itself serves as a fundamental catalyst for the country's economic diversification and long-term resilience. For decades, Azerbaijan's economic trajectory has been predominantly defined by its hydrocarbon wealth, with the strategic development of the oil and gas sector since the 1990s providing the necessary capital to ensure post-independence political and financial stability (Babayev, Ismailzade, 2020). However, this resource-centric model created a structural vulnerability due to an over-reliance on fossil fuel revenues.

As global energy markets face increasing volatility and the world accelerates its transition toward decarbonization, the inherent limitations of a resource-dependent economy have become a pressing concern. In response, Azerbaijan has strategically pivoted toward the transport and logistics sector, transforming its unique geostrategic position at the crossroads of major trade corridors into a sustainable economic asset (Baghirov, 2020). Within this context, the transition into a regional transit hub is no longer merely a strategic alternative; it has become a fiscal necessity for long-term sustainability. Consequently, the Azerbaijani government has significantly intensified capital investments in transportation infrastructure, aiming to substitute oil-dependency with a high-value logistics-driven economy.

Table 1

Capital Investment to Transport sector, million manats

	2018	2019	2020	2021	2022	2023	2024
Total	1.922,8	2.189,2	2.091,6	2.857,3	4.613,4	5.417,2	5.863,0
Activity of the overground transport and pipeline	305,2	377,5	389,8	166,9	208,5	192,8	314,2
Railway transport	7,1	1,2	1,2	0,4	0,1	0,1	0,0
Other land transport	129,8	235,8	266,8	109,2	108,6	73,6	239,7
Pipeline	168,3	140,5	121,8	57,3	99,8	119,1	74,5
Water transport	115,4	98,4	53,3	40,3	31,5	49,6	355,4
Air transport	39,4	33,7	109,7	147,1	89,3	1 004,7	184,2
Storehouses and activity of the suppozt transport	1.462,8	1.679,6	1.538,8	2.503,0	4.284,1	4 170,1	5.009,2

**Source: Azerbaijan Statistical Committee (2025)*

Table 1 clearly demonstrates that the steady increase in investments directed toward the transport sector is a direct result of Azerbaijan's economic diversification strategy. These statistical indicators serve as a primary reflection of the country's decisive steps toward strengthening the non-oil sector and transforming its transport-logistics potential into a key pillar of the national economy. Analysis shows that while the total investment in this field stood at 1,922.8 million manats in 2018, this figure nearly tripled to reach 5,863.0 million manats by 2024. This growth rate reflects not only the expansion of physical infrastructure but also the government's objective to diversify national revenue streams. According to the latest data from the State Statistical Committee, this investment policy has maintained its strategic importance into 2025. Specifically, in the first half of 2025 (January–June), 1.808 billion manats have already been directed toward fixed capital investments in the transport and storage sector. This substantial financial volume recorded in just the first six months of the year reaffirms Azerbaijan's determination to maintain its logistical base at modern standards and to solidify its role in global supply chains through domestic resource allocation.

The massive scale of these investments serves as a practical manifestation of the Middle Corridor's role as a fundamental driver of Azerbaijan's economic diversification. By funneling capital into transport-logistics infrastructure, the state has effectively positioned the Middle Corridor not just as a transit route, but as a transformative engine for the non-oil economy. In this matter, the corridor has become the primary focal point of Azerbaijan's strategic interests, as the nation increasingly prioritizes this route to transform its geographic potential into a high-value logistics asset. Azerbaijan had already initiated large-scale infrastructure projects long before the Middle Corridor's global significance surged to its current levels. This proactive strategy demonstrates that the country did not merely react to recent geopolitical shifts, but rather possessed the strategic foresight to build the necessary foundations for a transcontinental logistics hub well in advance.

A primary example of this proactive strategy is the Baku–Tbilisi–Kars (BTK) railway. According to the Official Website of the President of the Republic of Azerbaijan, initiated in 2007 under the leadership of President Ilham Aliyev, this project was envisioned as the 'Iron Silk Road.' Following its official inauguration on October 30, 2017, the BTK became the central pillar of the Middle Corridor, providing a seamless rail connection between East and West.

While Azerbaijan's early initiatives laid the foundation for the Middle Corridor, the recent surge in its global strategic importance has led the country to significantly scale up its efforts. As the corridor became a global focal point, Azerbaijan accelerated its infrastructure projects and expanded its investment scale to meet the growing demands of international trade.

To this end, the Minister of Digital Development and Transport, Rashad Nabiyev, has underscored key milestones such as the comprehensive renovation of the national railway network and the construction of three new international airports in the liberated territories. In particular, the Baku–Tbilisi–Kars (BTK) railway remains a critical component of this infrastructure, serving as the primary artery of the entire corridor.

The BTK's strategic relevance is fundamentally tied to its throughput capacity. A major technical breakthrough was achieved in 2024; following extensive modernization of the Georgian section funded by Azerbaijan, the railway's annual cargo capacity was successfully expanded from 1 million to 5 million tons (Coordinating Council of the Republic of Azerbaijan on Transit Freight, 2024). This capacity expansion effectively addresses a primary bottleneck of the Middle Corridor, facilitating a more seamless and high-volume transition of heavy freight from the Caspian Sea toward European markets.

However, this achievement represents only the initial phase of a more ambitious long-term roadmap. To ensure sustained competitiveness against global alternatives, the infrastructure is currently undergoing further strategic upgrades. These efforts aim to reach a total annual freight capacity of 17 million tons by 2034 (Dennis van der Laan, 2025). This target not only signals Azerbaijan's long-term commitment to enhancing logistical infrastructure but also highlights the corridor's evolution from a regional link into a massive-scale Eurasian artery, capable of reshaping trade dynamics between East and West.

According to the most recent data from Azerbaijan Railways (ADY) and official reports from early 2026, the corridor's operational efficiency has reached unprecedented milestones. In 2025, ADY handled a record 392 block trains, marking a substantial 37% increase compared to the 287 trains recorded in 2024. Furthermore, containerized freight – a key metric for modern global trade – rose by 19%, reaching a total of 135,300 TEU in 2025 (AzerNews, 2026; ADY, 2026).

The Port of Baku serves as another cornerstone of the Middle Corridor. Following the completion of its first phase, the port's capacity expanded to 15 million tonnes of cargo annually, including 100,000 TEU containers. Preparations are currently underway for the second phase of expansion, which is projected to raise total capacity to 25 million tonnes and accommodate an additional 500,000 TEU containers. This critical hub is evolving into a major center for East-West trade. Notably, the integration of the Baku International Sea Port

with Azerbaijan Railways in February 2025 has further strengthened the unified management of the national transport system, boosting overall operational efficiency (EU Reporter, 2025).

In addition to existing routes, Azerbaijan aims to further diversify the Middle Corridor through the implementation of the Zangezur Corridor Project. This project is designed to restore historical connectivity between Azerbaijan's western regions and the Nakhchivan Autonomous Republic. The Zangezur Corridor will provide uninterrupted transportation between the main territory of the Republic of Azerbaijan and the Nakhchivan Autonomous Republic, while also serving as a vital new segment of both the East-West and North-South transport corridors. The project will enhance integration across the Turkic World, foster a new era of regional economic collaboration, and establish a strategic link on the Eurasian logistics network (Coordinating Council on Transit Freight, 2025).

Building on these advancements, the digitalization of transport corridors is now a key focus. Today, Azerbaijan is actively working on the development of the 'Digital Transport-Logistics' information system to ensure transparency and streamline activities in the transport and logistics sector. This system aims to increase the efficiency, effectiveness, and forecasting quality of these activities, including the 'smart' management of cargo flows, tracking along the entire route, and reducing transportation times. It also involves the creation of a fully digital environment for transport and logistics operations, integrating the information systems of the country's railways, seaports, maritime agencies, and relevant state bodies involved in transit processes. This platform will enable international trade participants to access a single platform for managing all processes, including obtaining comprehensive trade-related information, understanding import-export and transit procedures, submitting applications for administrative procedures at state borders, and booking multimodal transportation services. And of course, in the future, this system will be integrated with other relevant systems along the corridor (Guliyev, 2026).

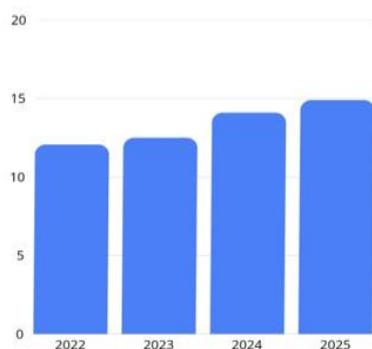


Fig. 2. Financial Performance of Azerbaijan's Transportation Sector, in billion manat (2023-2025)

** Source: Compiled by the author based on data from the State Statistical Committee and official announcements by the Minister of Digital Development and Transport, Rashad Nabiyeu, via his official X (formerly Twitter) account (as reported by Trend News Agency, 2025)*

The large-scale infrastructure projects and strategic investments implemented within the framework of the Middle Corridor have played a decisive role in the structural transformation of Azerbaijan's economy. The direct positive impact of these investments is evidenced by the consistent upward trajectory in the transportation sector's revenue. As illustrated in Figure 1, the sector's financial throughput escalated from 12.06 billion manats in 2022 to 12.5 billion manats in 2023 and then to 14.1 billion and ultimately reaching a record 14.894 billion manats by the conclusion of 2025.

This momentum is expected to persist into the near future. According to the Asian Development Bank (ADB), the sector's revenue and contribution to the national economy are projected to continue their expansion throughout 2026, driven by further optimization of transit routes and increased regional trade integration.

This sustained growth serves as a critical macroeconomic indicator of the successful implementation of Azerbaijan's economic diversification strategy. The substantial rise in transportation revenue not only increases the share of the non-oil sector in the national GDP but also effectively diversifies the state's revenue streams. This phase of economic development proves that the transport and logistics sector has evolved beyond a mere service industry into a fundamental engine of national economic resilience. By converting Azerbaijan's geographical advantages into high-value economic assets, the Middle Corridor has solidified the nation's strategic and financial standing within global supply chains high-value economic assets, the Middle Corridor has solidified the nation's strategic and financial standing within global supply chains.

The container traffic projections between the Ports of Aktau and Baku, illustrated in Figure 3, reveal a critical shift in Eurasian logistics. The exponential surge predicted between 2022 (18,000 TEU) and 2025 (80,000 TEU) is a direct consequence of the Russia-Ukraine war, which necessitated a rapid diversion of cargo from the Northern Corridor to the Middle Corridor. Azerbaijan's ability to absorb this sudden influx underscores the operational strength of its maritime infrastructure.

Looking beyond the immediate crisis, the steady climb toward 130,000 TEU by 2040 signals a permanent structural realignment of global trade routes. For Azerbaijan, these figures represent a vital pillar of economic resilience. This sustained traffic flow transforms the transport sector into a high-yielding engine of hydrocarbon-independent growth. By institutionalizing its role as the indispensable bridge between Aktau and Baku, Azerbaijan effectively hedges its economy against volatile energy markets, ensuring that its diversified economic base is driven by stable, international transit demand.

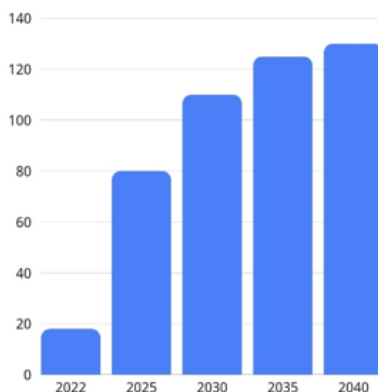


Fig 3. Container traffic estimates on the CTCN

**Source: European Bank for Reconstruction and Development (EBRD)*

Despite the promising economic prospects and projected revenue growth, the full realization of the Middle Corridor's potential faces significant structural challenges. While the route offers a strong alternative in terms of security and distance, its multimodal nature – involving rail, road, and maritime transport simultaneously – makes it logistically more complex than the traditional Northern Corridor. Currently, containers traversing this channel must cross up to six borders and two seas, necessitating highly integrated logistics services and streamlined documentation to remain competitive. The sustainable integration of the corridor into the global trade network depends on overcoming financial, technical, and geographical challenges, as the necessity of frequent loading and unloading processes across multiple modes increases the complexity and risk of delays. To address this, substantial investment in both physical and digital infrastructure is required, particularly for the littoral states of the Caspian Sea, Azerbaijan and Kazakhstan, where the optimal development of coastal ports is a prerequisite for ensuring smooth cargo flows.

A critical factor for the success of this supply route is the adoption of advanced cross-border collaboration mechanisms. Resolving logistics barriers requires the harmonization of tariffs, heightened transparency in customs services, and the simplification of regulatory procedures for transit containers. Applying an effective tariff policy and reducing the cost of integrated services are the keys to attracting foreign cargo forwarders. Moreover, the lack of infrastructure development at some regional ports and the need for sustained political commitment among actors remain challenges that require joint efforts from the leadership of the host nations. From this perspective, all parties will need to work more collaboratively to achieve the construction of an integrated, cohesive, and efficient intermodal transit corridor through improved cooperation among regional rail freight providers and state institutions.

Nevertheless, since the onset of the Russo-Ukrainian War in 2022, Azerbaijan and its partners have maintained a positive posture, positioning the corridor as a politically reliable and economically viable artery for East-West trade. Azerbaijan, located at the heart of this transregional project, has exerted maximum effort to ensure the full implementation of flagship transport initiatives. By leveraging its geographic position and investing in long-term incentive programs, Azerbaijan is increasingly aware that it can boost the Middle Corridor's role as a crucial passageway across the Eurasian land bridge. Even with its current shortcomings and limitations, the corridor has the potential to serve as an optimal linkage for Sino-EU rail connections. For Azerbaijan, the success of this corridor is synonymous with its own economic diversification strategy. By leading the charge in addressing these bottlenecks through digital innovation and regional leadership,

Azerbaijan is transforming the Middle Corridor from a functional alternative into a permanent, highly efficient cornerstone of global logistics (Guliyev, 2026).

Conclusions

This research establishes that the Middle Corridor has transitioned into a critical global necessity following the 2022 Russia-Ukraine war, positioning itself as the primary strategic alternative to the traditional Northern Corridor. The study highlights Azerbaijan's indispensable role in this transition, driven by its advanced railway connectivity, strategic seaport operations, and robust energy transit capabilities. A key theoretical finding of this paper is that the Middle Corridor serves as the central pillar of Azerbaijan's economic diversification, effectively transforming geographic potential into sustainable fiscal assets. This shift is empirically validated by data from the State Statistical Committee, which shows a nearly threefold increase in transport sector investments between 2018 and 2024. Furthermore, official announcements from the Minister of Transport, Rashad Nabiyeu, and record revenue projections reaching 14.89 billion AZN by late 2025 demonstrate the positive impact of these infrastructure upgrades on the national economy. However, the practical analysis reveals that the corridor's complex multimodal nature remains a significant bottleneck compared to the seamless rail structure of the Northern route. To mitigate these hurdles, the research concludes that physical expansion must be synchronized with digital innovation and tariff harmonization across borders. Ultimately, the successful integration of these projects confirms that Azerbaijan is not merely a transit point, but a primary architect of a resilient, hydrocarbon-independent economic foundation. By addressing operational complexities through regional leadership, Azerbaijan is solidifying its position within the permanent global supply chain. This strategic pivot ensures that the Middle Corridor remains a high-value engine for long-term regional stability and prosperity.

References

1. Aguiar, P. (2025). *The Middle Corridor: A Route Born of the New Eurasian Geopolitics*. [Accessed 2026-04-16]. Available at: <https://www.geopoliticalmonitor.com/the-middle-corridor-a-route-born-of-the-new-eurasian-geopolitics/>
2. *Asian Development Outlook April 2026: Azerbaijan*. [Accessed 2026-05-10]. Available at: <https://www.adb.org/sites/default/files/publication/1135881/aze-ado-april-2026.pdf>
3. Azernews. (2026, March 3). *ADY boosts rail transit volumes as block train traffic rises 37% in 2025*. [Accessed 2026-05-09]. Available at: <https://www.azernews.az/business/253024.html>
4. Babayev, B. & Ismailzade, F. (2020). Azerbaijan's Contribution to the Chinese Belt Road Initiative. *Munich Personal RePEc Archive*.
5. Baghirov, O. (2020). *The increasing role of Azerbaijan as a regional digital hub*. *Eurasia Daily Monitor*, 17(73). The Jamestown Foundation.
6. EU Neighbours East. (2019). *Eastern Partnership: Indicative TEN-T Investment Action Plan*. Available at: <https://euneighbourseast.eu/news/publications/eastern-partnership-indicative-ten-t-investment-action-plan/>
7. EU Reporter. (2025). *Azerbaijan's path to economic diversification and connectivity leadership*. [Accessed 2026-04-15]. Available at: <https://www.eureporter.co/azerbaijan/2025/12/06/azerbaijans-path-to-economic-diversification-and-connectivity-leadership/>
8. European Bank for Reconstruction and Development. (2023). *Sustainable transport Connections between Europe and Central Asia*. [Accessed 2026-05-14]. Available at: <https://share.google/zXxhula6e5DK4UHQq>
9. European Commission. (2023). Renewable energy directive, targets and rules. *Energy*. [Accessed 2026-05-05]. Available at: https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en
10. Guliyev, V. (2023). Middle Corridor: From Western-initiated TRACECA to China's Belt and Road Initiative. *Baku Research Institute*. [Accessed 2026-05-10]. Available at: <https://bakuresearchinstitute.org/en/middle-corridor-from-western-initiated-traceca-to-chinas-belt-and-road-initiative/>
11. Guliyev, V. (2022). *The rising significance of the Middle Corridor*. [Accessed 2026-04-20]. Available at: <https://bakudialogues.idd.az/articles/the-rising-significance-of-the-middle-corridor-18-10-2022>
12. Karacsony, P.(2023). Trade and Economic Opportunities: Azerbaijan's Contribution to the Middle Corridor. *Foreign Policy Review* (104-107). [Accessed 2026-06-04]. Available at: https://hiia.hu/wpcontent/uploads/2026/03/5_Peter_Karacsony_Trade_and_Economic_Opportunities_FPR_2023_2.pdf
13. Lianlei, B. (2016). Azerbaijan in the Silk Road Economic Belt: A Chinese Perspective. *Caucasus International*, 6 (1). [Accessed 2026-04-22]. Available at: <https://auic.uz/en/middle-corridor-cargo-traffic-through-azerbaijan-increases-by-6/>

14. Mukhigulishvili, G. (2024). *The Growing Importance of the Middle Corridor as an Energy Transport Route*. [Accessed 2026-04-17]. Available at: <https://hagueresearch.org/the-growing-importance-of-the-middle-corridor-as-an-energy-transport-route/>
15. *Restoration of the Great Silk Road*. [Accessed 2026-05-08]. Available at: <https://president.az/en/pages/view/azerbaijan/silkroad>
16. *The State Statistical Committee of the Republic of Azerbaijan*. (2025). [Accessed 2026-04-15]. Available at: <https://share.google/7II2yDglvfdmvjTX7>
17. Valansi, K. (2025). *Why the Middle Corridor matters amid a geopolitical resorting*. [Accessed 2026-04-13]. Available at: <https://www.atlanticcouncil.org/content-series/ac-turkey-defense-journal/why-the-middle-corridor-matters-amid-a-geopolitical-resorting/>
18. World Bank. (2023). *The Middle Trade and Transport Corridor: Policies and Investments to Triple Freight Volumes and Halve Travel Time by 2030*. *World Bank Group*. [Accessed 2026-10-04]. Available at: <https://thedocs.worldbank.org/en/doc/6248f697aed4be0f770d319dcaa4ca52-0080062023/original/Middle-Trade-and-Transport-Corridor-World-Bank-FINAL.pdf>

FINANCIAL EVALUATION OF PERFORMANCE IN UAB "ELEKTRŲNŲ KOMUNALINIS ŪKIS"

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Keywords: Financial Evaluation, Profitability, Liquidity, Asset Efficiency Turnover, Solvency.

Abstract

This work analyzes the theoretical aspects of the financial assessment of the company's activities and conducts a financial assessment of UAB "Elektrėnų komunalinis ūkis". The relevance of the work is determined by the increasing requirements for operational efficiency, financial stability, and the quality of services provided by utility companies. The purpose of the study is to assess the financial condition of the company, the results of its activities, and to present opportunities for improving its activities. During the work, the theoretical aspects of the financial assessment of the company's activities were analyzed, and the main methods and indicators of financial analysis were discussed. In the practical part, an analysis of the financial statements of UAB "Elektrėnų komunalinis ūkis" for 2021-2025 was performed using dynamic and structural analyses. The main indicators, such as profitability, liquidity, solvency, and operational efficiency, were assessed. The results of the study showed the company's financial changes, identified strong and weak areas of activity, and factors influencing the results of activity. Based on the analysis, recommendations were made to improve the company's operational efficiency and financial stability.

Introduction

In today's economic conditions, which are affected by rising energy prices, inflation, and increasing requirements for quality and efficiency of services, the financial sustainability of utility companies is becoming extremely important. Proper management of financial resources allows for ensuring uninterrupted service provision, while insufficient operational efficiency may lead to financial difficulties, an increase in service prices, or a restriction of investment opportunities. Financial assessment of activities provides an opportunity to assess the financial stability, performance results, and prospects of the company, as well as helps to identify problem areas and predict directions for improving activities. Therefore, the assessment of the financial performance of UAB "Elektrėnų komunalinis ūkis" is relevant and significant both in theoretical and practical aspects, since the results of the study may be useful for the company's management, the municipality, and other similar companies.

Problem of the Article. The financial assessment of activities in UAB "Elektrėnų komunalinis ūkis" has not been comprehensively assessed using financial analysis indicators and methods. It is not clear what the company's actual financial condition, operational efficiency, and financial stability are, and what areas of operational improvement could be applied to achieve better financial results.

Object of the Article is the activity of UAB "Elektrėnų komunalinis ūkis".

Goal of the Article is to analyze the aspects of the financial evaluation of the company's activities and to perform a financial evaluation of the activities of UAB "Elektrėnų komunalinis ūkis".

Objectives of the Article:

1. To examine the theoretical aspects of the financial evaluation of a company's activities.
2. To evaluate the performance indicators of UAB "Elektrėnų komunalinis ūkis" in 2021-2025.

Methods of research: Analysis of scientific literature, Analysis of financial statements.

Theoretical Aspects of Financial Assessment of Company Performance

Financial assessment of a company's performance is an important part of company management, enabling the evaluation of the company's financial condition, operational efficiency, and ability to create economic value. This process is based on the analysis of financial data and indicators, which allows for identifying the company's strengths and weaknesses and making informed management decisions. During financial assessment, the main indicators of the company's performance, such as profitability, liquidity, financial stability, and operational efficiency, are analyzed, allowing for a comprehensive assessment of the company's performance results. For modern companies, which are characterized by constant change and growing competition, financial assessment becomes not only a tool for analyzing performance but also an important means for predicting future results and increasing the company's competitiveness (Bitinas, Burkšaitienė, 2024).

Financial analysis is important for both internal and external users of information. The company's management uses it for planning, control, and performance evaluation, and investors and creditors use it to justify investment and lending decisions. In addition, financial analysis helps determine the value of the company, assess risk, and improve the efficiency of capital allocation. Given the dynamism and uncertainty of the modern business environment, the importance of financial analysis is increasing, as it enables prompt

responses to economic changes and supports long-term strategy (Kaur, 2022). In summary, in the scientific literature, the financial assessment of a company is classified according to several main criteria, such as the time of assessment, the object of assessment, information sources, and the nature of the analysis. According to the time of assessment, preliminary, current, and subsequent assessments are distinguished, which allow for predicting results, controlling the course of activities, and assessing the achieved results. According to the object of assessment, the analysis can be carried out at the level of the entire company, its divisions, or individual projects. According to the sources of information, financial assessment is divided into internal and external, depending on the data used and the objectives of the analysis.

Also, depending on the nature of the analysis, financial assessment can be absolute, relative, or comparative, allowing the evaluation of financial indicators both separately and in their relationships with one another, or in comparison with other periods and companies. Thus, financial analysis forms an important basis for making informed management decisions and contributes to ensuring the financial stability and long-term efficiency of the company.

Financial assessment of a company is an important process that allows you to determine how efficiently an organization uses its resources and what economic benefits it creates. According to R. D. Barman (2023), financial statements are the main tool that allows you to monitor the company's performance, compare planned goals with actual achievements, and make informed decisions about further strategy.

According to the scientific literature, one of the most important financial methods is inductive and deductive research methods. These methods help to structure the research process, formulate hypotheses, analyze data, and draw conclusions. In the scientific literature, induction and deduction are considered the main directions of logical thinking, which allows researchers to move from data to theory or from theory to empirical confirmation. These methods are widely used in social sciences, business research, and technology, as they allow for the explanation of complex phenomena and the prediction of possible outcomes (Binu, Ginu, 2025). The inductive research method is based on the principle that theories or generalizations are formed on the basis of empirical observations and data analysis. At this stage, data are first collected, identifying certain patterns or trends, and only then are theoretical conclusions formed. The inductive method is often used in qualitative research, where it is important to understand new or little-studied phenomena. In this way, scientific knowledge is formed gradually, analyzing specific facts and summarizing them into more accurate theoretical insights (Laari, 2025). The deductive research method, in contrast to the inductive one, starts with an existing theory or hypothesis, which is later tested with the help of empirical data. This means that the researcher relies on already existing theoretical knowledge and seeks to verify whether it is valid in a specific situation. The deductive method is most often used in quantitative research, where clear hypotheses are stated and tested using statistical or empirical methods. This method allows you to check the reliability of theories and determine the relationship between variables (Binu, Ginu, 2025). Although inductive and deductive methods are often presented as opposing research approaches, in modern methodology they are often used together. Many studies combine both methods. First, inductive data analysis is performed to identify certain trends, and then the deductive method is used to verify these trends. Such a combination allows for greater reliability of the study and provides an opportunity to better understand complex social or economic processes (Yuwono, Rachmawati, 2023).

Standardized financial analysis methods are also applied, such as relative indicators such as liquidity, profitability, solvency ratio, horizontal and vertical analysis, comparative analysis and other companies in the same sector. External assessment is important in determining the company's credit rating, investment attractiveness and financial stability. External users are interested not only in the profitability of the company, but also in its ability to generate cash flows, meet obligations and ensure sustainable growth (Olayinka, 2022).

According to G. Stojmenović (2025), dynamic (horizontal) analysis is one of the main financial analysis methodologies, which allows you to systematically assess changes in financial indicators over time by comparing financial statement data from different reporting periods. After performing horizontal analysis, it is possible to determine how income, expenses, and other key financial indicators change, identify trends that indicate both long-term growth and financial difficulties, as well as distinguish structural changes from seasonal fluctuations. Horizontal analysis helps to assess not only retrospectively, but also when creating forecasts, since historical dynamic trends are often used to model the company's performance in the future.

According to E. McLaney, P. Atrill (2023), structural (vertical) analysis focuses on assessing the structure of financial statements for a specific period. Each element of the report is expressed as a percentage of a base amount, for example, total income or total assets. In this way, it is possible to determine what share of income is accounted for by operating expenses, administrative expenses, or net profit, as well as to assess the

proportions of sources of financing of assets. Vertical analysis is particularly useful when comparing companies of different sizes or when analyzing structural changes over time. For example, an increasing share of borrowed capital may signal a growing financial risk, and an excessively high share of costs in relation to income may indicate inefficiency of activities. This analysis helps to determine the rationality of the allocation of financial resources and the efficiency of the organization of activities.

Analysis of financial indicators (Widianingrum, Suryani et al. 2024). In scientific literature, financial indicators are usually divided into four main groups:

- Profitability indicators;
- Liquidity indicators;
- Solvency (financial leverage) indicators;
- Operational efficiency indicators.

Each group of these indicators allows to analyze the different aspects of the company's financial performance. Profitability indicators show the company's ability to generate profit from its activities. These indicators allow you to assess how effectively companies use their resources and how successfully they manage operating costs.

Table 1

Ratios of financial evaluation

Ratio	Formula	Explanation
Profitability ratios		
Gross profitability	$(\text{Gross profit} / \text{Sales revenue}) * 100\%$	Describes how much profit remains after covering the cost price.
Net profitability	$(\text{Net profit} / \text{Sales revenue}) * 100\%$	Shows the final profitability of the company.
Return on assets, ROA	$(\text{Net profit} / \text{Assets}) * 100\%$	Evaluates how efficiently assets are being used.
Return on equity, ROE	$(\text{Net profit} / \text{Equity}) * 100\%$	Shows investor returns.
Liquidity ratios		
Current liquidity ratio	$\text{Current assets} / \text{Current liabilities}$	Describes the ability to cover short-term debts.
Quick liquidity ratio	$(\text{Current assets} - \text{Inventories}) / \text{Current liabilities}$	Shows liquidity without inventories.
Absolute liquidity	$\text{Cash} / \text{Current liabilities}$	Evaluates instant solvency.
Net working capital ratio	$\text{Current assets} - \text{Current liabilities}$	Shows financial reserve.
Capital structure ratios		
Debt ratio	$\text{Debts} / \text{Assets}$	Describes how much of the assets have been financed to cover the debts.
Debt to equity ratio	$\text{Debts} / \text{Equity}$	Shows financial leverage.
Leverage ratio	$\text{Assets} / \text{Equity}$	Evaluates dependence on borrowed capital.
Asset management efficiency ratios		
Asset turnover	$\text{Sales revenue} / \text{Assets}$	Shows the efficiency of asset utilization.
Inventory turnover	$\text{Cost of sales} / \text{Inventories}$	Describes the rate of inventory utilization.
Receivables turnover	$\text{Sales revenue} / \text{Receivables}$	Shows debt collection efficiency.
Sales and cost ratio	$\text{Sales revenue} / \text{Expenses}$	Evaluates operational efficiency.

**Source: by author according [1]*

Liquidity ratios show a company's ability to meet its short-term financial obligations on time using its current assets. They allow you to assess the company's solvency and financial stability in the short term and identify potential financial risks.

Solvency ratios show a company's ability to meet long-term financial obligations and assess its financial stability. They reveal the extent to which a company is dependent on borrowed capital. These ratios help determine the financial risk and the company's credibility with creditors and investors.

Operating efficiency indicators show how effectively a company uses its available resources to generate income. They allow you to assess the use of assets, inventories, and other resources and the efficiency of the organization of activities. These indicators determine whether the company manages its activities properly and whether there are no excessive debts.

In summary, it can be stated that a system of financial indicators is a necessary tool for objectively assessing a company's financial condition and operational efficiency, and its results are important for both company management and external stakeholders when making strategic decisions.

Research Methodology

When conducting the financial assessment of the activities of UAB "Elektrėnų komunalinis ūkis", a complex research methodology was applied, combining theoretical and practical research methods, allowing for a consistent and objective assessment of the company's financial condition, operational efficiency, and financial stability. The research methodology was formed based on the principles and methods of financial analysis presented in the scientific literature, as well as taking into account the purpose of the work and the tasks set. In the empirical part of the study, the main attention is paid to the analysis of financial statements. The study used the data of the financial statements of UAB "Elektrėnų komunalinis ūkis" for 2021 - 2025, including the balance sheet, profit (loss) statement, and other financial information. These data form the basis for an objective assessment of the company's financial condition, as they reflect the company's real performance results, asset structure, liabilities, as well as changes in income and expenses.

An important part of the study was the relative analysis of financial indicators, during which key indicators such as profitability, liquidity, solvency, and operational efficiency were calculated. These indicators allow for a comprehensive assessment of different areas of the company's activity. For example, profitability indicators show the company's ability to generate profit, liquidity indicators show the ability to meet short-term obligations, solvency indicators show long-term financial stability, and operational efficiency indicators show how effectively the company uses its assets.

In summary, the research methodology applied, which includes the analysis of scientific literature and online sources, analysis of financial statements, horizontal, vertical, and relative analysis, and other methods, allows for a comprehensive and objective assessment of UAB "Elektrėnų komunalinis ūkis" financial condition. This allows not only to determine the current financial situation of the company, but also to identify the main problems and provide reasonable recommendations for improving its activities of UAB "Elektrėnų komunalinis ūkis".

Presentation of the Company

UAB "Elektrėnų komunalinis ūkis" is a municipally owned company providing public utility services in Elektrėnai Municipality. The main purpose of the company is to ensure the supply of utility services to residents and businesses, contributing to the quality of the living environment, the functioning of the infrastructure, and the well-being of society. The company plays an important role in the local economy, as its activities are directly related to the daily needs of residents. After conducting a survey within the company and analyzing the company's website [2], it was found that the company's activities cover four main areas of municipal economy. The first area is waste and territory management, which includes the collection, removal of municipal waste, and maintenance of public spaces. This activity ensures environmental cleanliness, compliance with hygiene requirements, and contributes to the creation of an attractive living environment. The second area of activity is the administration of apartment buildings. This function includes the maintenance of residential buildings, ensuring their technical condition, management of common-use facilities, and servicing residents. The company organizes repair and renovation works, takes care of the operation of buildings, and ensures that the living environment is safe and meets the established standards. The third area of activity is heat supply, which includes the production and supply of heat energy to consumers. This service is necessary for ensuring the heating of residential and commercial buildings during the cold season. Effective organization of heat supply is important both from an economic and social perspective, as the price of services, energy efficiency, and comfort of residents depend on it. The fourth area of activity is water supply and wastewater management. The company supplies drinking water to consumers, maintains water supply networks, and also organizes wastewater collection and treatment. Additional services are also provided, such as connection to networks, water quality control, or wastewater removal.

From a financial point of view, the company is a medium-sized organization, which allows for the high-quality provision of municipal services. The company employs about 170 employees, which shows that the activity is wide-ranging and requires specialists in different fields, from administration and customer service to technical personnel responsible for infrastructure maintenance, heat supply, or maintenance of water treatment plants. Such a number of employees allows for efficient organization of work, ensuring prompt response to failures or residents' needs and maintaining the quality of services.

In summary, UAB "Elektrėnų komunalinis ūkis" is a municipally managed company that provides basic utility services in Elektrėnai municipality and contributes to the quality of life of residents and the functioning of infrastructure. The company's activities cover four main areas: waste and territory management, administration of apartment buildings, heat supply, water supply, and wastewater management.

Financial Evaluation of Performance in UAB "Elektrėnų komunalinis ūkis"

When analyzing the dynamics of the assets of UAB "Elektrėnų komunalinis ūkis" for the period 2021-2025, it was determined that the size of the company's assets changed unevenly. As can be seen in the graph, in 2021. The value of the assets amounted to 25,575,481 Eur., and in 2022. increased to 26,919,935 Eur., a change of 1,344,454 Eur or 5.26 percent. However, in subsequent periods, the assets decreased in 2023. The assets decreased by 455,088 (1.69 percent), in 2024 the assets decreased by 981,954 Eur (3.71 percent), and in 2025 it decreased by 277,506 Eur (1.09 percent).

Table 2

Dynamics of assets

Ratio	2021	2022	2023	2024	2025
Asset, Eur.	25 575 481	26 919 935	26 464 847	25 482 893	25 205 387
Change, percent	-	5,26	-1,69	-3,71	-1,09

**Source: by author according [1]*

Summarizing up the entire period, the total change in assets of UAB "Elektrėnų komunalinis ūkis" was negative and amounted to 370,094 Eur. (1.45 percent). This indicates that after a temporary growth in 2022. The company's assets were decreasing, which may be related to asset depreciation, limited investments, or asset write-offs. Such a trend may have a negative impact on the long-term operational efficiency of the company, especially considering that utilities sector companies are characterized by a high need for long-term assets.

The analysis of sales revenue shows a growth trend in all analyzed years. In 2021. Revenue amounted to 7,864,150 Eur., and in 2022. increased to 9,917,894 Eur., an increase of 2,053,744 Eur. (26.12 percent). In 2023, revenue increased to 10,409,908 Eur. (4.96 percent), in 2024. grew to 10,526,652 Eur. (1.12 percent), and in 2025 grew to 11,535,307 Eur. (9.58 percent). Over the entire period under study, revenue grew by 3,671,157 Eur. (46.69 percent), which indicates a significant increase in the scale of the company's activities.

Table 3

Sales revenue ratio

Ratio	2021	2022	2023	2024	2025
Sales revenue, Eur.	7 864 150	9 917 894	10 409 908	10 526 652	11 535 307
Change, percent	-	26,12	4,96	1,12	9,58

**Source: by author according [1]*

In summary, it can be stated that the sales revenue of UAB "Elektrėnų komunalinis ūkis", as shown in the graph, grew consistently in the period 2021-2025, and the total growth reached 46.69 percent, which indicates a significant expansion of activities. However, the growth of revenue was not uniform – after rapid growth in 2022, growth slowed down in subsequent years, but in 2025. an acceleration of growth is again noticeable. This allows us to conclude that the company's revenue is increasing in the long term, but its dynamics depend on external and internal factors, therefore growth is not stable every year.

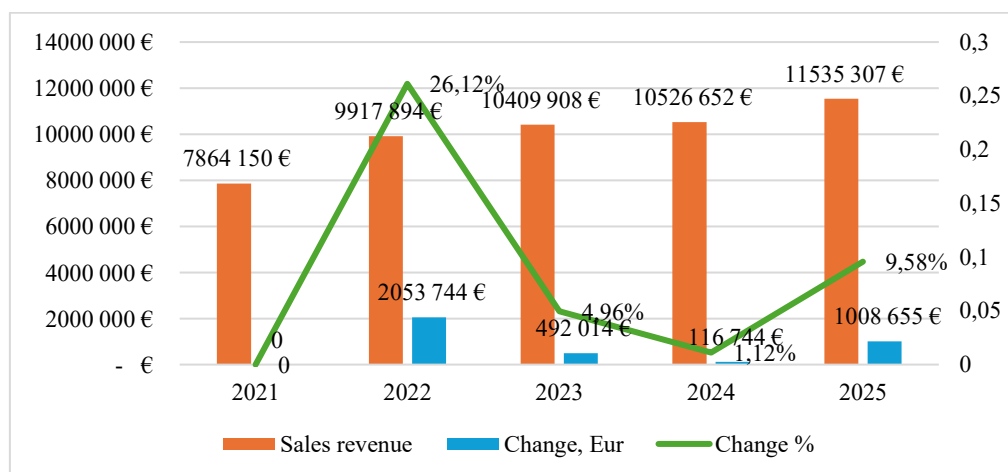


Fig. 1 Sales revenue

*Source: compiled by the author

The following work analyzes relative ratios. Profitability analysis allows us to assess how effectively UAB "Elektrėnų komunalinis ūkis" carries out its main activities, manages costs and user assets, and equity to earn profit. Profitability is an important area of financial analysis, as it shows not only the amount of profit earned, but also its ratio to sales revenue, asset volume, and owners' invested funds. When performing a company's profitability analysis, it is necessary to assess gross profitability, pre-tax profitability, net profitability, return on assets, and return on equity.

Analyzing the period from 2021 to 2025, it can be seen that the company's sales revenue increased in almost all years. In 2021, it amounted to 7,864,150 Eur., and in 2022 it increased to 9,917,894 Eur., in 2023 it increased to 10,409,908 Eur., in 2024 it increased to 10,526,652 EUR, and in 2025 it reached 11,535,307 EUR. During the entire analyzed period, sales revenue increased by 3,671,157 EUR. Such revenue growth indicates the development of activities, but the increase in revenue alone does not determine higher profitability, since it is necessary to assess how the cost price, administrative costs, and the final result changed at the same time.

The gross profitability amounted to 12.17 percent in 2021. In 2022, it decreased to 10.32 percent, although the gross profit increased to 1,023,478 EUR. This shows that the cost price grew faster than revenue. In 2023, the gross profitability improved to 11.77 percent, but in 2024 it decreased again to 10.55 percent. In 2025, the indicator increased to 16.3 percent. This was the best result of the analyzed period, showing that in 2025 the company managed the cost of sales significantly more effectively. Changes in gross profitability are shown by the ratio of cost of sales to revenue. In 2021, cost of sales accounted for 87.83 percent of revenue, in 2022 it accounted for 89.68 percent, in 2023 it accounted for 88.17 percent, in 2024 it accounted for 89.45 percent, and in 2025 it decreased to 83.7 percent. This shows that until 2024, a large part of revenue was used to cover operating costs, and in 2025, a turning point occurred, allowing for a significant improvement in the gross result.

Table 4

Gross profitability ratio

Ratio	2021	2022	2023	2024	2025
Sales revenue	7 864 150 €	9 917 894 €	10 409 908 €	10 526 652 €	11 535 307 €
Gross profit (loss)	957 083 €	1 023 478 €	1 225 138 €	1 110 357 €	1 880 043 €
Operating profit	159 113 €	64 027 €	122 178 €	44 282 €	605 851 €
Net profit (loss)	117 640 €	13 595 €	7 294 €	(60 769 €)	500 370 €
Asset	25 575 481 €	26 919 935 €	26 464 847 €	25 482 893 €	25 205 387 €
Equity	6 782 549 €	6 796 144 €	6 803 438 €	6 742 669 €	7 657 939 €
Gross Profitability	12,17%	10,32%	11,77%	10,55%	16,30%
Operational profitability	2,02%	0,65%	1,17%	0,42%	5,25%
Net profitability	1,50%	0,14%	0,07%	-0,58%	4,34%
ROA	0,46%	0,05%	0,03%	-0,24%	1,99%
ROE	1,73%	0,20%	0,11%	-0,90%	6,53%

*Source: by author according [1]

In 2021, operating profit was 159,113 EUR, and operating profitability was 2.02 percent. In 2022, operating profit decreased to 64,027 EUR, and operating profitability to 0.65 percent. In 2023, operating profit increased to 122,178 EUR, and operating profitability increased to 1.17 percent. In 2024, operating profit decreased again to 44,282 EUR, and operating profitability to 0.42 percent. In 2025, operating profit increased to 605,851 EUR, and operating profitability increased to 5.25 percent. This analysis shows that in 2021-2024, the profitability of the company's main activities was low, but in 2025, operating efficiency improved. General and administrative expenses had a significant impact on operating profitability. In 2021, they amounted to 932,003 EUR, in 2022 they increased to 1,085,275 EUR, in 2023 they increased to 1,307,532 EUR, in 2024 they decreased to 1,214,245 EUR, and in 2025 they increased again to 1,354,115 EUR. The cost-to-income ratio was 11.85%, 10.94%, 12.56%, 11.53% and 11.74%. This shows that the burden of administrative costs was high throughout the period and affected the final profitability, especially in 2023-2024.

In 2021, the net profitability reached 1.5%, in 2022 it decreased to 0.14 percent, in 2023 the indicator decreased even more to 0.07 percent, which means that out of 100 euros. The company had only 0.07 euros of net profit left. In 2024 the net profitability became negative and amounted to 0.85 percent, therefore the company worked at a loss. In 2025 the situation improved, net profitability rose to 4.34 percent. This result shows that the company's profitability is recovering. Net profit was also not constant. In 2021 the net profit amounted to 117,640 Eur., in 2022 it decreased to 13,595 Eur., in 2023 it decreased even more to 7,294 Eur., in 2024 the company suffered a net loss of 60,769 Eur., and in 2025 earned 500,370 Eur. net profit. Comparing 2025 with 2024, net profit improved by 561,139 Eur. This indicates not only the recovery of operations, but also significantly strengthened control of costs and financial expenses.

In 2021, ROA amounted to 0.46 percent, assets amounted to 25,575,481., in 2022, assets amounted to 26,919,935 Eur., ROA amounted to 0.05 percent. In 2023, assets amounted to 26,464,847 Eur., therefore ROA amounted to 0.03 percent. In 2024, assets decreased (25,482,893 Eur.), and net profit became negative (60,769 Eur.), therefore ROA also became negative by 0.24 percent. In 2025, assets decreased slightly (25,205,387 EUR), but net profit increased (500,370 EUR), so ROA also increased significantly by 1.99%. The data shows that until 2024 the company used its assets inefficiently, as the return on a large asset base was minimal. In 2025 the situation improved significantly, but the return on assets still remained relatively low when it comes to an asset base worth 25 million EUR.

In 2021 ROE was 1.73%, in 2022 ROE decreased to 0.20%, in 2023 ROE was 0.11%, in 2024 ROE became negative 0.9% due to negative net profit, but in 2025 net profit increased significantly along with ROE to 6.95%. Return on equity in 2021-2024 was low; in 2024 it became negative, but in 2025 there was a significant positive change.

When conducting the analysis, it can be stated that in 2021-2024 the main problem of the company was not the lack of income, but the insufficient conversion of income into final profit. Although sales revenue grew consistently, a very large part of it was consumed at cost, and general and administrative expenses additionally reduced the operating result.

Summarizing the profitability analysis, it can be stated that UAB "Elektrėnų komunalinis ūkis" operated in conditions of low profitability in the 2021-2024 period. Although income grew, gross, operating and net profitability remained weak, and in 2024 the company incurred a loss. This indicates that by 2024 the growth of the company's scale of operations was not effective enough. However, in 2025, the indicators improved significantly. Gross profitability increased by 16.3 percent, operating profitability increased by 5.25 percent, net profitability increased by 4.34 percent, ROA increased by 1.99 percent, and ROE increased by 6.95 percent. It can be said that in 2025, the company achieved a strong profitability recovery, but to ensure long-term financial sustainability, it is necessary to continue to control the cost price, administrative costs and financial expenses so that the achieved improvement becomes a sustainable trend, and not a one-time result.

Financial stability analysis allows you to assess whether the company's capital structure is balanced, whether the company can meet short-term and long-term obligations, to what extent its activities depend on borrowed capital, and to what extent assets are financed with its own funds. Financial stability is important for a utility company because such companies must ensure uninterrupted service provision, and the risk of financial disruptions can negatively affect not only the company itself but also the recipients of public services.

Initially, the equity ratio is assessed, which shows what part of the assets is financed by owners' funds. In 2021, the indicator was 0.27, in 2022 it was 0.25, in 2023-2024 it was 0.26, and in 2025 it increased to 0.3. This means that in 2021-2024, only about a quarter of all assets were financed with equity, and in 2025 it increased to almost a third. Such a change is viewed positively, but the indicator still shows a high dependence

on external funding sources, especially knowing that a significant part of the balance sheet consists of grants and subsidies.

Table 5

Financial stability ratio

Ratio	2021	2022	2023	2024	2025
Equity	6 782 549 €	6 796 144 €	6 803 438 €	6 742 669 €	7 657 939 €
Asset	25 575 481 €	26 919 935 €	26 464 847 €	25 482 893 €	25 205 387 €
Payable amounts and other liabilities	4 728 835 €	5 499 120 €	5 213 299 €	4 885 694 €	4 413 076 €
Equity ratio	0,27	0,25	0,26	0,26	0,30
Liabilities ratio	0,18	0,20	0,20	0,19	0,18
Debt to equity ratio	0,70	0,81	0,77	0,72	0,58

**Source: by author according [1]*

It is important to assess the liability ratio, which shows what part of the assets is financed by borrowed funds. In 2021, the indicator was 0.18, in 2022 it increased to 0.2, in 2023 it was 0.2, in 2024 it decreased to 0.19, and in 2025 it reached 0.18. This means that the share of direct liabilities in the company's asset structure remained relatively stable. Knowing that grants and subsidies make up a large part of the balance sheet, it can be said that the company's financial structure is not based solely on lending, but from a classical business point of view, its equity base is still not strong.

One of the long-term solvency indicators is the debt-equity ratio. It shows how much debt there is per euro of equity. In 2021, the indicator was 0.7, in 2022 the indicator increased to 0.81, in 2023 it decreased to 0.77, in 2024 it decreased even more to 0.72, and in 2025 it decreased to 0.58. This shows that in 2021-2024 there was about 0.7-0.81 EUR of debt per euro of equity, and in 2025 it fell to 0.58. The decrease in the indicator in 2025 is viewed positively, as it indicates a strengthening capital structure and lower dependence on creditors.

Short-term solvency is also calculated, which shows whether the company can cover its current liabilities on time.

Table 6

Short-term solvency ratio

Ratio	2021	2022	2023	2024	2025
Current assets	2 626 005 €	3 232 954 €	3 009 359 €	2 827 831 €	3 186 803 €
Amounts payable within one year and other current liabilities	2 473 159 €	3 567 520 €	3 319 960 €	3 349 886 €	3 280 320 €
Reserves	228 429 €	239 479 €	273 413 €	211 546 €	242 404 €
Deferred expenses and accrued expenses	13 672 €	13 479 €	23 274 €	25 144 €	60 571 €
Current liquidity ratio	1,06	0,91	0,91	0,84	0,97
Quick liquidity ratio	0,96	0,84	0,82	0,77	0,88

**Source: by author according [1]*

In 2021, the general liquidity ratio was 1.06, in 2022 it decreased to 0.91, in 2023 it remained the same – 0.91, in 2024 it decreased further to 0.84, and in 2025 it increased again to 0.97. Theoretically, a safe general liquidity level is usually 1.2 – 2, therefore, during the analyzed period, the company's short-term solvency was worse than the required ratio. In 2021, the indicator was slightly above 1, but in 2022-2025 it was less than 1, which means that short-term assets were not enough to fully cover short-term liabilities.

In 2021, urgent liquidity was 0.97, in 2022 it decreased to 0.84, in 2023. decreased slightly to 0.83, in 2024 it decreased even more to 0.78, in 2025 the indicator increased to 0.9. This analysis shows that even after excluding less liquid parts of current assets, the company's ability to cover short-term liabilities remained insufficient. The worst indicator was in 2024, and in 2025 the situation improved, but the indicator did not reach the recommended 1.0.

In summary, it can be stated that the financial stability of UAB "Elektrėnų komunalinis ūkis" in 2021-2025 was average.

Table 7

Asset efficiency ratio

Ratio	2021	2022	2023	2024	2025
Sales revenue	7 864 150 €	9 917 894 €	10 409 908 €	10 526 652 €	11 535 307 €
Assets	25 575 481 €	26 919 935 €	26 464 847 €	25 482 893 €	25 205 387 €
Fixed assets	22 935 804 €	23 673 502 €	23 432 215 €	22 629 918 €	21 958 013 €
Current assets	2 626 005 €	3 232 954 €	3 009 359 €	2 827 831 €	3 186 803 €
Cost of sales	6 907 067 €	8 894 416 €	9 178 171 €	9 416 295 €	9 655 264 €
Inventories	228 429 €	239 479 €	273 413 €	211 546 €	242 404 €
Receivables	1 420 624 €	1 899 838 €	1 498 381 €	1 529 984 €	1 651 002 €
Amounts receivable within one year	1 574 542 €	2 278 614 €	1 722 969 €	1 720 733 €	1 850 685 €
Asset turnover	0,31	0,37	0,39	0,41	0,46
Fixed asset turnover	0,34	0,42	0,44	0,47	0,53
Current asset turnover	2,99	3,07	3,46	3,72	3,62
Inventory turnover	30,24	37,14	33,57	44,51	39,83
Trade receivables turnover	5,54	5,22	6,95	6,88	6,99
Receivables turnover	4,99	4,35	6,04	6,12	6,23

**Source: by author according [1]*

Asset efficiency analysis shows how rationally the company uses its available resources to earn income. This analysis is important for utility companies because a large part of their assets are long-term tangible assets, such as buildings, structures, equipment, transport, and other infrastructure. Therefore, asset efficiency indicators allow us to assess whether such assets are used productively. In the case of UAB "Elektrėnų komunalinis ūkis", it is necessary to analyze the total asset turnover, the turnover of long-term and short-term assets, and the turnover of inventories and receivables. Initially, the total asset turnover is assessed. This indicator shows how many euros of sales revenue are generated per euro invested in the company's assets. In 2021, the total asset turnover was 0.31, in 2022 it was 0.37, in 2023 it was 0.39, in 2024 it was 0.41, and in 2025 the indicator was 0.46. The growth of the indicator indicates that the company used all its assets more efficiently to generate income.

Since the company's asset structure is dominated by fixed assets, it is important to calculate the turnover of fixed assets. In 2021, the indicator was 0.34, in 2022 it was 0.43, in 2023 it was 0.44, in 2024 it was 0.46, and in 2025 it was 0.52. This shows that the efficiency of the use of fixed assets was improving, and one euro of fixed assets generated more sales revenue.

To assess the efficiency of the use of short-term assets, the turnover of short-term assets is calculated. In 2021, the turnover of short-term assets was 2.99, in 2022 it was 3.39, in 2023 it was 3.34, in 2024 it was 3.61, and in 2025 it was 3.84. This indicates that current assets were used more and more actively every year, and their conversion into income accelerated.

In 2021, inventory turnover was 30.24, in 2022 it was 38.02, in 2023 it was 35.79, in 2024 it was 38.83, and in 2025 it was 42.54. The growth of the indicator indicates that inventory management was effective and the company did not have excess inventory.

In 2021, trade receivables turnover was 5.54, in 2022 it was 5.97, in 2023 it was 6.13, in 2024 it was 6.95, and in 2025 the indicator increased and amounted to 15.95. Such growth of the indicator indicates improved collection of settlements, especially in 2025.

Since the balance sheet also presents all receivables within one year, it is worth calculating the total receivables turnover. In 2021, the receivables ratio was 5, in 2023 it rose to 5.2. In 2024 it rose to 6.11, and in 2025 it was 6.46. The increase in the ratio indicates that companies managed receivables more and more effectively.

The asset structure is also important for assessing asset efficiency. In 2021-2025, non-current assets accounted for the largest share of total assets, about 89 percent, while current assets accounted for only about 12 percent of total assets. Such a structure indicates that the company is very capital-intensive, the slower total asset turnover is related to the nature of its activities. The largest share of non-current assets consisted of tangible assets, such as buildings and structures, which were the main element of the operational infrastructure.

In summary, it can be stated that although the activities of UAB "Elektrėnų komunalinis ūkis" are characterized by capital intensity and relatively slower asset turnover, the company demonstrated positive

trends in financial indicators during the analyzed period. Revenues increased, asset utilization efficiency improved, liabilities decreased, and in 2025, significant profitability growth was achieved. This allows us to conclude that the company's financial condition has strengthened, and operational management has become more effective, although certain aspects of liquidity and cost control still require improvement.

Conclusions

The financial analysis is used to identify the strengths and weaknesses of a company, assess financial risk, and compare results with other companies. Therefore, this analysis is important for both company management and investors, as it helps to make rational decisions and ensure long-term operational efficiency and financial stability. The financial evaluation of UAB "Elektrėnų komunalinis ūkis" shows that during 2021 – 2025 the company experienced steady revenue growth (46,69%), indicating expansion of its operations. However, until 2024, this growth did not translate into strong profitability, as a large share of revenues was absorbed by high production and administrative costs, resulting in low profitability and even a net loss in 2024. A significant improvement occurred in 2025, when all key profitability indicators strongly increased, reflecting better cost control and operational efficiency. Despite this progress, the company's financial stability remains moderate due to a relatively low equity share and continued reliance on external financing. Additionally, liquidity ratios were below recommended levels for most of the period, indicating difficulties in covering short-term obligations.

Overall, although the company shows positive development trends, especially in 2025, it is important to strengthen liquidity, improve cost management, and ensure that recent performance improvements are sustainable in the long term.

References

1. Audito formules for indicators [viewed 2026-04-21]. Available at: <https://www.auditum.lt/index.php/finansiniu-rodikliu-skaiciuokles/pelningumo-rodikliai.html>
2. Elektrėnų komunalinis ūkis [viewed 2026-04-22]. Available at: <https://www.eku.lt/>
3. Barman, R. D. (2023). Financial Statement: A Tools to Evaluate Business Performance. *Business Management and Economics Engineering*, 21(02), 819-835.
4. Bitinas, A., Burksaitienė, D. (2024). Evaluation of the impact of financial technologies on the financial efficiency of commercial banks. *Mokslas – Lietuvos ateitis/Science – Future of Lithuania*, 16.
5. Binu, D., Ginu, G. (2025). Inductive vs. Deductive Research Methods: A Comprehensive Methodological Guide for Bachelor's and Master's Theses. *International journal of scientific research in engineering and management*. 09. 1-9. 10.55041/IJSREM52576.
6. Kaur, S. (2022). A Study on "Financial Performance Analysis". *Multi – Dimensional Aspects of Management*, 93.
7. Laari, L. (2025). Inductive – deductive qualitative data analysis logic in health sciences research: A framework for analysing qualitative data. *International Journal of Qualitative Methods*, 24, 16094069251381706.
8. McLaney, E., Atrill, P. (2023). *Accounting and finance: an introduction*. BoD – Books on Demand.
9. Olayinka, A. A. (2022). Financial statement analysis as a tool for investment decisions and assessment of companies' performance. *International Journal of Financial, Accounting, and Management*, 4(1), 49-66.
10. Stojmenović, G., Samardžić, M., Dimitrov, F., Trepeski, P. (2025). Perspectives of analysis of the state of the company through horizontal and vertical analysis for the purpose of future predictions. *Science International Journal*, 4(2), 127-132.
11. Widianingrum, E., Suryani, R., Ilmaknun, L. (2024). Financial Performance Analysis Reviewed from Liquidity, Solvency, and Profitability Aspects. *Jurnal Ilmiah Akuntansi Kesatuan*, 12(5), 641-650.
12. Yuwono, M. A., Rachmawati, D. (2023). Combined methods. Can this solve the differences between deductive and inductive methods in qualitative research? *Moroccan Journal of Quantitative and Qualitative Research*, 5(3).

A NETNOGRAPHIC ANALYSIS OF DEAF AND HARD-OF-HEARING INDIVIDUALS' PERSPECTIVES TOWARD THE ACCESSIBILITY OF MUSIC EVENTS AND THE PROSPECTS FOR INCLUSIVE MUSIC TOURISM DEVELOPMENT

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Keywords: Netnography, deaf and hard-of-hearing individuals, inclusive tourism, music events, accessibility of music events, music tourism, development of inclusive music tourism, tourism sector.

Abstract

This article analyses the perspectives of deaf and hard-of-hearing individuals toward the accessibility of music events and the development prospects of inclusive music tourism. The study was conducted using a qualitative approach, specifically netnography. The main objective of the research was to evaluate the accessibility of music events adapted for deaf and hard-of-hearing individuals, as well as their perspectives on potential directions for the development of music tourism. The findings presented in this article may be beneficial not only for the deaf and hard-of-hearing community in Lithuania but also for the development of inclusive music tourism in Lithuania and other countries.

Introduction

Relevance of the Article. Inclusive tourism is defined as a principle aimed at ensuring that tourism services are accessible and of high quality for all individuals, regardless of their physical abilities, age, or other social factors (Rochman et al., 2022). Accessible or inclusive tourism is widely discussed as both a social and economic value in the global tourism context, as it not only enhances social equity but also expands tourism markets. Deaf and hard-of-hearing individuals represent a group whose tourism experiences remain relatively underexplored in academic literature. Nevertheless, recent studies have begun to highlight the specific needs and experiences of this group (Jensen et al., 2023). Music tourism, as a form of cultural tourism, is based on the attraction of musical events, places, and cultural consumption as primary travel motivations. The literature on music tourism frequently emphasizes its role in fostering creativity, identity formation, social interaction, and economic development (Mazlan et al., 2025). Despite the growing body of research on inclusive tourism and music tourism, limited attention has been given to the perspectives of deaf and hard-of-hearing individuals regarding the accessibility of music events and the future development of inclusive music tourism.

Problem of the Article – the perspectives of deaf and hard-of-hearing individuals toward the accessibility of music events and the development prospects of inclusive music tourism represent a significant area of inquiry in the contemporary tourism industry. Understanding these perspectives allows for an evaluation of how these individuals perceive and respond to evolving inclusive tourism trends, innovations in music events, and their implementation effectiveness.

The tourism sector increasingly focuses on inclusive tourism, aiming to ensure that services are accessible to individuals with diverse needs (Partale & Partale, 2021). This approach is grounded in the principle that all individuals have equal rights to participate in travel, leisure, and cultural activities (Darcy & Dickson, 2017). Inclusive tourism encompasses not only physical accessibility but also the adaptation of information, services, and cultural experiences.

The core issue lies in the fact that, although inclusive and music tourism have been widely studied, there is a lack of research specifically examining the perspectives of deaf and hard-of-hearing individuals regarding the accessibility of music events and the development potential of inclusive music tourism.

Music tourism involves travel to concerts, festivals, and other music-related events. Studies indicate that it enhances tourist mobility and contributes to economic growth (Mejías Martínez & Gutiérrez Iturralde, 2024; Kement, 2024; Saji & Sreelakshmi, 2020). Music also influences travel choices and stimulates niche tourism forms (Kim et al., 2023). However, most research focuses on general audiences, while the experiences of deaf and hard-of-hearing individuals remain underrepresented.

Research shows that deaf and hard-of-hearing individuals can experience music not only through sound but also through vibrations and visual elements (Schmitz et al., 2020). Consequently, concerts increasingly incorporate vibrotactile technologies, sign language interpretation, and visual enhancements (Fryer, 2021). Nevertheless, technological solutions alone are insufficient; it is essential to understand users' lived experiences and needs (Kuppusamy & Buhalis, 2019). There is still a lack of research focusing on specific audience perspectives (Darcy & Dickson, 2017).

Therefore, it can be argued that the perspectives of deaf and hard-of-hearing individuals toward music event accessibility and music tourism opportunities remain insufficiently explored. Although new solutions are emerging, there is limited research on their actual impact on user experience and their contribution to the development of inclusive music tourism. Considering the above, a clear research gap exists: **the perspectives of deaf and hard-of-hearing individuals on the accessibility of music events and the development opportunities of inclusive music tourism remain insufficiently studied.** Addressing this gap can provide valuable insights for event organizers and tourism stakeholders seeking to improve the quality and accessibility of inclusive music tourism services. It may also contribute to the development and implementation of more inclusive music events and tourism experiences for deaf and hard-of-hearing communities both in Lithuania and internationally. Thus, the research question can be formulated as follows: *how do deaf and hard-of-hearing individuals evaluate the accessibility of music events and the development prospects of music tourism in the context of inclusive tourism?*

Object of the Article – the perspectives of deaf and hard-of-hearing individuals toward the accessibility of music events and the development prospects of inclusive music tourism.

Aim of the Article – to analyse the perspectives of deaf and hard-of-hearing individuals toward the accessibility of music events and the development prospects of inclusive music tourism.

Objectives of the Article:

1. To analyse the theoretical aspects of deaf and hard-of-hearing individuals' perspectives toward the accessibility of music events and the development prospects of inclusive music tourism.
2. To evaluate the perspectives of deaf and hard-of-hearing individuals toward the opportunities for the development of inclusive music tourism.
3. To present possibilities for improving the attractiveness of music events and inclusive music tourism for deaf and hard-of-hearing tourists.

Research Methods – the research methods include a review and analysis of scientific literature, analysis of online sources, and the creation and analysis of graphical representations. A qualitative method is applied in the study, which allowed for an in-depth analysis of deaf and hard-of-hearing individuals' perspectives. The research was conducted using the netnography method, which allowed for a deeper understanding of deaf and hard-of-hearing individuals' perspectives on music event accessibility and inclusive music tourism development, as well as highlighting their experiences and challenges. The netnographic sample consisted of social media groups and online platforms involving deaf and hard-of-hearing individuals.

The Concept and Importance of Inclusive Tourism

Inclusive tourism is conceptualized as a process aimed at removing social, physical, and communication barriers to ensure that all tourists can fully participate in tourism activities (Partale & Partale, 2021). Partale and Partale (2021) identify several key elements of inclusive tourism, which provides an overview of the main components and characteristics of this sector (Table 1).

Table 1

An overview of the elements of an inclusive tourism destination

Elements	Description of an inclusive tourism destination
Awareness	Decision-makers and service providers in the tourism industry are aware of the importance and the potential of inclusive tourism development.
Inclusion	The inclusion of persons with disabilities is an accepted objective of the development of tourism which is supported by everyone involved.
Participation	Persons with disabilities are involved in decision-making processes, in particular in areas where their interests and the subject of inclusion in general play a role.
Target groups	The target group consists in equal measure of guests and local people with disabilities, with the latter primarily being employees and founders of tourism businesses.
Visibility	The social, cultural and political visibility of persons with disabilities arises as a result of encounters between local people and visitors with and without disabilities.
Inclusive employment	Companies and organisations in the tourism value chain are encouraged and supported to employ persons with disabilities and provide fair working conditions.
Inclusive entrepreneurship	Persons with disabilities are encouraged and supported to establish tourism businesses or take on self-employed work in the tourism industry.

Accessible travel experiences	Companies and organisations in the tourism value chain are encouraged and supported to offer inclusive travel experiences.
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**Source: compiled by the author based Partale & Partale (2021)*

Table 1 presents an overview of the main elements and characteristics of the inclusive tourism approach, as well as a general perspective of the industry. The development of accessible travel experiences, along with employment and entrepreneurship, is considered essential within the context of development cooperation, particularly in ensuring that the promotion of inclusion in the tourism sector contributes to the reduction of poverty and social inequality. International studies indicate that the implementation of inclusive tourism principles not only helps to reduce social exclusion but also has a significant economic impact on the tourism sector by expanding potential consumer segments (Rebello, 2022). M. T. Jensen et al. (2023) emphasize that the tourism experiences of deaf and hard-of-hearing tourists often remain insufficiently explored due to the traditional focus of tourism research on auditory experience as a „background” element. Furthermore, many studies treat deafness as merely one category within physical disabilities, without considering the unique communication and experiential aspects relevant to deaf and hard-of-hearing tourists (Rochman et al., 2022).

In summary, inclusive tourism represents an important and complex direction for tourism development; however, its effective implementation requires greater attention to the specific experiences and needs of diverse audiences, particularly deaf and hard-of-hearing individuals.

Music Tourism as a Form of Tourism

Music tourism encompasses tourist experiences related to musical activities, cultural consumption, and participation in events. The literature emphasizes that this form has become an integral part of cultural tourism, including concerts, festivals, and music-related destinations (Kim et al., 2023). Mazlan et al. (2025) argue that music tourism contributes to economic growth, strengthens cultural identity, and promotes tourism development.

In recent years, increasing attention has been paid to music events as a key tourism attraction factor. Research indicates that festivals and concerts create unique experiences and often serve as the primary motivation for travel (Kement, 2024). They are considered part of the „experience economy,” where tourists actively engage in cultural activities (Iványi & Bíró-Szigeti, 2020). Such experiences enhance emotional connections to destinations and foster tourist loyalty.

Music tourism is also closely linked to globalization and popular culture. The phenomenon of K-pop (a combination of South Korean popular music, choreography, and distinctive visual aesthetics) demonstrates how music can stimulate international tourist flows and shape emerging travel destinations (Kim et al., 2023).

However, there is a notable lack of research focusing on audiences with specific needs. Most studies are oriented toward general audiences without adequately addressing the diverse needs of different groups (Jensen et al., 2023). This gap is particularly significant for deaf and hard-of-hearing individuals, whose participation is often limited by issues related to communication and information accessibility.

Research highlights that alternative forms of experience, such as visual and vibrotactile technologies, are essential for the inclusion of deaf and hard-of-hearing individuals (Schmitz et al., 2020). In summary, music tourism represents a rapidly growing field with substantial potential; however, greater emphasis must be placed on inclusivity and the experiences of diverse audiences.

The Concept of Music Events and Their Significance in Tourism

Music events constitute an important segment of the event industry and cultural tourism, generating significant social, economic, and cultural impacts. They are defined as organized cultural occasions centered on live or technologically mediated musical performance (Mair & Weber, 2019). Such events take place in a variety of settings, ranging from concert halls to large-scale festival venues.

Studies emphasize that music events are not merely a form of entertainment but also a powerful driver of tourism. They can serve as the primary motivation for travel by offering unique cultural experiences and fostering emotional connections with music (Bolderman, 2020).

The main forms of music events include concerts and festivals. Concerts refer to live performances delivered to an audience, whereas festivals typically span several days and feature multiple artists and genres (Theodore, 2024). Festivals are particularly important for tourism, as they attract large numbers of visitors and stimulate local economies (Webster & McKay, 2017).

Music events are closely associated with music tourism, where the primary purpose of travel is to experience music-related activities such as concerts or festivals (Bolderman, 2020). In summary, music events represent a complex cultural phenomenon with substantial importance for tourism development, cultural experience, and social integration.

Music Events with Sign Language Interpreters for Deaf and Hard-of-Hearing Individuals

Music is a universal cultural experience; however, for deaf and hard-of-hearing individuals, it involves not only sound but also the ability to perceive meaning and emotion through sign language interpretation. Consequently, sign language interpreters are increasingly included in concerts, where they do more than translate lyrics – they convey rhythm, intonation, and emotional content through body language. This form of interpretation represents a culturally significant practice that enhances event inclusivity (Tarantini, 2023).

Research shows that interpreters at concerts act as a bridge between music and deaf and hard-of-hearing audiences. Through facial expressions, movement, and rhythm, they communicate musical intensity and enrich the overall experience (Lill, 2019). Similar practices are applied at festivals - for example, at „Rock in Rio,” interpreters are displayed on large screens to convey the energy of the performance (Ticket Fairy, 2026). Auslan (Australian Sign Language) interpreters are also recognized as an important accessibility measure in Australia (Mason & Randall, 2025). A significant contribution to the musical culture of deaf and hard-of-hearing individuals has been made by the „Deaf Rave” movement, which has transformed the traditional festival format. This initiative emphasizes not only visual translation but also sensory engagement through low-frequency vibrations and powerful sub-bass systems, enabling participants to physically experience music. The „Deaf Rave” platform also promotes the visibility of deaf artists - such as DJs, VJs, and VV (Visual Vernacular performers) - demonstrating that music is a multimodal experience extending beyond auditory perception (Deaf Rave, 2026). Visual Vernacular (VV) performances represent not only translation but also artistic expression, using body language, facial expressions, and gestures to convey musical mood and lyrical metaphors (Deaf Rave, 2026).

In summary, the inclusion of sign language interpreters in concerts is a crucial practice for enhancing inclusivity. It enables deaf and hard-of-hearing individuals not only to attend but to fully experience music events, thereby promoting cultural equality and improving accessibility in tourism.

Music Accessibility Technologies for Deaf and Hard-of-Hearing Individuals

Contemporary technologies are opening new possibilities for making musical experiences accessible to deaf and hard-of-hearing individuals. One of the most advanced initiatives in this field is the „Music: Not Impossible” project, which utilizes Vibrotextile™ wearable technology (Not Impossible Labs, 2018-2026) (Figure 1).



Fig. 1. Vibrotextile™ wearable technology
**Source: Not Impossible Labs (2018-2026)*

Figure 1 illustrates how this technology converts music into complex vibrations that users can feel through their bodies. The project employs specially designed vests equipped with multiple vibration points, enabling concertgoers – including deaf and hard-of-hearing individuals – to perceive rhythm, melody, and instrumental textures through the skin and muscles (Not Impossible Labs, 2018-2026). The „Deaf Rave” festival represents a unique social and cultural phenomenon that transforms the traditional music industry and club culture through the prism of inclusivity and sensory adaptation. This initiative employs vibrotactile stimulation – where low-

frequency sound waves (bass) generate physical vibrations transmitted to the brain via body tissues and bone conduction – alongside Woojer haptic technologies (Deaf Ravwe, 2026) (Figure 2).



Fig. 2 . Woojer vest 3 and Woojer strap 3 wearable technology

**Source: Deaf Rave (2026)*

Figures 1 and 2 present vibrating vests and additional accessories (such as wrist and ankle bands), which are configured so that each musical element – bass, percussion, synthesizers, or rhythmic phrases – is transmitted to different parts of the body (Deaf Rave, 2026; Not Impossible Labs, 2018-2026). This enables a multi-layered perception of music, rather than a single vibration typically experienced through traditional methods such as standing near speakers or holding balloons. (Deaf Rave, 2026; Not Impossible Labs, 2018-2026). Such vibrotactile transmission not only strengthens the physical connection to music but also enhances its emotional and cognitive dimensions compared to conventional vibration-based experiences (Figure 3).



The Mostly Mozart Festival Orchestra perform at the Lincoln Center's Summer for the City event using Music: Not Impossible technology. Picture: Music: Not Impossible / Lincoln Center

Fig. 3. Vibrotactile music transmission

**Source: Not Impossible Labs, (2018-2026)*

Figure 3 illustrates vibrotactile music transmission. According to Classic FM journalist S. A. Hall (2023), vibrating vest technology can transmit up to 24 distinct musical elements through the skin, providing a richer and more complex experience for deaf listeners during live performances. These technologies are not merely experimental but are already being implemented at events worldwide. Vibrating vests have been used at concerts ranging from the „Life is Beautiful” festival in Las Vegas to symphonic performances at Lincoln Center, where deaf, hard-of-hearing, and hearing audiences participated in shared musical experiences through both auditory and physical vibration channels (Hall, 2023).

In summary, both academic and technological research demonstrate that vibrotactile solutions can expand the perception of music and enrich it with an emotional dimension that is often inaccessible through hearing alone. By integrating deaf and hard-of-hearing individuals into music events through vibrating vests and other haptic devices, it is possible to promote not only physical accessibility but also deep cultural engagement - an essential component of inclusive music tourism.

Research Methodology

This study employs a qualitative research method – **netnography** – to analyze the perspectives of deaf and hard-of-hearing individuals toward inclusive tourism accessibility, the supply of music events, and the prospects of music tourism. Netnography is a qualitative research approach adapted for analyzing online

communities and discussions within social media environments. It enables researchers to examine user-generated content, opinions, experiences, and interactions in a natural digital context (Kozinets and Gretzel, 2023).

Netnography is considered one of the most significant methods in contemporary research on consumer behavior, tourism, and culture (Kozinets & Gretzel, 2023). The analysis of social networks, forums, and online communities allows researchers to observe authentic user discussions that are not artificially constructed within a research setting.

The selection of netnography for this study is justified by several factors. First, deaf and hard-of-hearing individuals actively engage in online communities, where they share experiences related to music events and their accessibility. Second, netnography allows for the analysis of spontaneous opinions while reducing social desirability bias (Kozinets, 2019). Third, this method is particularly suitable for studying geographically dispersed communities (Kozinets, 2020).

In tourism research, netnography facilitates the analysis of tourist experiences, motivations, and satisfaction (Bhatt et al., 2024; Narangajavana Kaosiri et al., 2017). Such data contribute to a deeper understanding of the needs and experiences of deaf and hard-of-hearing tourists in real-world contexts.

Ethical principles were strictly followed in conducting the netnographic study. Only publicly available online discussions and articles were analyzed, ensuring the anonymity of users. The study included the discussion platform „Reddit” – R/DEAF group, (X1) (2019-2026) (approximately 100 000 members), virtual communities on the social network „Facebook“ (2019-2026) (Deaf Rave (X2) 4 300; Deaf Worl Live (X3) 78 000; Deaf People around the World (X4) 28 000 and Community of the Deaf and Hard of Hearing (X5) 77 000) characterized by active communication about the experiences of deaf and hard-of-hearing individuals (including festival attendance and musical experiences) and a large number of members, as well as articles from Ticket Fairy – The Promoter's Playbook (X6) (2025; 2026), Classic FM (X7) (2023) „These incredible ‘vibrating vests’ are changing live music for deaf audiences – watch how it works”, The New York Times (X8) (2023) „Haptic Suits Let You Feel Through Your Skin“ and the Lithuanian Deaf Association (LKD): „We didn’t agree to this” (X9) (2023). A total of 1,045 posts (N = 1045) from nine groups were analyzed. The data collection period covered January 1, 2019, to March 26, 2026. When citing user comments, no personal or identifying information was disclosed, in accordance with ethical guidelines for netnographic research (Kozinets, 2019). Informants’ statements were coded from X1 to X9 based on their respective groups.

In this study, netnography is applied to examine discussions on music event accessibility, sign language interpretation, vibrotactile technologies, and music tourism experiences.

In summary, netnography enables a deeper understanding of the authentic experiences of deaf and hard-of-hearing individuals and helps identify key challenges and opportunities relevant to inclusive music tourism.

Results

The qualitative study encompassed 1,045 posts collected from the discussion platform „Reddit,” social network „Facebook” groups, and other online sources, where individuals shared their personal experiences, opinions, and recommendations regarding the accessibility of music events for deaf and hard-of-hearing individuals. These platforms provided diverse, experience-based insights reflecting both community needs and practical solutions applied in real-life contexts. Table 2 presents informants’ statements on the accessibility of music events for deaf and hard-of-hearing individuals, highlighting key accessibility dimensions related to communication, information dissemination, spatial organization, and technological solutions.

The analysis of the category „Music events experiences” reveals that accessibility is a multidimensional phenomenon, encompassing not only individual measures but also their interaction within a broader system.

Sign language interpreters are identified as a key accessibility measure; however, informants’ statements indicate that their mere presence is not sufficient. A post from an informant in group X6 highlights the importance of active communication – emphasizing the need not only to provide sign language interpreters but also to clearly inform the community about their availability. An informant from group X1 notes that the integration of sign language interpretation contributes to the overall atmosphere and liveliness of the event, a point further reinforced by another X1 informant, who states that even for those who do not require this service, it is not disruptive. This suggests that sign language interpreters perform not only an informational role but also a social and cultural function, strengthening the sense of inclusion for deaf and hard-of-hearing individuals.

Sensory musical experience emerges as a primary mechanism of engagement. Posts from informants in groups X1, X2, and X9 demonstrate that vibrations enable not only the perception of rhythm but also the

differentiation of instruments and the understanding of musical structure, alongside visual and facial expressions. Personal accounts from group X9 further confirm that music is perceived through the body and lived experience. This indicates that effective development of music tourism should be grounded in multisensory design, integrating vibrational, visual, and emotional elements.

Technological solutions, particularly vibrotactile and haptic technologies, significantly contribute to expanding musical experiences. Informants from group X1 refer to a range of practical solutions, from simple approaches to more advanced technologies. Posts from groups X1 and X8 suggest that vibrations allow music to be experienced physically and create a sense of environmental immersion, while also acknowledging certain limitations of these technologies. Additional insights from groups X7 and X8 reinforce their importance but also demonstrate that they are not universal solutions and must be combined with other accessibility measures.

Table 2

Accessibility of Music Events for Deaf and Hard-of-Hearing Individuals

Category	Subcategories	Coding Description	Evidential statements
Music events experiences	Sign language interpreters and communication	Sign language interpreters are considered a fundamental accessibility tool; however, it is not only their presence that is vital, but also active communication regarding their availability and their proper integration within the event space.	„Yes, we do enjoy it... I think it makes the concert more lively” (X1). „Many find it beneficial to have signed access. Those that don’t benefit from it aren’t bothered, so why not include it” (X1). „Hire interpreters and advertise it... Tell the deaf community that you have interpreters”(X6).
	Sensory music experience	Music is perceived through vibrations, which allow for the identification of rhythm, instruments, and even the overall structure of the music.	„She can now distinguish between vibrations made by drums, guitar and sometimes bass.” (X1). „I can use vibrations to know a chord, note...” (X1). „I felt these subtle changes in sound through my body.” (X1) „DJ & Sign Song Workshop for Young People in London! Free creative workshop... No experience needed.” (X2). „We can feel the vibrations... my sister puts her hands on her Bluetooth speakers.” (X5) „To get those chills, you need intonation; there must be a connection between the words and the facial expressions, and for us, expressions are our intonation.” (X9). „There are many in the Deaf community who believe they don’t need music. But for me, it’s different-I love it; I feel the vibrations of the sound and the pulse of the rhythm.” (X9).
	Technological solutions: vibrotactile and haptic technologies	Vibrational technologies (vests, floor devices, speakers) allow music to be experienced through the body; however, their effectiveness is limited by frequency range and technological constraints.	„Provide balloons or bottled water... or rent those haptic vests.” (X1). „Vibrations that come from below the feet offer a feeling of sound that surrounds me.” (X1). „Vibrations from a saxophone are too high to make out.” (X1). „Haptic vests... speakers and amps on the floor is awesome.” (X1) „Vibrating vests help deaf people experience music.” (X7). „Haptic suits allow deaf people to feel music.” (X8).
	Information dissemination and community engagement	Effective communication with the deaf and hard-of-hearing community (e.g., through social groups) is essential to ensure genuine accessibility and participation.	„Find your local Deaf coffee groups and advertise there.” (X1). „Come Share Vusic between the Deaf and the Hearing! Discover gestivals where vusic is experienced differently, together!” (X2). „To Derby Deaf community!! There is a cool event with captioning with special glasses...” (X5). „Advertise that you already have interpreters booked.” (X6).

	Spatial organization and visibility	The physical environment and seating arrangements have a direct impact on the quality of the experience.	„Put the Deaf seats close enough that we can see the entire stage.” (X1). „The interpreter doesn’t need to describe a muted trumpet sound if I can see the mute.” (X1).
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**Source: compiled by the author based on the results of the study*

Information dissemination and community engagement are identified as critical factors in accessibility. The findings indicate that even when accessibility measures are in place, their effectiveness depends on whether the target audience is aware of them. Informants from groups X1, X2, and X6 emphasize the need for targeted communication channels directed at deaf and hard-of-hearing communities, including social media initiatives that highlight community belonging and encourage shared participation. This suggests that accessibility begins prior to the event, with information accessibility and communication strategies forming the foundation of inclusion.

The organization of physical space and visual accessibility has a direct impact on the quality of the experience. Informants from group X1 clearly indicate that the ability to simultaneously see the stage and the sign language interpreter is essential for a comprehensive understanding of the event. Visual accessibility compensates for the lack of auditory information and, in some cases, reduces the need for additional explanations. This highlights that spatial planning must prioritize visual experience and sensory accessibility, integrating these aspects into the overall event design.

In summary, the accessibility of music events for deaf and hard-of-hearing individuals is a complex process involving communication, community engagement, physical environment, sensory experience, and technological solutions. These elements do not function independently but rather as an integrated system; only their combination enables the creation of a comprehensive and inclusive musical experience.

Table 3 presents informants’ statements on the development perspectives of inclusive music tourism for deaf and hard-of-hearing individuals, highlighting the importance of experiential value, sensory perception, individual differences, and inclusive design.

The analysis of the category „Music Tourism Experiences” reveals that music tourism for deaf and hard-of-hearing individuals is perceived as a holistic and multi-layered experience that transcends the traditional understanding of music as solely an auditory phenomenon.

Posts from informants in group X1 emphasize that concerts and festivals are not limited to sound-based experiences but also encompass emotional, social, and physical dimensions. Statements from groups X2 and X3 highlight the importance of community and atmosphere, while vibrations emerge as a key component of the experience. This indicates that the development of music tourism should be oriented toward a holistic experience that integrates multiple sensory and social dimensions.

Strategies of musical perception reveal the active involvement of deaf individuals in the processes of music creation and interpretation. Informants from group X1 indicate that they consciously develop the ability to perceive music through vibrations and bodily sensations. This suggests that music tourism can move beyond passive observation to become an active and creative engagement, involving participants in both experiencing and co-creating music.

The influence of auditory experience highlights the significance of individual differences. Posts from informants in groups X1, X4, and X5 emphasize that music perception depends on the degree of hearing loss and prior experience. This leads to the conclusion that universal solutions are insufficient, and that flexible, individualized experiences tailored to diverse users are necessary.

Emotional and aesthetic experience remains fundamental regardless of hearing ability. Informants from groups X1 and X4 stress that music evokes pleasure, emotional connection, and a sense of energy. Additionally, posts from group X2 reflect a positive attitude toward the participation of deaf and hard-of-hearing individuals in the music industry. This demonstrates that music tourism can provide a meaningful and fulfilling emotional experience independent of auditory capacity.

Inclusion and design solutions are identified as essential conditions for successful development. Informants from groups X1 and X5 emphasize the importance of involving deaf and hard-of-hearing individuals in decision-making processes and avoiding generalized assumptions about uniform experiences. Contributions from group X9 further indicate that co-creation principles are reflected in practical initiatives. This suggests that effective development of music tourism should be grounded in user-centered and participatory design approaches.

Finally, the need for music – identified as a core dimension of music tourism – reveals a strong and consistent emotional connection to music across different informant groups. Posts from groups X1, X5, and

X9 demonstrate that music remains a meaningful experience regardless of hearing ability. Sensory experience is particularly emphasized in groups X1 and X5, indicating that music is perceived not only through sound but also through bodily and environmental sensations. Additionally, the use of symbols by informants in groups X1-X5 reinforces a positive relationship with music and reflects emotional engagement. In netnographic research, such symbols are considered significant data, as they function as forms of digital paralinguistic communication that convey emotions, attitudes, perspectives and social approval. Studies show that emojis are used to compensate for the absence of nonverbal cues in online communication and help express emotional content (Kennison et al., 2024; Was & Hamrick, 2021). Furthermore, emojis and „like” functions serve as indicators of social engagement, enabling the identification of users’ positive attitudes toward content (Scharlach & Hallinan, 2023). Zappavigna and Logi (2024) emphasize that emojis create „ambient affiliation,” that is, a sense of shared connection among users, which is particularly important within communities of deaf and hard-of-hearing individuals. It is also noted that emojis act as tools for visual meaning-making, strengthening emotional messages and increasing engagement in digital environments (Yan et al., 2024).

Table 3

Development Perspectives of Inclusive Musical Tourism for Deaf and Hard of Hearing Individuals

Category	Subcategories	Coding Description	Evidential statements
Music tourism experiences	Experiential value of concerts and festivals	Musical events and festivals are perceived as a complex experience that encompasses not only the music itself but also visual, social, and physical elements.	„It’s not just the music... but the crowd’s enthusiasm, the feel of the music in my bones.” (X1). „Magnificent lighting displays... in sync with the music.” (X1) „Festivals are more than sound. They’re energy. They’re atmosphere. They’re community... Because Deaf audiences deserve the same goosebumps.” (X2). „He loves my events... just the vibrations from the speakers.” (X3).
	Music perception strategies	Deaf musicians actively develop alternative strategies for music perception and performance, based on vibrational memory and bodily sensations.	„I’ve managed... by memorizing vibration patterns.” (X1). „When I play I depend on the vibrations of my guitar.” (X1). „Allow me to feel the vibrations and then attempt recreating them.” (X1).
	The impact of auditory experience	Music perception depends on individual auditory experience, the timing of hearing loss, and its degree; therefore, these experiences vary significantly.	„The type of music I listen to is affected by my hearing loss.” (X1). „Some Deaf folks may benefit... it depends on prior experience.” (X4). „Some can hear a bit, others can hear a lot. Our perceptions vary a lot.” (X5).
	Emotional and aesthetic experience	Music is experienced as both emotional and physical; it is not defined by hearing alone.	„The vibrations... can still be pleasurable.” (X1). „Having a hearing loss has given me a larger appreciation for music, silence, and vibrations.” (X1). „Another DJ booking on the mainstream festival circuit! It clearly shows Deaf DJs make noise! Let the music play! Shut Up and Dance!” (X2). „I still love it... feel vibrations, trust intuition, enjoy the energy.” (X4).
	Inclusion and design solutions	Effective accessibility requires more than just technology; it demands the direct involvement of deaf and hard-of-hearing individuals in the decision-making process.	„We need to be involved with its development.” (X1). „We shouldn’t assume that different people... will have the same experience.” (X1). „Hire a deaf consultant to help with accommodations.” (X5). „We created this educational publication by collaborating with both Deaf and hearing participants to better understand how to integrate sign language into the musical experience.” (X9).

	The need for music	It reflects an innate inner need for music and a positive emotional relationship with it, which persists regardless of hearing abilities.	„I still love music... I feel it and enjoy the energy.“ (X1). „I like songs with strong bass because I can feel them.“ (X1). „I enjoy the atmosphere and vibrations.“ (X5). „I love music even though I can't hear everything.“ (X5). „Music is still important to me.“ (X5). „Music is part of my life.“ (X5). „...I love music; I can feel the vibrations of the sound and the rhythm.“ (X9). „👉“ (X1, X2, X3, X4, X5). „👉“ (X2, X3, X4, X5). „❤️“ (X2, X3, X4, X5).
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*Source: compiled by the author based on the results of the study

In summary, the development of inclusive music tourism is grounded in the creation of multisensory experiences, the recognition of individual needs, and active community involvement. The need for music remains universal and independent of hearing ability; however, its expression shifts toward alternative forms -sensory, emotional, and digital. Only the integration of these elements enables the creation of meaningful, inclusive, and competitive music tourism offerings for deaf and hard-of-hearing individuals.

Conclusions

The analysis revealed that the perspectives of deaf and hard-of-hearing individuals toward the accessibility of music events are shaped not only by physical or technological measures but also by inclusive cultural practices. Sign language interpreters, vibrotactile and haptic technologies, as well as the integration of facial expression and intonation into performances, emerge as essential tools for creating a comprehensive sensory, visual, and emotional experience. Both academic research and discussions on social platforms indicate that, for deaf and hard-of-hearing individuals, music is not merely sound but an integrated bodily, visual, and emotional experience, closely linked to social inclusion and community participation. It is emphasized that the presence of a sign language interpreter alone is insufficient; active communication about their availability to the community is equally important.

The perspectives of deaf and hard-of-hearing individuals toward the development opportunities of inclusive music tourism are highly positive, as reflected in the frequent use of emojis in the analyzed posts. It is highlighted that specially adapted educational programs, the use of social platforms for information dissemination, and the integration of sign language interpreters at events contribute to a sense of inclusion and motivate participation in both local and international music tourism activities. This perspectives demonstrates significant potential for the development of inclusive music tourism targeted at deaf and hard-of-hearing audiences, fostering international collaboration, creative workshops, and social exchange.

The attractiveness of music events and inclusive music tourism can be enhanced through multi-level measures: the active inclusion of sign language interpreters and effective communication about their services; the integration of vibrotactile and haptic technologies; appropriate organization of stage visibility and seating arrangements; and the adaptation of visual and emotional elements to support music perception. The use of social platforms for event promotion, along with educational initiatives such as the Lithuanian Deaf Association (LKD) project „We didn't agree to this“ (2023), can further strengthen audience engagement and ensure meaningful experiences for deaf and hard-of-hearing individuals. Additionally, creative workshops (e.g., improvisation, DJ and VJ activities) and participation in international festivals enrich experiences, expand social networks, and reinforce the sense of inclusion.

References

1. Bhatt, V., Singh, P., Bhartiya, S. P., & Mishra, S. (2024). A netnographic analysis of tourists' experiences in the rural tourism village of India. In *Building community resiliency and sustainability with tourism development*, 128-147. Retrieved from: https://www.researchgate.net/publication/383006706_A_Netnographic_Analysis_of_Tourists'_Experiences_in_the_Rural_Tourism_Village_of_India
2. Bolderman, L. (2020). *Contemporary music tourism: A theory of musical topophilia*. Routledge.
3. Classic FM. (2023). *Vibrating vests help deaf people experience music*. Retrieved from: <https://www.classicfm.com>
4. Community of Deaf and Hard of Hearing (2019-2026). Retrieved from: <https://www.facebook.com/groups/deafandhoh/>

5. Deaf (2019-2026). Retrieved from: <https://www.facebook.com/login/?next=https%3A%2F%2Fwww.facebook.com%2Fgroups%2F33998345603%2F>
6. Deaf People around the World (2019-2026). Retrieved from: <https://www.facebook.com/groups/644489433422509/>
7. Deaf Worl Live (2019-2026). Retrieved from: <https://www.facebook.com/groups/329702945336190/>
8. Darcy, S., & Dickson, T. (2017). A whole-of-life approach to tourism: The case for accessible tourism experiences. *Journal of Hospitality and Tourism Management*, 29, 44-52.
9. Deaf Rave, (2019-2026). Retrieved from: <https://www.deafrave.com/>
10. Fryer, L. (2021). Accessibility of cultural events for deaf audiences: Challenges and innovations. *Journal of Cultural Management and Cultural Policy*, 7(2), 215-229.
11. Hall, S. A. (2023). *These vibrating vests bring music to life for deaf gig-goers*. Classic FM. Retrieved from: <https://www.classicfm.com/discover-music/live-music-deaf-audiences-vibrating-vests/>
12. Iványi, T., & Bíró-Szigeti, S. (2020). Understanding internal connections of music festivals' experience dimensions. *Tourism and Hospitality Management*, 26(2), 437-454. Retrieved from: https://thm.fthm.hr/images/issues/vol26no2/9_Ivanyi_B_r_Szigeti
13. Jensen, M. T., Chambers, D., & Wilson, S. (2023). *The future of deaf tourism studies: An interdisciplinary research agenda*. *Annals of Tourism Research*, 100, 103549. Retrieved from: <https://ideas.repec.org/a/eee/anture/v100y2023ics0160738323000221.html>
14. Kement, U. (2024). Music festivals research in the hospitality and tourism industry: A bibliometric analysis. *Worldwide Hospitality and Tourism Themes*, 16(4), 440-456. Retrieved from: https://www.researchgate.net/publication/383817246_Music_festivals_research_in_the_hospitality_and_tourism_industry_a_bibliometric_analysis
15. Kennison, S. M., Fritz, K., Hurtado Morales, M. A., & Chan-Tin, E. (2024). Emoji use in social media posts: Relationships with personality traits and word usage. *Frontiers in Psychology*, 15, 1343022. Retrieved from: <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1343022/>
16. Kim, S. S., Kim, S., & Wong, A., K., F. (2023). Music-induced tourism: Korean pop (K-pop) music consumption values and their consequences. *Journal of Destination Marketing & Management*, 30, 100824. Retrieved from: <https://www.sciencedirect.com/science/article/abs/pii/S2212571X2300063X>
17. Kozinets, R. V. & Gretzel, U. (2023). Netnography. In book: *Encyclopedia of Tourism Management and Marketing*, 316-319. Retrieved from: https://www.researchgate.net/publication/371784485_Netnography
18. Kuppusamy, M., & Buhalis, D. (2019). Accessible tourism and the role of digital technologies. *Journal of Tourism Futures*, 5(3), 274-288.
19. Lill, A. (2019). At Concerts, American Sign Language Interpreters Translate More Than Lyrics. CPR News. Retrieved from: <https://www.cpr.org/2019/07/23/sign-language-interpreter-concerts-red-rocks-colorado/>
20. LKD: „Mes taip nesitarėm“. (2023). Lietuviški socialiniai-meniniai projektai su kurčiaisiais. Retrieved from: <http://www.lkd.lt/prie-pirmosios-dainos-lietuviu-gestu-kalba-prisidejusi-neprigirdincioji-dievinu-lietuviska-muzika>
21. Mair, J., & Weber, K. (2019). Event and festival research: A review and research directions. *International Journal of Event and Festival Management*, 10(3), 209-216. Retrieved from: https://www.researchgate.net/publication/337681086_Event_and_festival_research_a_review_and_research_directions
22. Mason, O. & Randall, A. (2025). Australian Broadcasting Corporation. *Auslan interpreters improve accessibility at live music performances*. ABC News. Retrieved from: <https://www.abc.net.au/news/2025-07-10/auslan-interpreters-improve-accessibility-live-performances/>
23. Mazlan, C. A. N., Abdullah, M. H., Hashim, N. S. N., & Abdul Wahid, N. (2025). *Music in cultural tourism: Insights from a dual approach of scoping review and bibliometric analysis*. *Humanities and Social Sciences Communications*. Retrieved from: https://www.researchgate.net/publication/390734115_Music_in_cultural_tourism_insights_from_a_dual_approach_of_scoping_review_and_bibliometric_analysis
24. Mejías Martínez, G., & Gutiérrez Iturralde, I. (2024). The music festival as a tourist attraction. *Street Art & Urban Creativity*, 11. Retrieved from: <https://visualcompublishations.es/SAUC/article/view/5803>
25. Narangajavana Kaosiri, Y., Callarisa Fiol, L., Moliner, M. A., & Rodriguez-Artola, R. M. (2017). User-generated content sources in social media: A new approach to explore tourist satisfaction. *Journal of Travel Research*, 58(2), 253-265. Retrieved from: https://www.researchgate.net/publication/321854607_User-Generated_Content_Sources_in_Social_Media_A_New_Approach_to_Explore_Tourist_Satisfaction
26. Not Impossible Labs, (2018-2026). *Music: Not Impossible – Vibrotexile™ wearable technology for inclusive music experiences*. Retrieved from: <https://www.notimpossible.com/projects/music-not-impossible>
27. Partale, K. & Partale, A. (2021). Inclusion and Tourism. Analysis and practical approaches for development cooperation projects. *Human Rights in Tourism Foundation*.

28. Rebelo, S., Patuleia, M., & Dias, Á. (2022). Inclusive tourism: Assessing the accessibility of Lisbon as a tourist destination. *Tourism and Hospitality*, 3(2), 466-495. Retrieved from: https://www.mdpi.com/2673-5768/3/2/30?utm_source
29. Reddit. (2019–2026). *Online discussions on Deaf and hard-of-hearing experiences with music and concerts*. Retrieved from: <https://www.reddit.com>
30. Rochman, G. P., Afiati, Syaodih, E., & Aji, R. R. (2022). How accessible is tourism for people with disabilities? In *Science and Technology Research Symposium (SIRES)*. KnE Life Sciences, 211-218. Retrieved from: <https://knepublishing.com/index.php/KnE-Life/article/view/12528/20314>
31. Saji, S., & Sreelakshmi, N. (2020). Music and tourism: An analysis of music as a part of cultural tourism. *Tourism Development, Behavior, and Sustainability*, 23.
32. Scharlach, R., & Hallinan, B. (2023). The value affordances of social media engagement features. *Journal of Computer-Mediated Communication*, 28(6). Retrieved from: <https://academic.oup.com/jcmc/article/28/6/zmad040/7326084>
33. Schmitz, A., Holloway, C., & Cho, Y. (2020). Hearing through vibrations: Perception of musical emotions by profoundly deaf people. Retrieved from: <https://arxiv.org/abs/2012.13265>
34. Schmitz, A., Holloway, C., & Cho, Y. (2020). Hearing through vibrations: Perception of musical emotions by profoundly deaf people. Retrieved from: <https://arxiv.org/pdf/2012.13265>
35. Tarantini, F. (2023). *When Accessibility Becomes Performance: Performativity as an Element and Carrier of Accessibility in Sign-Language-Interpreted Music*. *Journal of Audiovisual Translation*, 6(1), 93-109. Retrieved from: https://www.researchgate.net/publication/376642836_When_Accessibility_Becomes_Performance_Performativity_as_an_Element_and_Carrier_of_Accessibility_in_Sign-Language-Interpreted_Music
36. Theodore, B. A. J. (2024). The nature of matter: An inherent element in the interpretation of a work of art (three-dimensional). *Art and Design Review*, 12(4). Retrieved from: <https://www.scirp.org/reference/referencespapers?referenceid=3876404>
37. Ticket Fairy, (2026). *Case study: Accessibility innovations at music festivals*. Retrieved from: <https://www.ticketfairy.com/blog/case-study-accessibility-innovations-at-festivals>
38. Ticket Fairy, (2025). *Music Event Technology Trends 2025: Innovations Shaping the Future of Live Music Experiences*. Retrieved from: <https://www.ticketfairy.com/blog/music-event-technology-trends-2025-innovations-shaping-the-future-of-live-music-experiences>
39. Ticket Fairy. (2025). *Accessibility innovations in music festivals*. Retrieved from: <https://www.ticketfairy.com>
40. The New York Times (2023). *Haptic Suits Let You Feel Through Your Skin*. Retrieved from: <https://www.nytimes.com/2023/08/20/style/haptic-suits-deaf-music.html>
41. Was, C. A., & Hamrick, P. (2021). What did they mean by that? Young adults' interpretations of 105 common emojis. *Frontiers in Psychology*, 12, 655297. Retrieved from: <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2021.655297/full>
42. Webster, E., & McKay, G. (2017). *From Glyndebourne to Glastonbury: The impact of British music festivals*. Arts and Humanities Research Council. Retrieved from: https://www.researchgate.net/publication/316646280_From_Glyndebourne_to_Glastonbury_The_Impact_of_British_Music_Festivals
43. Yen, H., Shen, C., Wey, Y. & Xiong, H. (2024). The visual effects of emoji in social media travel sharing on user engagement. *Journal of Hospitality and Tourism Management*, 61, 240–250. Retrieved from: <https://www.sciencedirect.com/science/article/abs/pii/S1447677024001219>
44. Zappavigna, M., & Logi, L. (2024). How emoji make meaning and enact ambient affiliation. *Social Semiotics*.
45. Retrieved from: <https://www.tandfonline.com/doi/full/10.1080/10350330.2024.2389520>

ANALYZING SUPPLY AND DEMAND FOR AIRSIDE ACCOMMODATION AT MAJOR EUROPEAN AIRPORTS: THE CASE STUDY OF BANGLADESHI TRANSIT PASSENGERS

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Keywords: airside accommodation, European airports, Bangladeshi transit passengers, supply and demand.

Abstract

The primary goal of this article is to examine and evaluate the supply and demand for airside accommodation services among Bangladeshi transit passengers at major European airports. To achieve this, the study aims to: analyse the needs of transit passengers and evaluate accommodation models from a theoretical perspective; assess the demand for these services through empirical research; identify and evaluate the current supply and types of airside facilities at major European aviation hubs; and identify gaps between supply and demand to propose recommendations for infrastructure development. The research utilizes a systematic analysis of scientific literature to build a theoretical foundation. Empirical data was gathered through a written questionnaire survey of 492 respondents (Bangladeshi citizens residing in Lithuania) in February 2026. The supply-side analysis was conducted via desk research and qualitative content analysis of official platforms and websites of the 10 largest European airports. The survey results reveal a "gap" in airport services, characterized by a mismatch between infrastructure and the needs of transit passengers. Although transit hotels offer high-quality services, their prices are often too high. This is completely out of line with the budget that the vast majority of transit passengers are willing to spend on rest. As a result, there is a "missing middle" in the market between free benches (which are uncomfortable) and expensive hotels (which are unaffordable).

Introduction

International airports are the biggest entry point into the EU for third-country nationals. Airports represent a country's window on the world. Passengers form their first impressions about a nation from the state of its airports. (Minali et al., 2025). Evaluating the demand for short-stay lodging for visa-restricted passengers at major European hubs involves understanding the "rest deficit" created by the modern aviation environment.

Relevance of the Article. Research indicates a significant shift in how time is utilized within airport terminals. While mandatory processing activities (check-in, security, and immigration) occupy only about 20% of a traveller's time, approximately 80% is spent on discretionary activities, including resting, dining, and seeking comfort (Stephano et al., 2024). Transit passengers at non-Schengen airports and passengers from third countries who are unable or unwilling to leave the terminal (for fear that lengthy passport control checks might cause them to miss their flight) are required to spend 80% of their time in the transit zone, therefore creating a huge demand for private rest areas.

Looking toward 2026, the industry is moving toward a more seamless journey where providing immediate benefits and comfort during delays is becoming a key competitive differentiator for international hubs (International Airport Review, 2026). Despite the expansion of airport infrastructure and the diversification of passenger services, the availability and accessibility of airside accommodation remain uneven across major European hubs. Major European hubs – such as Paris (CDG), Amsterdam (Schiphol), Frankfurt, and Madrid – compete for international transit traffic. Empirical evidence suggests that satisfaction with non-aeronautical services, particularly those providing comfort, is a primary driver of overall airport service quality. Conversely, the lack of basic amenities for restricted passengers can severely "taint" the perception of the airport (Khoa, 2023).

Problem of the Article. Data from 2025 reveals that while flight cancellations in Europe decreased, structural delays remained persistent, with an overall delay rate of 32.22% (Eurocontrol, 2026). The phased introduction of the Schengen Entry/Exit System (EES) in October 2025 significantly exacerbated the situation. The legal basis for these changes is Regulation (EU) 2017/2226, which establishes the Entry/Exit System (EES) to register entry and exit data of third-country nationals crossing the external borders of the Schengen Area. This regulation aims to modernize border management by replacing manual passport stamping with an automated IT system (ACI Europe, 2025). According to industry reports (Eurocontrol, 2026; International Airport Review, 2026), border processing times increased by approximately 70%, leading to immigration queues exceeding 3 to 4 hours at major hubs like Lisbon and Paris CDG. These logistical bottlenecks resulted in a high incidence of missed flight connections and forced airport operators to expand rest areas and transit infrastructure to accommodate thousands of stranded passengers.

The system is now running more smoothly, but the increased number of security checks and the installation of self-service kiosks have reduced the available space for passengers, causing lines to stretch all the way to the boarding gates. Researchers (Martins, Silva, 2025) have calculated that the space allocated to

each passenger in the security screening area has decreased by 25% due to the installation of equipment, which has caused a "domino effect of congestion. As Eurocontrol (2025) reports, the rise in "reactionary delays" has led to a surge in overnight stays within transit terminals.

This systemic delay often results in missed flight connections, leaving travellers stranded within the international transit zones. For TCNs, this predicament is exacerbated by legal constraints; as many lack the necessary visas to exit the airport perimeter, they are effectively confined to the airside environment (ACI Europe, 2025). Consequently, traditional airport seating has proven insufficient for passengers facing delays of 24 hours or longer, necessitating a strategic shift toward integrated rest solutions.

Transit passengers, those who are prohibited by law from leaving the transit zone or who choose not to do so due to potentially lengthy security checks when re-entering and an inability to stay at hotels outside the airport – face particular difficulties during long layovers or flight disruptions. Current airport infrastructure often fails to meet the specific physiological and logistical needs of this group, resulting in a mismatch between supply and demand that undermines passenger well-being and the airport's competitiveness.

The novelty of this research lies in its specific focus on a critically underserved segment of the aviation market: third countries transit passengers (Bangladeshi citizens). While existing scientific literature extensively covers airport service quality (Alsaleh, 2024; Khoa, 2023; Dedok, 2024; Mapunda, Mwageni, 2025) and general passenger satisfaction (Hejazi, Fawzy, 2021; Khoa, 2023; Mapunda, Mwageni, 2025; Stephano et al., 2024; Ranga et al., 2024), most studies treat travellers as a homogenous group with equal mobility. Furthermore, this study specifically examines accommodation providers accessible to this passenger segment. A review of major academic databases indicates that this niche remains significantly under-researched, with no prior studies specifically focusing on these demographics' needs.

Object of the Article: The supply and demand of airside accommodation services for Bangladeshi transit passengers at major European airports.

Goal of the Article: To examine and evaluate the supply and demand for airside accommodation services among Bangladeshi transit passengers at major European airports.

Objectives of the Article:

1. To analyse the needs of transit passengers and evaluate airside accommodation models from a theoretical perspective.
2. To analyse the demand for airside accommodation among Bangladeshi transit passengers through empirical research.
3. To identify and assess the current supply, types, and availability of airside accommodation services at major European aviation hubs.
4. To identify gaps between supply and demand and propose recommendations for enhancing the accessibility and development of airside facilities.

Methods of research. The following methods were used in preparing this article:

1. The theoretical foundation of this study was established through a systematic **analysis of scientific literature**, including peer-reviewed articles, academic books, and industry reports.

2. **Written questionnaire survey.** A survey was conducted to assess the demand for on-site (airside) hotel services at airports. The survey was carried out between 1 February 2026 and 1 March 2026. The survey questionnaire (consisting of 15 questions) was prepared at <https://www.qualtrics.com>. The questionnaire link was distributed via email and social networks, specifically within social media groups for Bangladeshi citizens in Lithuania.

Sample of respondents. The study sample consisted of Bangladeshi citizens residing in Lithuania. This group was chosen as a highly relevant target population: it is not possible to fly directly from Bangladesh (Dhaka) to Vilnius – you must choose a flight with at least one, and usually two, layovers. Consequently, they are more likely to encounter challenges during layovers, particularly in cases of extended waiting times or disrupted travel itineraries. Their experiences provide valuable insights into the specific needs and potential demand for airside accommodation services.

According to statistics (migracija.lt, 2026), as of February 1, 2026, there were 1,644 Bangladeshi citizens living in Lithuania. The sample size was calculated using the sample size calculator based on the Paniotto formula, available at <https://www.qualtrics.com/blog/calculating-sample-size/>, with a margin of error of 5 percent (confidence level 95 %) and it was determined that 312 respondents needed to be surveyed to obtain reliable data. In total, 492 targeted respondents were surveyed in February. This is certainly a sufficient number of respondents to draw conclusions.

Survey Instrument and Structure. The research instrument consisted of a structured 15-item questionnaire. To ensure comprehensive data collection, the survey was organized into four thematic modules,

each addressing specific aspects of the transit experience: 1. *Respondent Demographics*. This section collected baseline information, including age, gender, occupation in Lithuania, and primary purpose of travel.

2. *Travel Experience*. This module examined travel frequency, commonly used European transit hubs (e.g., FRA, AMS, CDG), and average layover duration. Such data are essential for evaluating the potential need for on-site accommodation. 3. *Regulatory Impact*. As a central component of the survey, this section assessed whether respondents were legally restricted to the airside zone and how they utilize terminal infrastructure (e.g., floors, seating areas, or lounges) during extended waiting periods. 4. *Demand and Willingness to Pay*. The final module aimed to identify the supply – demand gap. Respondents were asked to evaluate the importance of specific hotel amenities and indicate their willingness to pay for short-term (hourly) airside accommodation. The questionnaire employed a combination of Likert scales, multiple-choice questions, and ranking scales to ensure both quantitative reliability and deeper insights into passenger experiences and unmet needs.

3. The supply-side analysis relied on desk research and **qualitative content analysis** of official airport platforms. To identify the types of accommodation services available on the premises of major European airports and their availability, an analysis of the websites of the 10 largest airports was conducted. The airports were selected based on the latest official passenger traffic data, with priority given to the largest airports. Ten European airports were selected. The list of airports was obtained from the Airports Council International. "Annual World Airport Traffic Report 2025" (Airports Council International, 2025). For each airport, the publicly accessible sections of the official websites were reviewed, including general services and passenger services. Only the English-language versions of the websites were analysed, which were available in 100% of cases. The analysis was conducted in January and February 2026. Table 1 lists the European airports under review and their websites.

Once the survey was completed, the results were entered into Microsoft Excel. They were organized, and certain trends in the responses to the questions were identified. All survey questions were analysed, and graphs were created for the key questions. After analysing the survey results, conclusions were drawn and recommendations were made.

The Needs and Satisfaction of Transit Passengers at Airports

Asad Miss (2024) study examines passenger priorities when choosing between long-haul direct flights and connecting flights between the Asian and European regions. The authors reveal that Asian travellers are more likely to choose cheaper flights with layovers, while Europeans prioritize saving time and prefer direct routes. Passenger behaviour is also influenced by socioeconomic level; wealthier people are more likely to pick direct flights for long-distance travel, independent of price considerations. On the other hand, despite the difficulty of long journey periods, customers with limited financial means sometimes choose flights with layovers in order to maximize reduced ticket rates (Luttmann, 2018). Transit passengers are individuals passing through an airport on a journey between two other points, typically staying for a few hours up to a single day. Because they are in the process of transferring between flights, their needs are distinct from those of originating or terminating passengers (Asad Miss, 2024). Transit passengers form a crucial segment of the travel industry, contributing to the revenue of airlines and airports while presenting unique challenges and opportunities. Understanding the needs and preferences of transit passengers and implementing best practices for their handling can enhance the overall travel experience and ensure customer satisfaction. By prioritizing the comfort, convenience, and efficiency of transit passengers, airlines and airports can create a seamless and enjoyable journey for travellers passing through their facilities.

Traditionally, passenger satisfaction in aviation was evaluated primarily through tangible service outputs, such as punctuality, baggage handling efficiency, and in-flight comfort. However, as the aviation industry has matured and the number of passenger touchpoints has increased, the criteria for assessing the overall travel experience have expanded significantly (Alsaleh, 2024). Contemporary passengers tend to perceive their journey as an integrated experience, in which high-quality service at certain stages can compensate for shortcomings at others. For example, flight delays may be perceived more leniently if airports provide seamless check-in procedures, a comfortable environment, and efficient internal mobility systems that reduce transit fatigue (Stephano et al., 2024).

Modern air travel is increasingly characterized by extended waiting periods caused by long layovers and flight disruptions. These conditions can negatively affect passengers' physical, psychological, and emotional well-being (Gotti et al., 2024). Importantly, research shows that only about 20% of passengers' time at the airport is spent on mandatory processes such as check-in and security screening, while the remaining 80% is dedicated to discretionary activities, including resting, dining, and seeking comfort (Stephano et al., 2024). This shift highlights the growing importance of airport environments as spaces not only for transit but also for temporary living and recovery.

Accordingly, the quality of the airport environment and its facilities has become a key determinant of overall passenger satisfaction (Mapunda, Mwageni, 2025). Elements such as ambiance, spatial comfort, and the availability of high-quality rest areas are no longer considered optional or luxury features, but essential components in reducing travel-related stress and preventing dissatisfaction (Stephano et al., 2024). The absence of private and comfortable resting spaces is frequently associated with feelings of discomfort and even "dehumanization", particularly during prolonged waiting periods in crowded and poorly equipped areas (Gotti et al., 2024).

Recent studies further emphasize the role of sensory experience in shaping passenger perceptions. For instance, reduced noise levels have been shown to significantly improve both passenger well-being and overall airport efficiency (Andrews, 2024). Silence in airport environments is not merely the absence of sound, but a condition that fosters tranquillity and allows passengers to rest, work, or relax without constant interruptions. Airports that minimize excessive announcements and instead rely on digital information systems can create calmer, more passenger-friendly environments.

In this context, the provision of dedicated rest solutions, such as mini-hotels and sleeping pods, directly addresses what can be described as a "rest deficit" experienced by transit passengers. Extended waiting times in noisy and crowded terminal spaces often lead to heightened stress and physical exhaustion (Gotti et al., 2024). Airside accommodation offers a controlled and private environment that mitigates these negative effects, enhancing both comfort and overall travel experience.

Passenger satisfaction is therefore driven not only by operational efficiency but also by the quality of physical infrastructure and available amenities (Alsaleh, 2024; Mapunda, Mwageni, 2025). Comfortable seating, quiet zones, and private rest facilities represent fundamental dimensions of service quality. Investment in high-standard rest infrastructure enables airports to transform waiting time from a negative experience into a valuable opportunity for rest and recovery, thereby improving overall satisfaction and airport service quality (Alsaleh, 2024; Stephano et al., 2024).

Moreover, providing passengers with access to private resting spaces has been shown to positively influence behavioural outcomes. Passengers who are able to rest comfortably during delays are significantly more likely to recommend the airport and choose it for future transit (Alsaleh, 2024; Khoa, 2023). This highlights the strategic importance of airside accommodation not only as a service enhancement but also as a tool for strengthening airport competitiveness and customer loyalty.

Looking ahead, airports are increasingly evolving into "intelligent hubs," where digital technologies are seamlessly integrated with physical comfort solutions (International Airport Review, 2026). Leading international hubs are already differentiating themselves by offering immediate comfort-oriented services to passengers affected by delays or long transit times. In this highly competitive environment, airside accommodation - particularly in the form of mini-hotels - serves as a key differentiator, enabling airports to attract transit passengers by ensuring a smoother, less stressful, and more human-centered travel experience (International Airport Review, 2026).

The theoretical analysis of transit passenger needs demonstrates that contemporary air travel is no longer evaluated solely through operational efficiency, but through the overall quality of the passenger experience within airport environments. Due to extended layovers and the growing proportion of discretionary time spent in terminals, passengers increasingly prioritize comfort, privacy, and opportunities for rest.

Transit passengers require specific assistance with flight connections, including real-time updates on gate changes and flight schedules. Navigation (Wayfinding) – efficient wayfinding is critical to guide passengers through security checks, immigration, and terminal changes. During their stay, passengers seek access to rest areas, showers, charging stations, and transit lounges. Access to restful spaces like sleep pods or transit hotels is increasingly valued.

Factors Influencing Passenger Satisfaction:

- **Airport Lounges.** Lounge access has shifted from an optional perk to a decisive factor in selection, with 47% of users planning routes around lounge access. Satisfaction scores significantly increase for passengers who remain in a lounge for two hours or longer. The primary draws are food and beverage offerings (74%) and rest and relaxation (62%). (Ratlif, 2025).
- **Service Quality.** Key satisfaction drivers at international airports include check-in staff efficiency, ease of finding one's way, comfort in the departure lounge, and the friendliness of staff. (Hejazi, Fawzy, 2021). High-quality mobile connectivity is now a core standard for the passenger experience. Passengers depend on mobile networks for streaming entertainment during delays, business communications, and making retail or food purchases via mobile platforms.
- **Wait Times and Queuing.** Passengers are highly sensitive to queue times at check-in and security. The option for a "queue-free" journey is a top desire for 78% of travellers. (Ratlif, 2025).
- **Physical Environment.** Satisfaction is linked to pleasant surroundings, including comfortable seating areas, Scandinavian design, and "oasis-like" spaces where travellers can relax. Conversely, long walking distances between functional areas (such as arrival gates and waiting zones) can lead to negative emotions.

In summary, transit passengers should be understood as active users of airport spaces with complex and evolving needs, where rest, comfort, and emotional well-being are central components. This reinforces the importance of integrating appropriate accommodation solutions within airport infrastructure, particularly in the context of prolonged waiting times and restricted mobility conditions.

Typology of Airside Accommodation

Airport infrastructure is typically divided into two main categories: airside and landside. Airside infrastructure primarily supports aircraft operations, including elements such as aprons, taxiways, and airfield lighting systems, as well as the secure areas of the terminal accessible only to ticketed passengers. In contrast, landside infrastructure is designed for general passenger and ground transport activities, encompassing access roads, parking facilities, and terminal buildings (Minali et al., 2025).

Landside areas accommodate passenger processing, public access, and commercial activities; consequently, they are generally open to all users. These areas represent a complex system of functional components-such as ground access, parking, and real estate - that serve both passengers and the broader airport catchment area (Dimitriou et al., 2022). Traditionally, most airport hotels and transit accommodation facilities have been located within this landside zone.

Transit hotels are specifically designed to provide short-term accommodation for passengers experiencing layovers or delays. Unlike conventional hotels, these facilities are characterized by time-limited occupancy, often offering flexible booking options ranging from a few hours to short overnight stays (Rangga et al., 2024). Depending on their location relative to the airport, such hotels may be classified as on-airport, off-airport, on-campus, or within the airport catchment area (Airport Hotel Study, 2022). Furthermore, based on accessibility, airport hotels can be categorized into walkable properties with direct terminal access and shuttle-dependent properties requiring transportation services (Dedok, 2024).

A key distinction in airport accommodation typology is based on the location relative to passport and customs control. Landside hotels are accessible to all passengers and visitors, as they are situated before security or border control zones. In contrast, airside hotels are located within the secure transit area, beyond passport control, and are accessible only to passengers who have already cleared security or are in transit (Dedok, 2024). These facilities are a logistical necessity for transit passengers who are legally unable or unwilling to leave the restricted zone due to visa requirements.

Airside accommodation is primarily designed to maximize comfort for transit passengers, especially in large hub airports with high passenger volumes and frequent connecting flights (Dedok, 2024). Compared to traditional city hotels, airport accommodation caters to a distinct clientele, typically characterized by short stays, urgency, and functional needs related to travel schedules (Dimitriou et al., 2025). As a result, these facilities emphasize efficiency, flexibility, and immediate accessibility.

In recent years, airside accommodation has evolved significantly with the introduction of technologically advanced rest solutions, such as sleeping pods and micro-hotel concepts. These facilities are commonly categorized based on their technological sophistication into basic, semi-smart, and fully digital systems (Fortune Business Insights, 2026). While basic units provide essential privacy and rest functions, semi-smart

pods incorporate adjustable lighting and ventilation, whereas fully digital systems offer automated services, self-check-in, and integration with airport digital platforms.

Technological advancements have further enhanced the user experience through ergonomic and hygienic innovations. For instance, solutions such as SmartBed technology, implemented by brands like YOTELAIR, allow the transformation of seating into beds, optimizing limited space (Les Roches, 2022). Additionally, post-pandemic developments have accelerated the adoption of automated cleaning technologies, including UV sterilization and self-disinfection systems, ensuring higher standards of hygiene and passenger safety (Fortune Business Insights, 2026).

The global market for airport sleeping pods is expanding rapidly, with projections estimating a value of approximately USD 147.4 million by 2034 (Fortune Business Insights, 2026). These facilities are increasingly deployed in both landside and airside zones, although airside placement is more prevalent due to its ability to serve transit passengers within secure areas (Dimitriou et al., 2025). They cater to a diverse range of users, including commercial passengers, premium travelers, and airport staff requiring rest areas.

A variety of accommodation formats are currently available in airports worldwide. Leading providers such as GoSleep, NapCabs, and YOTEL offer solutions ranging from ergonomic reclining pods to fully enclosed private cabins. For example, GoSleep pods, first introduced at Abu Dhabi International Airport in 2013, provide adjustable seating, privacy covers, and integrated charging facilities. More advanced models, such as flat-bed capsules or "Work & Rest" stations, combine sleeping and working functionalities, reflecting the growing need for multifunctional transit spaces (Kaljakina, 2018).

The concept of airport micro-hotels has also gained prominence as an innovative solution that allows passengers to rest without leaving the terminal. Major international hubs such as Heathrow, Gatwick, Munich, and Sheremetyevo have already adopted these models, highlighting a broader shift toward passenger-centric service innovation (Caetano, Alves, 2018).

In summary, airside accommodation represents a rapidly evolving segment of airport infrastructure, driven by the need to address the specific requirements of transit passengers. The typology of such services ranges from traditional transit hotels to technologically advanced sleeping pods and micro-hotels. Their defining characteristics include short-term flexibility, secure location within transit zones, and a strong focus on comfort, privacy, and efficiency. As airports continue to transform into integrated service environments, airside accommodation is becoming an essential component in enhancing passenger experience and supporting the overall competitiveness of major aviation hubs.

Theoretical Model of Transit Passenger Needs and Service Satisfaction Constraints

Demand represents the needs and financial capabilities of passengers. In the context of airside transit, demand is driven by thousands of transit travellers who require a secure, quiet, and affordable place to rest during long layovers. **Supply** refers to the infrastructure and services provided by airports, such as transit hotels, sleeping pods, or rest zones. The success of a major aviation hub depends on the alignment (balancing) of these two forces. **When supply meets demand** at the right price point, it creates a win-win situation: for Passengers – it improves the travel experience, reduces fatigue, and provides dignity to those who cannot legally leave the airport. For Airports -it unlocks new revenue streams and increases the airport's competitiveness as a global hub.

The proposed model (Figure 1) illustrates a structured pathway for evaluating the fulfilment of transit passenger requirements within a restricted airport environment. The framework operates through four sequential stages: Needs Identification, Barriers, Service Delivery, and Satisfaction Assessment.

1. **Passenger Needs.** At the primary stage, the model identifies the core drivers for transit travellers: physiological (rest and hygiene), psychological (privacy and security), and functional needs (connectivity and time management). The core objectives - rest, privacy, and safety - represent the essential outputs that passengers require to mitigate the stress of long-haul transit.

2. **The Barriers.** The transition from a need to a service is obstructed by a "Barrier Zone." For the specific demographic of Bangladeshi passengers, the legal barrier (Visa restrictions in non-Schengen countries) is the most critical, as it limits their mobility to the airside zone. This is compounded by the economic barrier (high cost vs. perceived value) and the informational barrier (lack of awareness or clear signage), which often prevent the utilization of available facilities.

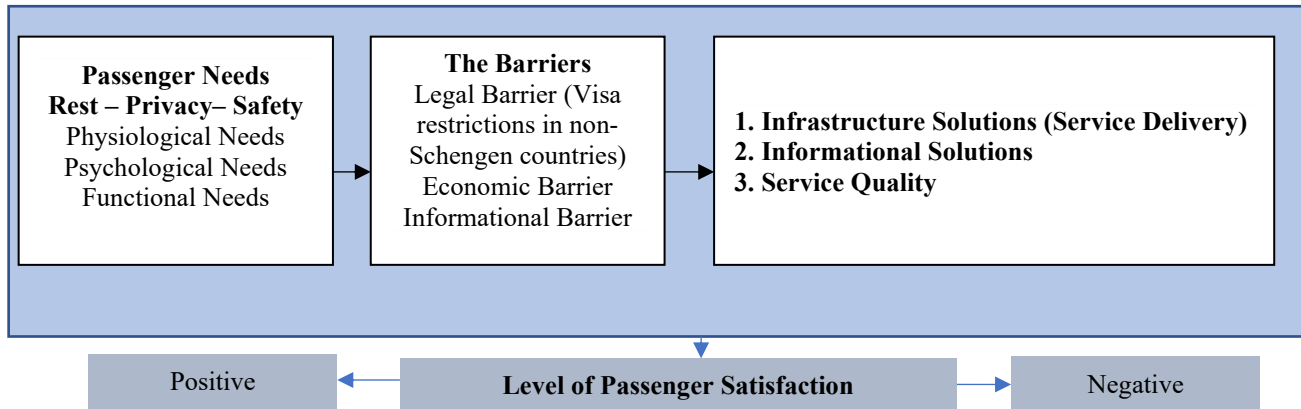


Fig. 1. Theoretical pathway from passenger needs to satisfaction outcomes in airport transit zones

**Source: compiled by the author*

The proposed model (Figure 1) illustrates a structured pathway for evaluating the fulfilment of transit passenger requirements within a restricted airport environment. The framework operates through four sequential stages: needs identification, barriers, service delivery, and satisfaction assessment.

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2. The barriers. For the specific demographic of Bangladeshi passengers, the legal barrier (visa restrictions in non-Schengen hubs) is the most critical, as it confines their mobility to the airside zone. This is compounded by the economic barrier (high cost vs. perceived value) and the informational barrier (lack of awareness or clear signage), which often prevent the utilization of available facilities.

3. Infrastructure, information, and quality solutions. To overcome these barriers, the model categorizes service delivery into three pillars:

- Infrastructure solutions – a shift from traditional full-service hotels to innovative models like sleep pods and micro-hotel concepts, characterized by hourly-based pricing (Micro-stays) and 24/7 automated accessibility.
- Informational solutions - strategies to enhance service visibility and booking ease.
- Service quality – the overarching standard of the provided facilities that ensures the infrastructure meets the functional and hygiene expectations of modern travellers.

4. The final output of the model is the level of passenger satisfaction. If the infrastructure and informational solutions effectively lower the barriers, a positive outcome is achieved (regeneration and loyalty). Conversely, if the barriers remain prohibitive, the outcome is negative, typically resulting in passengers resting in suboptimal conditions (terminal floors) and a decrease in the airport's overall service rating.

The model demonstrates that for transit passengers, airside accommodation is a logistical necessity rather than a luxury. True passenger satisfaction is achieved only when infrastructure is both legally accessible and economically aligned with the constraints of the transit segment. Failure to address these barriers inevitably leads to "Negative" outcomes, such as passengers resting on terminal floors.

The Demand and Primary Barriers for Airside Accommodation Among Bangladeshi Transit Passengers: Survey Data Analysis

According to the survey data, the majority of respondents are men (85%), while women account for 15% of the sample. As many as 77% of all respondents fall into the 18–34 age group - the largest group consists of people aged 25–34 (45%), while travellers over 45 years old make up only a small portion (12%). Most of the respondents in Lithuania are students (65%), while another quarter (25%) are salaried professionals.

Most respondents are frequent travellers - 60% of them travel to Bangladesh once a year: 85% of respondents travel to Bangladesh to visit friends and relatives, while 15% of those surveyed travel for business purposes. When analysing transit hubs, the clear leader, Istanbul (IST), dominates as the main hub (95% of

respondents). Frankfurt (FRA) remains in second place (25%), while other European hubs (Amsterdam, Paris) are visited less frequently.

The logistics connection between Bangladesh and Lithuania is complex because there are no direct flights between the two countries. Passengers are forced to choose one of three main transit routes, each of which poses different challenges for the hospitality infrastructure.

The most popular and direct route goes through Istanbul (IST) Airport, flying with Turkish Airlines. This option is valued for its relative convenience, as it usually requires only one layover. Another common alternative is flights via Gulf countries, using Emirates / fly Dubai (via Dubai) or Qatar Airways (via Doha). In this case, the journey becomes significantly longer, as it usually requires a second stop in major European capitals such as Copenhagen, Warsaw, or Frankfurt, from which Vilnius can be reached. A similar principle applies when flying via major European transit hubs (Frankfurt or Amsterdam) with Lufthansa and Air France / KLM. However, these trips can be cheaper, as it is often possible to find cheaper tickets than when flying via Istanbul.

Only 30% of passengers transfer quickly (within 6 hours), while the remaining 70% enter what can be defined as the 'fatigue zone': 45% wait 6–12 hours, and 25% wait longer than 12 hours (including 5% who face layovers exceeding 24 hours). Consequently, seven out of ten passengers require facilities for at least a brief rest or a shower. As many as 85% of respondents indicated that they lack the necessary travel documents or entry permits to leave the airport during transit. This means that the vast majority of travellers from Bangladesh to Europe (via hubs such as Istanbul or Frankfurt) are legally and physically confined to the airside zone. They lack the option to stay at more affordable hotels located in the city or the airport's landside area; their only viable choice is what is offered beyond passport control. This is particularly critical at Istanbul Airport, where Turkish national visa requirements apply independently of the Schengen Area status.

The survey results regarding passenger behaviour during extended layovers (exceeding 8 hours) reveal a stark deficiency in adequate rest infrastructure within European transit zones. As illustrated in Figure 2, an overwhelming majority of respondents (65%) indicated that they typically spend this substantial waiting period on airport benches or the floor. This high percentage highlights a critical comfort issue and suggests a state of physical strain for passengers confined to the airside.

The remaining options capture only a small fraction of the travellers. Airline lounges and coffee shops/restaurants each accommodate just 15% of respondents. While these areas offer seating and amenities, they are not designed for horizontal rest and cannot be considered sustainable solutions for layovers lasting upwards of 8 hours.

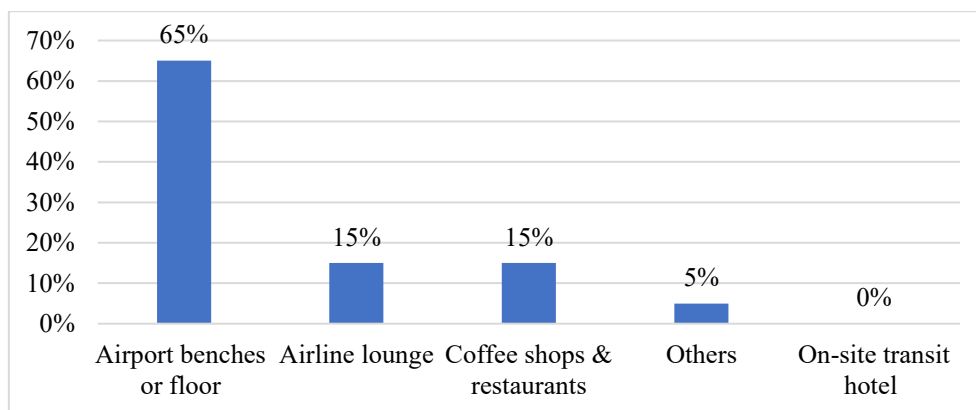


Fig. 2. Preferred Locations for Layovers Longer than 8 Hours in European Transit Zones (N=100)

**Source: compiled by the author*

Most notably, 0% of the surveyed passengers reported using on-site transit hotels. This finding is profound, as it strongly suggests that existing in-terminal hotel options are either financially prohibitive for this demographic (primarily students and VFR travellers) or consistently suffer from a lack of availability. This data serves as definitive evidence of a massive, unserved market gap between uncomfortable free seating and inaccessible accommodation, underscoring an urgent demand for affordable, private rest solutions like sleep pods.

The assessment of existing non-hotel rest facilities in European transit zones reveals a prevailing sentiment of mediocrity among travellers. As shown in the data, exactly 50% of respondents rated the current infrastructure as "Average" (3 out of 5). While this indicates that basic needs such as seating and connectivity

are generally met, it highlights a significant lack of specialized facilities designed for long-term comfort. Furthermore, a substantial 30% of passengers expressed explicit dissatisfaction, rating the facilities as "Poor" or "Fair" (1 or 2). Given that the majority of these travellers are restricted to the airside zone and face layovers exceeding 8 hours, an "average" or "poor" rating signifies a major barrier to physical recovery during transit. Only 20% of the sample reported high levels of satisfaction (ratings 4 and 5).

The ranking of essential amenities for airside facilities underscores two fundamental passenger needs: security and sensory relief. Based on a 5-point scale of importance, the study identifies a quiet environment (4.8) as the highest priority. This finding highlights that acoustic isolation is the primary driver for passengers seeking private accommodation within noisy and overcrowded airport terminals (Fig.3).

Significantly, secure luggage storage (4.5) emerged as the second most critical feature. For transit passengers the inability to securely store personal belongings while resting is a major source of anxiety.

While hourly booking flexibility (3.8) and a private shower (3.6) are considered important, they follow the fundamental requirements of sleep and safety. Notably, traditional airport amenities such as high-speed Wi-Fi (2.8) and proximity to departure gates (2.2) ranked the lowest. This confirms that long-haul travellers are willing to sacrifice digital connectivity and a convenient location in exchange for a secure, silent, and private sanctuary.

Respondents were asked the following question: "Would you be more likely to book a transit hotel in advance if it was integrated into your airline ticket purchase process?" As shown in the data, the responses were distributed as follows: Definitely yes: 50%, Probably yes: 25%, Neutral: 15%, Probably no: 7%, Definitely no: 3%. The data demonstrates a significant positive correlation between booking convenience and purchase intent, with 75% of respondents expressing a likely preference for integrated services.

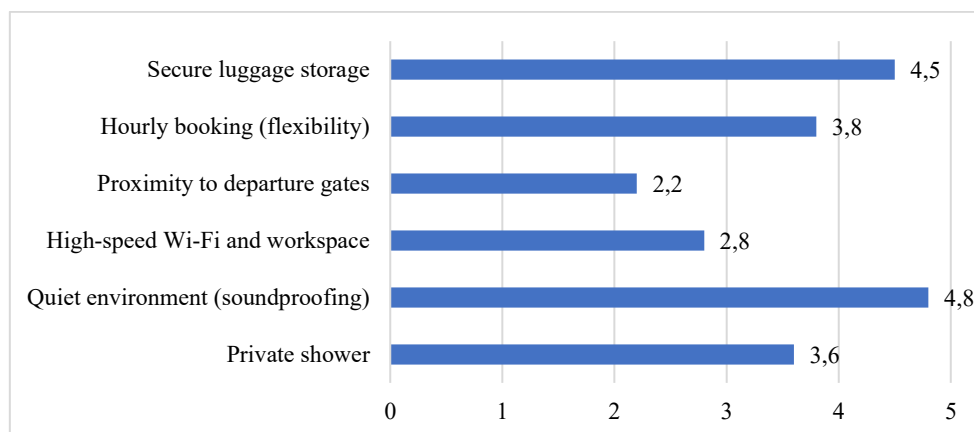


Fig. 3. Weighted Importance Ratings of Airside Amenities for Respondents (1-5 Scale)

**Source: compiled by the author*

To understand why the majority of passengers currently resort to resting on airport floors or benches, the study investigated the perceived obstacles to using existing in-terminal hotels. Respondents were asked: "In your opinion, what is the biggest barrier to using airside hotels today?" The findings, illustrated in Figure 4, highlight a combination of economic, informational, and structural challenges.

1. Price sensitivity (35%). Consistent with the demographic profile of the respondents (primarily students), high prices were identified as the leading barrier. This 35% confirms that current airside hotels-often priced as premium services-are financially inaccessible to a large segment of the market, creating a clear demand for "economy-class" solutions such as sleep pods.

2. Lack of awareness (25%). A significant discovery of this research is that one-quarter of respondents are unaware that such services even exist within the transit zone. Given that 85% of these passengers do not leave the airport premises, this lack of information directly results in "forced inactivity" on the terminal benches.

3. Supply vs. demand imbalance (20%). One in five travellers cited lack of availability as a primary barrier. This suggests that even at current high price points, existing facilities are frequently at full capacity, proving that the demand for private rest significantly outpaces the current supply in major European and regional hubs like Istanbul and Frankfurt.

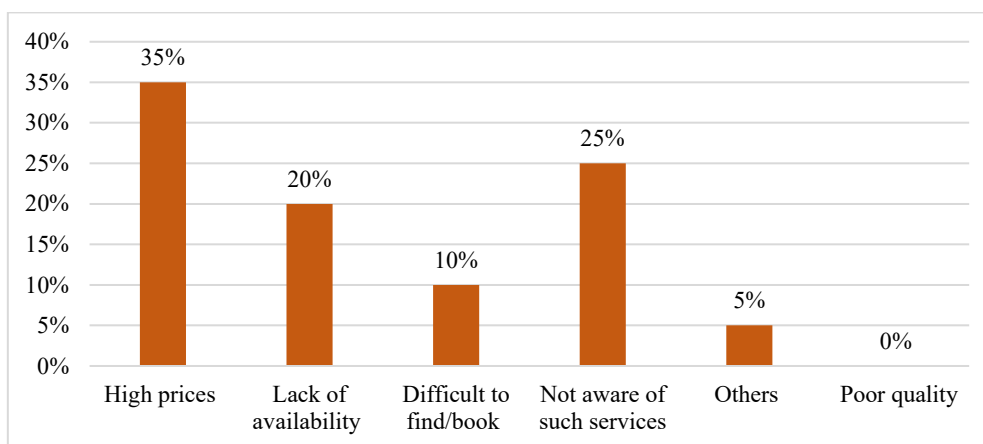


Fig. 4. Identification of Primary Barriers to Utilizing Airside Hotel Facilities (N=100)

**Source: compiled by the author*

4. Navigational and booking challenges (10%). A combined 10% of travellers find these facilities difficult to find or book. This supports the previously discussed findings that integrating accommodation options into the airline ticket purchase process would resolve significant logistical friction for the passenger.

The respondents were asked the following question: "If a private 'Sleep Pod' or a small cabin was available inside the transit area, what would be the maximum you would pay for 6 hours of use?". The data reveals that the vast majority of travellers are price-sensitive regarding short-term transit accommodation. 75% of respondents are only willing to pay €50 or less for a 6-hour stay. The most common price point (the mode) is the €30–€50 range, accounting for 40% of the total. On the other end of the spectrum, luxury or premium pricing (above €80) appeals to only a small fraction (5%) of the market, while an equal 5% would not use the service at any price. So, to maximize occupancy and appeal to the broadest range of transit passengers, the "Sleep Pod" service should be priced within the €30–€50 bracket.

Comparative Analysis of Airside Accommodation in Top 10 European Hubs

To identify the types of accommodation services available on the premises of major European airports and their availability, an analysis of the websites of the 10 largest airports was conducted. The airports were selected based on the latest official passenger traffic data, with priority given to the largest airports. Ten European airports were selected. The list of airports was obtained from the Airports Council International. "Annual World Airport Traffic Report 2025" (Airports Council International, 2025). For each airport, the publicly accessible sections of the official websites were reviewed, including general services and passenger services. Only the English-language versions of the websites were analysed, which were available in 100% of cases. The analysis was conducted in January and February 2026. Table 1 lists the European airports under review and their websites.

The availability of rest facilities for transit passengers varies significantly across Europe's busiest airports. This study focuses on 'airside' hotels – facilities located beyond passport control – which are the only legal option for passengers who do not hold the necessary travel documents to enter or travel within the Schengen Area.

Major northern hubs like Amsterdam and Frankfurt have historically integrated airside hotels (Mercure, My Cloud) better than southern hubs or UK-based airports. Both London Heathrow and Gatwick lack full-service airside hotels. Munich's Napcabs represent an "intermediate" solution – highly space-efficient but lacking the hygiene (showers/private bathrooms) offered by Istanbul's YOTELAIR.

An analysis of the accommodation infrastructure at Paris Charles de Gaulle (CDG) reveals a significant gap between standard landside hotels and specialized airside facilities. Although the airport perimeter hosts numerous large-capacity hotels – such as the Hilton, Sheraton, and Novotel – these remain inaccessible to third-country nationals who lack the necessary travel documents for the Schengen Area. Furthermore, they are out of reach for passengers who, despite having the right to enter, choose not to leave the terminal to avoid potentially lengthy and rigorous security screenings upon re-entry. For these groups, legally or practically restricted to the international transit zone, the only viable accommodation is YotelAir, located within the airside area of Terminal 2E.

Table 1

Top 10 European Airports by Passenger Volume (2025 Data)

Rank	Airport (IATA Code)	City (Country)	Passengers (M, Approx.) 2025	Official Website
1	Istanbul Airport (IST)	Istanbul (Turkey)	83.5	istairport.com
2	London Heathrow (LHR)	London (UK)	81.2	heathrow.com
3	Paris Charles de Gaulle (CDG)	Paris (France)	71.4	parisaeroport.fr
4	Amsterdam Schiphol (AMS)	Amsterdam (Netherlands)	64.1	schiphol.nl
5	Madrid-Barajas (MAD)	Madrid (Spain)	62.8	aena.es
6	Frankfurt Airport (FRA)	Frankfurt (Germany)	61.5	frankfurt-airport.com
7	Barcelona-El Prat (BCN)	Barcelona (Spain)	52.1	aena.es
8	London Gatwick (LGW)	London (UK)	44.8	gatwickairport.com
9	Rome Fiumicino (FCO)	Rome (Italy)	43.2	adr.it/fiumicino
10	Munich Airport (MUC)	Munich (Germany)	40.6	munich-airport.com

**Source: Compiled by the author based on Airports Council International (2025); and airports official websites*

While Paris-Charles de Gaulle offers a marginal solution through the airside-located YotelAir, London Heathrow (LHR) represents a more severe infrastructural challenge for passengers caught in the "transit trap." A detailed survey of Heathrow's hotel portfolio - including facilities like the Aerotel (Terminal 3) and Sofitel (Terminal 5) – reveals that these establishments are located exclusively in "landside" or arrivals zones (Heathrow Airport, 2025). For third-country nationals arriving from non-Schengen or non-Common Travel Area origins who lack a UK transit visa, these hotels are legally inaccessible. Heathrow currently lacks a dedicated airside hotel within its international transit boundaries. Consequently, in the event of prolonged EES-induced delays or missed connections, third-country nationals at Heathrow are frequently subjected to "terminal confinement," where they must remain in departure lounges for 24 hours or longer without access to private beds, showers, or dignified rest facilities.

Table 2

Comparative analysis of airside hospitality facilities in top 10 European airports (Non-Schengen transit zones)

Airport (IATA Code)	Airside Hotel Information (Non-Schengen/Transit)
Istanbul Airport (IST)	YOTELAIR: Located in the international transit duty-free area. Accessible for transit passengers who are legally or practically unable to exit the airport terminal. Includes cabins and shower facilities.
London Heathrow (LHR)	None: No full-service hotels in the airside transit zone. Passengers must use limited "Sleep Pods" in lounges or remain in departure halls.
Paris Charles de Gaulle (CDG)	YotelAir: Located in the transit area of Terminal 2E (Instant Paris). Accessible for transit passengers who are legally or practically unable to exit the airport terminal.
Amsterdam Schiphol (AMS)	Mercure Hotel & YotelAir: Both are located airside (beyond passport control). Ideal for transit passengers.
Madrid-Barajas (MAD)	Air Rooms by Premium Traveller: Located in Terminal 4. Offers airside access, but availability is often limited during peak Entry/Exit System delays.
Frankfurt Airport (FRA)	My Cloud Transit Hotel: Located in Terminal 1, Gate Z (Non-Schengen). Designed specifically for transit passengers who are legally or practically unable to exit the airport terminal.
Barcelona-El Prat (BCN)	Air Rooms: Located in Terminal 1. Accessible from the transit zone, but primarily used for short-stay "day use" during connections.
London Gatwick (LGW)	None: Like Heathrow, Gatwick's YOTEL is located landside. No dedicated airside hotel for transit passengers who are legally or practically unable to exit the airport terminal.
Rome Fiumicino (FCO)	HelloSky: Located in the terminal area, but primarily serves landside. Airside rest options are restricted to premium lounges with limited pods.

Munich Airport (MUC)	Napcabs: Not a full hotel, but soundproof sleeping cabins located airside in Terminals 1 and 2. Useful for short-term rest.
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**Source: Compiled by the author based on airports data and official websites (2026)*

A benchmark airport infrastructure can be found at Istanbul Airport (IST), which addresses the 'transit trap' through a bifurcated hospitality model. Unlike many Western European hubs, IST features YOTELAIR, a dedicated facility situated entirely within the international transit (airside) zone, beyond the passport control threshold. This strategic placement allows third-country nationals facing EES-related disruptions or prolonged layovers to access secure accommodation without the legal necessity of a Turkish entry visa. The Istanbul YOTEL complex is one of the largest airport hotels in the world, with over 450 rooms – 250 of which are located within the airside YOTELAIR facility. This demonstrates that airside accommodation can be a mass-market solution rather than just a niche offering. They offer 'pay-by-the-hour' rates (e.g., 4-hour blocks), which is particularly relevant for passengers whose flights are delayed by several hours due to congestion at biometric checkpoints.

Key Findings from the Research

Both London Heathrow (LHR) and London Gatwick (LGW) lack full-service airside hotels. While these airports have many high-quality hotels nearby, they are located "landside." For transit passengers who are legally or practically unable to exit the airport terminal, these hotels are legally inaccessible, leading to "terminal confinement" where travellers must stay in departure lounges for 24 hours or more.

Istanbul Airport (IST) stands out as a global leader with its YOTELAIR concept. Located entirely within the international transit zone, it offers over 250 rooms accessible without a Turkish entry visa. Similarly, Amsterdam Schiphol (AMS) and Frankfurt (FRA) have successfully integrated airside hotels (Mercure and My Cloud) into their transit zones.

While airports like Paris Charles de Gaulle (CDG) offer some airside options (YotelAir), the capacity is often too low compared to the total number of transit passengers. In contrast, Munich Airport (MUC) uses "Napcabs." These are space-efficient, soundproof cabins that provide privacy and a bed. However, unlike full-service hotels, they lack private hygiene facilities like showers, which remain a top priority for long-haul travellers.

For transit passengers who are unable or unwilling to leave the airport, an airside hotel is not a luxury - it is a logistical necessity. To improve passenger satisfaction and maintain high service quality scores, airports must shift their focus. The goal should be to move away from traditional 'landside' hotels and toward flexible, airside micro-stay solutions that are accessible to all, regardless of their legal or practical ability to exit the terminal.

Analysis of Airside Accommodation Supply and Demand for Bangladeshi Transit Passengers in European Aviation Hubs

Empirical research focusing on a highly relevant target population - Bangladeshi citizens residing in Lithuania – reveals the specific needs of this segment. This demographic typically travels between South Asia and the Baltic states via major hubs such as Istanbul (IST), Frankfurt (FRA), and Amsterdam (AMS). Because there are no direct flights, multiple layovers are a necessity. Furthermore, as Turkey operates under its own national visa policy outside the Schengen Area, Bangladeshi nationals without a valid Turkish entry permit are legally restricted to the international transit zone at Istanbul Airport.

The survey data suggests that the "fatigue zone" begins after six hours of waiting. While 30% of passengers transfer quickly, the remaining 70% face extended stays. 45% wait between 6 and 12 hours, and 25% wait longer than 12 hours, including a small segment (5%) stranded for over 24 hours.

The behaviour of these passengers during extended layovers highlights a massive gap in service provision. When faced with an eight-hour wait, 65% of respondents resort to sleeping on airport benches or floors. Only 15% utilize airline lounges, which are often not designed for horizontal sleep, and 0% utilize on-site transit hotels. This complete lack of utilization of existing hotels suggests that current supply is either geographically inaccessible, financially prohibitive, or perpetually overbooked.

Beyond the physiological need for sleep, passengers exhibit specific psychological and functional requirements for airside accommodation. When ranking the importance of amenities, travellers prioritize silence and security above digital connectivity or location.

The supply of accommodation services within airport premises in Europe is highly fragmented. Although there are plenty of hotels outside the airport grounds (such as Hilton, Sheraton, and Novotel), they do not serve transit passengers who are unable or unwilling to leave the airport grounds. An analysis of the 10 largest European airports by passenger traffic reveals three distinct service models: full-service transit hotels, modular sleep pods, and the "transit gap" (lack of services).

The "gap" in airside services is not merely a lack of beds, but a disconnect between infrastructure design and passenger reality. The most profound gap is the price-value perception. While the My Cloud Transit Hotel in Frankfurt offers a high-quality experience, its rates can exceed €370 per night. This is completely detached from the budget of 75% of transit passengers, who are willing to pay a maximum of €50 for a six-hour rest. This creates a "missing middle" in the market: there are free benches (uncomfortable) and expensive hotels (unaffordable), but very few options in the €30-€50 range.

Research reveals that 25% of passengers are unaware that airside rest facilities exist. Because these hotels are tucked away in specific terminal wings (e.g., CDG Terminal 2E or FRA Gate Z), passengers who are not proactively searching for them will never encounter them. This leads to "forced discomfort" where passengers sleep on the floor because they assume there is no other option.

To overcome these barriers, the model proposes a shift in the service mix:

Infrastructure: Moving from traditional 24-hour hotels to modular, hourly-based "sleep pods".

Information: Integrating rest options into the airline ticket purchase process (which 75% of passengers support).

Quality: Ensuring high standards of hygiene (UV-C sanitation) and acoustic isolation. A positive outcome (loyalty and regeneration) is achieved only when the infrastructure is both legally accessible and economically aligned with the passenger segment. If the barriers remain, the outcome is negative (floor sleeping), leading to "dehumanization" and decreased airport competitiveness.

Limitations and Directions for Future Research

Although this study provides valuable information about the needs of Bangladeshi travelers, it must be acknowledged that it has certain limitations. First, the empirical study focused on a specific demographic group: Bangladeshi citizens residing in Lithuania, the majority of whom are students. Since this group represents a younger and more budget-conscious segment, their perceptions of "value" and "affordability" may differ from those of other transit passenger groups. In the future, the study will be expanded by diversifying the demographic criteria to include a broader spectrum of nationalities and age groups.

Conclusions

1. Analysis of transit passenger needs show that "rest deficit" experienced by travellers is a significant source of dissatisfaction that can be mitigated by private, quiet, and secure rest solutions. Providing these spaces transforms "dead time" into an opportunity for recovery, which is essential for maintaining high service quality scores in a competitive global hub environment.

2. Empirical research confirms a massive, unserved demand for short-term rest. 70% of these travellers face layovers exceeding six hours, yet 65% are forced to sleep on floors or benches. The primary barriers to utilization are the high price of existing full-service hotels and a significant lack of awareness. There is a clear market mandate for a "middle-tier" rest solution.

3. The current supply of airside accommodation is uneven and insufficient. While Istanbul (YOTELAIR) and Frankfurt (My Cloud) provide dedicated solutions, major hubs like London Heathrow and Gatwick lack any full-service airside hotel options. Consequently, transit passengers who are unable or unwilling to leave the airport are left without adequate rest during long layovers or flight disruptions, effectively subjecting them to 'terminal confinement'.

4. The survey results reveal a "gap" in airport services, characterized by a mismatch between infrastructure and the needs of transit passengers. Although transit hotels offer high-quality services, their prices are often too high. This is completely out of line with the budget that the vast majority of Bangladeshi transit passengers are willing to spend on rest. As a result, there is a "missing middle" in the market between free benches (which are uncomfortable) and expensive hotels (which are unaffordable).

Proposals

1. Implementation of modular "Economy-Tier" rest zones. Airports should install "Semi-Smart" sleeping pods – which provide acoustic isolation, a workstation, and secure storage - terminals can cater to the of passengers seeking a €30-€50 price point. These pods should be deployed in modular blocks in underutilized airside zones.

2. Integration of hospitality into the digital booking flow. Airlines and airports must collaborate to include airside accommodation as an "ancillary service" during the ticket purchase process. 75% of travellers have indicated they would "definitely" or "probably" book in advance if it were part of the flight reservation. This solves the informational barrier and provides airports with predictable demand data.

3. Dynamic hourly pricing models. To maximize occupancy and affordability, airside facilities should utilize dynamic pricing based on "micro-stay" blocks (e.g., 4-hour, 6-hour, and 8-hour increments). This allows the 35% of price-sensitive travellers to access a private bed during their "fatigue zone" window without paying for a full overnight stay.

References

1. ACI Europe. (2025). *Infrastructure constraints and the implementation of the Entry/Exit System (EES): A comparative study of major European hubs*. Brussels: Airports Council International.
2. Airport Hotel Study. (2022). Australia and New Zealand Edition. The MERCURIUS Group. Available at: <https://api.airportir.com/assets/products/downloadable/previews/Airport-Hotel-Study-Extract.pdf>.
3. Alsaleh, A. (2024). *Leveraging AI to Improve Service Quality for Better Passenger Satisfaction at Airport*. RIT Digital Institutional Repository.
4. Andrews, E. (2024). *Quiet Airports -Technological Advances in Reducing Airport Noise*. Available at: <https://tavtechnologies.aero/en-EN/review/pages/quite-airport-technologies>.
5. Asad Miss, H. (2024). Passenger Preferences for Ultra Long Haul Flights vs. Connecting Flights: A Comparative Study between Asia and Europe. *International Journal of Aviation, Aeronautics, and Aerospace*, 11(3), 9.
6. Caetano, M., Alves, C.J.P. (2018). Identification of variables related to airport innovation practices. In *ISPIM Innovation Symposium. The International Society for Professional Innovation Management (ISPIM)*, 1-17.
7. Dedok, M.V. (2024). Airport Hotels as A Subsegment of International Hotel Industry. *New economics: Science, industrial and educational integration*, 2, 86-96.
8. Dimitriou, D., Sartzetaki, M., Karagkouni, A. (2025). Airport landside area planning: An activity-based methodology for seasonal airports. *Transportation Research Procedia*, 82, 1167-1184. <https://doi.org/10.1016/j.trpro.2024.12.119>
9. Eurocontrol (2026). *European aviation overview. Analysis of air traffic management in Europe*. European Organisation for the Safety of Air Navigation. Available at: <https://www.eurocontrol.int/sites/default/files/2026-01/eurocontrol-european-aviation-overview-20260123-2025-review.pdf>
10. Fortune Business Insights. (2026). *Airport sleeping pods market size, share & industry analysis and regional forecast, 2026-2034* (Report ID: FBI11920).
11. Gotti, D., Morales, E., Routhier, F., Riendeau, J., Hadj Hassen, A. (2024). Dehumanizing air travel: a scoping review on accessibility and inclusion of people with disabilities in international airports. *Frontiers in Rehabilitation Sciences*, 5, 1305191.
12. Hejazi, M., Fawzy, M. (2021). Passengers' Satisfaction of the Service Quality at Saudi International Airports. *International Journal of Economics, Commerce & Management*, 9 (8), 10.13140/RG.2.2.19652.96648.
13. International Airport Review. (2026, January 5). *Top airport technology trends set to shape the future of airport operations in 2026*.
14. Istanbul Airport. (2025). *Integrated transit hospitality: The YOTELAIR model for international transfer efficiency*. Istanbul Airport Operations (IGA) Research Series.
15. Kaljakina, K. (2018). *From the airport to the city centre: GoSleep Pod as a part of pop-up hotel concept*. Available at: <https://urn.fi/URN:NBN:fi:amk-2018112818865>.
16. Khoa, B. T. (2023). The Role of Airport Service Quality Toward Passenger Electronic Word-Of-Mouth. *Journal of Logistics, Informatics and Service Science*, 10(4), 336-345.
17. Les Roches. (2022, December 28). YOTEL: A glimpse into a hotel concept like no other. <https://lesroches.edu/blog/yotel-hotel-concept/>
18. Luttmann, A. (2018). Are passengers compensated for incurring an airport layover? Estimating the value of layover time in the U.S. airline industry. *SSRN Electronic Journal*. <https://dx.doi.org/10.2139/ssrn.3083290>.
19. Mapunda, H.M., Mwageni, D. (2025). Effects of airport service quality on airline passenger satisfaction: A case of Julius Nyerere International Airport, Tanzania. *Journal of Industrial Engineering and Management Research*, 6(5), 207-216.

20. Martins, A., Silva, J. (2025). Infrastructural rigidity in the era of biometric border control: The case of Lisbon Humberto Delgado Airport. *Journal of Air Transport Management*, 118, 102-115.
21. Migracija.lt. (2026). Imigrantai Lietuvoje. 2026 m. kovo 1 d. duomenys. Available at: <https://migracija.lrv.lt/public/canonical/1772794252/1559/imig-2026-03.pdf>
22. Minali, Acharya, B., Singh, A. (2025). Development of Airport Infrastructure: Need for an Hour. *International Journal for Multidisciplinary Research*, 7 (1). <https://doi.org/10.36948/ijfmr.2025.v07i01.38158>.
23. Ranga, F., Azkia, N., Utaberta, N., Shaari, N., Ismail, S. (2024). Enhancing Transit Hotel Experiences: A Comparative Study of Interior Facility Requirements in Indonesian Transportation Hubs. *Journal of Architectural Research and Design Studies*, 8(2), 133-145.
24. Ratlif, L. (2025). *Airport Lounges Are Now Dictating How Travelers Choose Flights*. Available at: <https://www.luxurytravelreport.com/air/articles/airport-lounges-are-now-dictating-how-travelers-choose-flights-jd-power-finds>.
25. Stephano, D., Soka, M.A., Massami, E. (2024). Passengers' Satisfaction with Airport Service Quality: Insights from Julius Nyerere International Airport in Tanzania. *Journal of Logistics, Management and Engineering Sciences*, 5(2), 1-18.
26. YOTEL. (2025). *Sustainable airside accommodation: Impact of micro-hotel availability on passenger stress levels in major global hubs*. Global Aviation Hospitality Report.

SUSTAINABLE TOURISM DEVELOPMENT IN SUNDARBANS (MANGROVE FOREST) BANGLADESH: STRATEGIC PLANS

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Keywords: Sustainable Tourism, Tourism Development, Sustainable Tourism Stakeholders, Sustainable Tourism in Sundarbans.

Abstract

Tourism in Sundarbans, as a UNESCO World Heritage Site in Bangladesh, requires effective tourism management, which is crucial to both economic growth and environmental protection for local communities. The study establishes a sustainable structure to manage the adverse effects of tourism using a theoretical framework. Using UNWTO indicators and consultations with experts as its basis, the study identifies ten central challenges to scaling up sustainable tourism, such as inadequate infrastructure, insufficient waste management, and fragmentation of stakeholders. Meantime, these challenges are prioritized identify stuff that demands immediate action to improve the site's profile and visitors' experience. Results demonstrate that sustainable tourism relies on partnerships between governments, private industries, and local communities to realize common goals for conservation. To tackle these issues, we propose a five-year strategic action plan for 2027–2031 with SMART objectives such as reducing plastic waste by 50 percent, facilitating maritime safety, and building eco-friendly facilities. The research lays down a framework for joint action, underlining that the sustainable conservation of the Sundarbans in the long run will only be possible with a balanced approach to economic growth through responsible resource management and proactive community participation.

Introduction

Tourism is a big industry and contributes to economic growth and job creation around the world. It encompasses domestic and overseas trips for business, leisure, health, religion, and adventure over a range of time from one day to as long as a year (WTO & UNSTAT, 1994).

Tourism is an industry that both impacts and depends on the economy, environment, society, and culture.

Tourism is defined by the UNWTO (2005) as activities that entail travel away from a person's home, outside of their environment, and/or where they stay for less than one year, whether traveling for leisure or business, culture, health, or visiting relatives.

Tourism represents more than 10% of global GDP (UNWTO, 2023). It's widespread, fueling growth and jobs in Bangladesh, especially as the nation progresses beyond LDC status. Sustainable tourism balances economic, environmental, and social goals while preserving natural resources (UNEP and UNWTO, 2005).

Unsustainable tourism is imperiling the Sundarbans, the world's largest mangrove forest and a UNESCO World Heritage site in Bangladesh. The management relies on low-impact travel in certain areas for visitors and sustainable practices to maintain biodiversity (Islam & Bhuiyan, 2016).

Overtourism, pollution, and lost revenue threaten the Sundarbans. Possible solutions are stricter environmental rules and stronger community participation (Islam & Bhuiyan, 2016; UNEP & UNWTO, 2005).

Tourism has the potential to harm ecosystems (Vologzhina et al., 2018; Challenger et al., 2009); it may damage soil, vegetation, and increase the risk of forest fires. To minimize these impacts, sustainable methods need to be established.

Tourism is associated with transport, hospitality, agriculture, and entertainment. Environmental and socio-economic challenges can result from unsustainable development and overconsumption of resources.

Relevance of the Article. Comprising the world's largest mangrove forest as well as being a UNESCO World Heritage site, the Sundarbans represent an invaluable natural resource for Bangladesh (UNESCO, 2023). Sustainable tourism provides a vital pathway to the protection of livelihoods and jobs whilst protecting the unique ecosystems and cultural heritage that make the region special. By adopting a sustainable tourism framework, biodiversity conservation can be improved, poverty reduced, and millions of visitors each year become ambassadors for positive conservation attitudes. (Valuation of the conservation of the Sundarbans mangrove forest ecosystem, 2022)

Problem of the Article. Both soil and vegetation here are being affected by unsustainable tourism today, as overtourism leading to pollution and ecosystem degradation threatens the Sundarbans. (BSS, 2025) However, the region is confronting a myriad of issues, from insufficient tourism infrastructure and poor waste management to risky maritime transport and a lack of technical support for local communities. (UNESCO World Heritage Committee reports sustainable development plan required for Sundarbans, 2023)

Despite the Government of Bangladesh's target to promote sustainable tourism in the Sundarbans ever since (FD, Bangladesh, 2010), this goal has never flourished and largely remains unfulfilled.

Object of the Article. This paper explores the management and development system for sustainable tourism in the Sundarbans mangrove forest of Bangladesh. It concerns the assessment and coordination of such organizations, firms, tour operators, travel agents and local sites that are in and around this UNESCO World Heritage site. The study, therefore, aims to track and protect the site for potential nature-based tourism in the area while also tracking social, economic, environmental, and cultural perspectives of the region.

Goal of the Article. This study aims to formulate a strategic five-year action plan and management framework that promotes a balance between visitors' experiences, maintaining the integrity of nature, and meeting the requirements of local communities in the Sundarbans.

Objectives of the Article:

1. To perform sustainable tourism development analysis from a theoretical perspective.
2. To perform research on sustainable tourism development in Sundarbans (Mangrove forest), Bangladesh: strategic plans.

Methods of research: The research design used in this study was exploratory and descriptive (Malhotra & Dash, 2011). A literature review and destination audit evaluated the current state of tourism in Sundarbans according to UNWTO (2004) indicators. Then, the final stage of this data collection process involved conducting interviews with experts on tourism in Bangladesh to gain a more detailed understanding of the implications of sustainable development within the Sundarbans. This step uncovered several key tourism issues, which were then prioritized for effective management.

Then a cross-sectional survey to create a Prioritization Matrix (PM) adapted from Tribe et al. (2000). Questionnaires were (Malhotra & Dash, 2011) – administered to 80 stakeholders engaged with sustainable tourism (ST) development in Sundarbans using judgmental sampling. The sample respondents are shown in Table 1.

Table 1

Profile and number of sample respondents

Category	Number of respondents
Tourists	52
Local community	15
Tour guide	5
Tour operators of Sundarbans	5
Local government	3
Total	80

**Source: compiled by the authors*

A nine-item closed-ended questionnaire on each sustainable tourism issue was specified by and scored 1 (low) to 3 (high)... Tribe et al. (2000). The data for the Prioritization Matrix were summarized through frequency analysis.

Using the Prioritization Matrix and tourism vision for Sundarbans, it was decided to form SMART objectives related to sustainable tourism. Approximately 22% of tourists use the Internet for information services. The study concludes with a five-year strategic plan.

Literature Review. The literature review classifies sustainable tourism as a management approach that sufficiently addresses the contemporary needs of society while preserving those resources for future generations. Based on the Brundtland Report, this framework focuses on intertwining economic growth with social equity and ecological preservation. Another important point is that the successful implementation of this plan will require not just interdepartmental coordination within countries, but also across multiple levels (governments/ private enterprises/non-government actors/community) working together. Government policies provide the regulatory framework; local communities contribute cultural knowledge and support to ensure developmental initiatives create jobs and infrastructure. Both negative and positive effects of tourism are recognized in literature. Tourism economically drives development, creates jobs, promotes cultural exchange, and improves living standards. On the other hand, tourism can lead to environmental damage, the erosion of indigenous cultures, and even the overuse of a destination. Local populations may also suffer from other impacts, such as seasonality and inflation. In sensitive ecosystems like the Sundarbans, with its world-renowned mangrove forests and wildlife, there is a need for responsible management. Sustainable tourism is

a dynamic field that requires a participatory approach to overcome barriers to engagement to maintain the natural beauty of heritage sites, while also providing ongoing economic dividends in line with findings. while providing lasting economic benefits.

Sustainable Tourism: According to the United Nations World Tourism Organization (UNWTO), sustainable tourism is defined as: “Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future. It is conceived towards management of all resources in a way so that economic, social and aesthetic needs can be fulfilled while ensuring the cultural integrity, essential ecological processes, biological diversity and life support system” (WTO, 1998:19). Sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs,” according to the Brundtland Report (World Commission on Environment and Development, 1987). Shikida et al. According to Hardy et al. (2009), sustainable tourism is defined as development that makes use of the socioeconomic resources of the community and reinvests into these destination resources from returns generated through tourism. An integrated sustainable tourism model 71. Stakeholders such as citizens, entrepreneurs, and community leaders must support the successful implementation of sustainable tourism development (Gunn, 1994).

Sustainable tourism has been around as part of modern discussions for a few decades now. 137–K71) Sustainable Tourism Development [337] Since the late twentieth century, government and private sector organizations have significantly strengthened their commitment to sustainable tourism development (PATA, 1992). “There must be more than an industry profit potential from tourism; the effects must be seen as ecologically acceptable if they are to help ensure lasting benefits, and this cannot happen without a new and alternative approach to planning and development of its industry” (PATA.1992) Natural beauty (PATA, 1992), heritage monuments, the weather and indigenous civilization are all things that tend to attract tourists; in fact locals seem to function as regional motivators for visitation. Tourism has the potential to impact host populations' natural heritage, environment, and culture, for better or worse, depending on management and development practices.

Quality of life and responsible tourism have now gained worldwide significance for the development of a socially and economically sustainable future. Tourism is largely seen as a boon for sustainable development. According to the World Tourism Organization and the United Nations, policies, plans, and actions need to be undertaken at local, national, and international levels for sustainable tourism development (UNWTO 2007). UNWTO is doubling down on creating its research center aimed at sustainable tourism development. Even more, for tourism to be collectively sustainable in the long haul, effective policies and plans need to be exercised at all levels — local destination level, top among them, where tourists buy services mostly from service providers called communities (Workshop, Kolašin and Montenegro, 2007).

Positive and Negative Impacts of Tourism.

Positive Experiences: Chen (2014) studied stakeholders' perception of sustainable development with a focus on residents, tourists, and tourism operators in the Arctic region. Tourism was determined to be the main sector for sustainable development in the area, as determined by the study. The results show that there is an inclination towards the preservation of culture and environment. Tourism aids in locals' revenue and employment. Tourism is their source of income and economic opportunity (Nyaupane et al., 2006; Gursoy and Rutherford, 2004; Gursoy et al., 2002; Yoon et al., 2001; Pagdin, 1995; Allen et al., 1993). According to Das and Sharma (2009), by providing considerable direct and indirect employment, tourism can be a great source of income. The tourism industry is deemed suitable for investment in hotels, restaurants, tour operations, and the promotion of culture. Tourism is also important for the development of sectors like basic infrastructure, roads and transportation, water supply, communication systems, electricity, and sewerage-feeding services. Furthermore, tourism facilitates cultural exchange.

Das and Sharma (2009) mention that it includes music and dance festivals, handicrafts and fairs, as well as yoga and meditation activities through which tourists and host communities mutually benefit. According to Creaco and Querini (2003), tourism is the largest and fastest-growing economic sector in the world. In most cases, regional development is driven by tourism, and this phenomenon creates economic activity in developing countries with regard to revenue generation. Also, tourism contributes to the socio-economic and political development of a nation. According to Ponna and Prasiassa (2011), tourism has been widely considered to be the single most important engine of economic development, as well as increasing living standards for local populations, while at the same time earning foreign currency and taxes for governments. Interestingly, tourism can alleviate migration from communities to urban settlements.

Negative Impact: One of the major negative consequences of tourism is when local people in a destination feel required to imitate foreign tourists (in mannerisms, attitude, dress, and lifestyle), resulting in

diminishing or distorted indigenous cultures (Mill and Morrison 2002). Visitation that exceeds a destination's carrying capacity may cause the destination to lose its environment and or cultural uniqueness (Manning and Dougherty, 2000). Seasonality has an impact on tourism businesses as well, with those reliant upon tourism subject to its ups and downs. Problems like crime, drug trafficking, prostitution, noise pollution, and inflation of the prices of basic amenities will cause harm to both the tourism sector and local people (Das & Sharma, 2009). Gursoy and Rutherford (2004), Gursoy et al. (2002), and McIntyre (1993), suggest that tourism can disrupt the ecological carrying capacity of a location if the resources are used excessively. Baum (1999) has mentioned that seasonal pursuits, linked to tourist fluctuation, hinder the people who are dependent on tourism. Jaafar et al. (2013) examined that the adverse effects of tourism development can slowly destroy a destination's environmental resources. These effects refer to air and water degradation, adverse modifications of natural processes, heightened waste generation, increased use of the available resources in nature, imbalanced land utilization, diminished natural beauty, and disturbance of wildlife. Other barriers to sustainable tourism include rising management costs, difficulty identifying genuine stakeholders and their attitudes towards sustainable tourism development, and the most important issue, which is the limited capacity of tourist stakeholders involved in the development process.

Sustainable tourism stakeholders: Sustainable tourism is often conceptualized in terms of a stakeholder framework, where multiple stakeholders cooperate to achieve a balance between environmental protection, social benefits, and commercial advantages (Byrd, 2007). The sustainable tourism actor model has been widely recognized and applied as a model of how key actors work together to influence tourism outcomes (Bramwell & Lane, 2011).

Within this framework, government authorities issue policies and regulations as well as develop planning conditions leading towards sustainable tourism. They also implement measures such as environmental protection, zoning regulations, and tourism management policies. Hotels, tour operators, and transport providers are some of the various tourism businesses that work to practice sustainable principles in their operations – including resource-use efficiency, waste management, responsible service delivery, and more.

Tourism is embedded in their social and cultural context, making local communities' vital stakeholders. The more sustainable model of tourism, in contrast, prefers significant local people and their input to the decision-making process, with added benefits like new job opportunities, preservation of heritage, and improved infrastructure. Tourists affect sustainability through their consumption habits, preferences, and responsible experience demand.

Other key actors are non-governmental organizations (NGOs) and environmental groups that promote conservation, expertise, and monitor the impact of tourism. Such organizations can work with governments and businesses to advocate for environmental protection, biodiversity conservation, and the preservation of cultural heritage.

This continuous engagement between these parties is explored through the stakeholder cycle in sustainable tourism. Governments create policies, businesses implement sustainable practices, communities provide local wisdom and cultural value, tourists energize demand for responsible travel, and NGOs uplift environmental and social goals. When tourism companies come together, they can offer economic opportunities that protect, hence, both the planet and local traditions. This participatory approach is in accordance with the essence of sustainable tourism, which is to meet current generation needs without jeopardizing access to tourism resources for future generations (UNWTO, 2005; Bramwell & Lane, 2011). Figure 1 shows the main domains of key stakeholders involved in sustainable tourism at a typical destination.

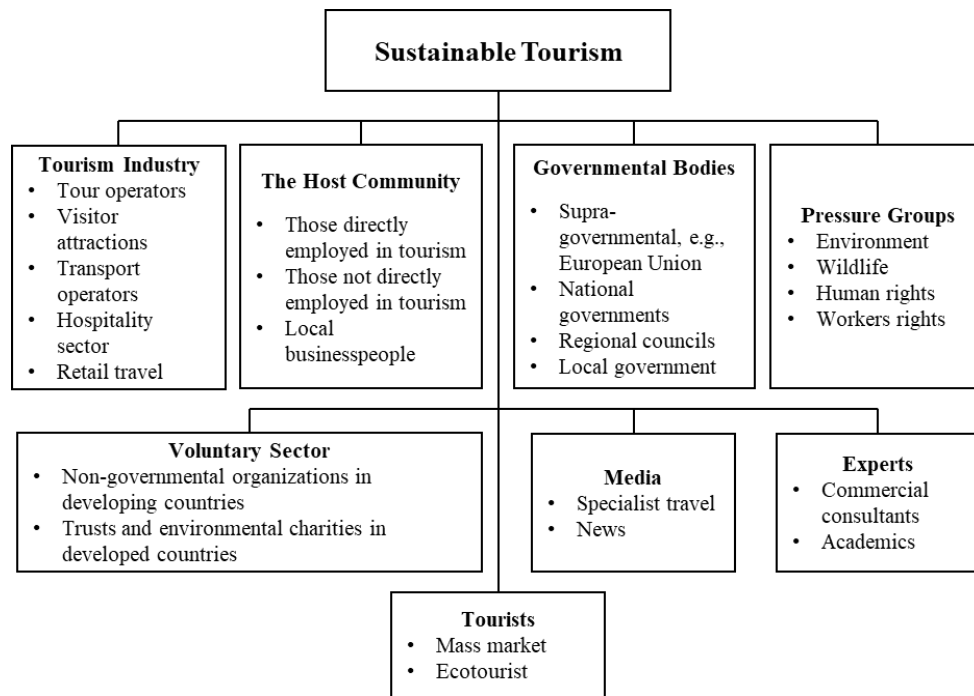


Fig 1. Principal stakeholders involved in sustainable tourism

**Source: Swarbrooke (2010, p. 17)*

Tourist Attractions in Sundarbans:

Table 2

Shows Tourist attractions in the Sundarbans

Category	Description
Spots	Karamjal, Harbaria, Kotka & Kachi khali, Hiron Point (Nilkamal)
Channel	Since there are many small and large canals in the Sundarbans, cruise tourism and boating provide a great opportunity for tourists.
Forest	The world's largest mangrove forest can be found here.
Wildlife	Home to the largest population of Bengal tigers, thousands of river dolphins, spotted hyenas, wild boars, birds and reptile species, among extensive flora and fauna.
Beaches	The southern part of the Sundarbans is known for unblemished, exotic sandy beaches, particularly Kotka.
Culture and Heritage	Culture and Heritage: The Sundarbans are made up of forests nestled within villages that rely on the forest for their livelihood; it all adds to the unique customs, traditions, and culture that epitomize this region.

**Source: UNESCO (2018), Hassan (2012), Forest department Bangladesh (2018)*

Data Analysis: Problem Identification. Based on the destination audit, situation analysis, and expert interviews, the following 10 key issues have been identified that need to be addressed for sustainable tourism development and management in Sundarbans:

- Lack of tourism bodies and stakeholders at present in the management of tourism;
- Inadequate pre-travel and on-site information;
- Inadequacy of safety and security in transportation by sea;
- Tourist overcrowding at selected locations;
- Tourists and locals lack conservation education;
- Inadequate tourism infrastructure and facilities;
- Littering;
- Poor sewage, solid, and food waste disposal;
- Lack of technical support for the community to benefit from tourism;
- Lack of resource monitoring.

Prioritization Matrix. A Prioritization Matrix for the ten identified sustainable problems was developed based on data collected from sample respondents, using descriptive statistics such as frequency distributions. The matrix was constructed, and the collected data were arranged using mean scores. The ten issues were then ranked into three categories of intervention priority based on their total scores.

Discussion. Considering the Prioritization Matrix findings (see Table 3) and subsequent identified sustainable tourism development and management concerns, a range of SMART objectives have been devised for being opted through the short- long-term destination management action plan based on which Sundarbans as a tourism destination will grow into a sustainable one in times to come while competing with arrivals of all forms. Thus, the objectives were ordered by priority (total score), and aim categories were defined in the Prioritization Matrix.

Table 3

Prioritization Matrix Results

Score (1 = Low, 2 = Med, 3 = High)	Lack of tourism bodies and stakeholders at present in the management of tourism	Inadequate pre-travel and on-site information	Inadequacy of safety and security in transportation	Tourist overcrowding at selected locations	Tourists and locals lack conservation education	Inadequate tourism infrastructure and facilities	Littering	Poor sewage, solid, and food waste disposal	Lack of technical support for the community to benefit from tourism	Lack of resource monitoring
Is it easy to alleviate the issue?	2.01	1.99	1.97	1.95	2.15	2.22	2.13	2.09	2.13	2.2
Will alleviation of the issue show good results?	2.95	3	3	2.96	2.79	2.99	2.75	2.87	2.02	2.86
Is solution required urgently?	2.97	2.95	2.89	2.81	2.11	2.92	2.97	2.99	2.84	1.8
Is there necessary equipment to act against the issue?	2.15	1.02	1.11	1.18	1	1.41	1.52	1.22	2.09	2.06
Is there staff trained to deal with the issue?	1.15	2.01	1.29	1.15	1.97	1.88	1.8	2.06	2.12	1.18
Will the visitor experience be enhanced if issue is removed?	2.87	2.74	2.95	2.8	1.85	2.89	3	2.92	2.83	1.04
Will the site image be enhanced if the issue is removed?	1.23	2.79	2.88	1.92	2.03	2.95	3	2.9	1.05	1.98
Is it easy to identify probable impacts of the issue?	2.12	2.11	2.86	3	2.96	2.96	3	2.9	1.22	1.9
Total Score	17.45	18.61	18.95	17.77	16.86	20.22	20.17	19.95	16.3	15.02
Priority	2nd	1st	1st	2nd	2nd	1st	1st	1st	3rd	3rd

**Source: made by authors*

Here are the sets of objectives we identified: **1st Priority** (Combined score 18.50 and more):

- Over the next 5 years, plastic waste should be reduced by at least 50%.

- ii. Formulate and implement sewage and refuse management services and reduce damage by 40% within five years.
- iii. In the next 5 years, build and maintain tourist infrastructure & facilities whilst minimizing the environmental impacts and maximizing visitor experiences.
- iv. Next year, we will form a regulation providing safety and security for tourists in boat transportation.
- v. Evaluate stakeholder involvement in newly improved pre-travel to on-site information availability, and enhance visitor information centers, brochures, site leaflets (including conservation messages), and signs, interpretation by 1 year.

Table 4

5 year (2027-2031) recommended strategic plan for sustainable tourism development and management in Sundarbans

Objectives (according to priority and total score)	Proposed Plans	Time
Tourism infrastructure and facilities development (TIFD)	TIFD1: concentrated endeavors in cross-sections with high visitor throughput entry stations, toilets and direct access routes before turning directions towards the popular areas (by visiting with discretion to demand/environmental variables) observing road towers, conceals, tones alike reference places for restrooms or vendors endures. Future phases will expand services to secondary locations as visitation increases. Infrastructure will be planned in accordance with an eco-friendly design. TIFD2: Refurbish existing traveler houses in Sundarbans.	TIFD1: 2027-2031 TIFD2: By 2028-ongoing
Reducing littering (RL)	RL1: Provide bins. RL2: Post signs and maps that show where bins are located. RL3: Introduce recycling bins. RL4: Implement systems for the daily collection of waste. RL5: The Visitor Experience and Management staff should develop a waste consciousness program focusing on waste reduction and recycling principles. RL6: Teach visitors to throw trash in the bins present.	RL1-RL4: By 2027-ongoing RL5: 6 workshops and seminars in a year up to 2027, then 4 workshops and seminars up to 2031 RL6: From 2027-ongoing
Waste Management (WM)	WM1: Upgrade toilet facilities within tourism sites. WM2: Ban dumping sewage and food waste from boats and ships in rivers and canals. WM3: On-board bins for litter on boats and ships. WM4: Educate boat and ship operators on the waste impacts on the forest water system WM5: A law is making it obligatory to sweep the garbage inside your boat & ship, also imposing penalties, such as never throwing any rubbish into our forest system, irrespective of the scenario. The measures will include “regular inspections of boats and ships by the relevant monitoring authorities,” along with spot checks at departure and arrival points, as well as a specific system for reporting violations among staff members and visitors. The offender is liable to a fine, or other legal action may be taken against him as prescribed by regulation.	WM1-WM3: By 2028-ongoing WM4: Yearly 6 workshops up to 2028 then yearly 4 workshops up to 2031 WM5: After completing WM2-ongoing
Tourist safety and security measures on transportation- boat (TSSMT)	TSSMT1: Concentrate on compelling safety and security requirements to the boat transportation that carry guests to the Sundarbans. TSSMT2: All boats/ships take visitors to Sundarbans and are following safety/security law with respect to the boat, ship, association, terminal authority and law implementing agency. TSSMT3: I think there should be more punishment or penalties for the offenders. TSSMT4: Monitoring the law in action	TSSMT1: By 2027-ongoing TSSMT2- TSSMT4: From 2027-ongoing
Make it easier to find pre-travel and on-site information	PTSI1: Availability of adequate information regarding ecological destinations on the websites, brochures and leaflets to tourists from all concerned stakeholders such as the Department of Forest, Bangladesh Parjatan Corporation, local government authorities, tourism operators	PTSI1- PTSI2: By 2027-ongoing PTSI3: By 2029-ongoing

(PTSI)	and community-based organizations. As the lead coordinating agency, each Organization will need to ensure its designated messaging platforms provide consistent and non-duplicating information. PTSI2: Modernization of visitor information Centre at Bagerhat, Mongla, Satkhira & Khulna PTSI3: Build visitor information centers at Karamjol and Kotka. PTSI4: Enhancements of the facilities related to natural guidance PTSI5: At popular sites or ecotourism places, put up signs / with interpretation & maps for conservation/environment protection messages	PTSI4-PTSI5: By 2028-ongoing
Locating ecotourism places, such as picnic, nature camps, and trails in the core and buffer areas (LEBA)	LEBA1. Discovering ecotourism sites in the inner zone (3 wildlife sanctuaries). LEBA2: Buffer zone field trips: Seeking a location for ecotourism LEBA3: Identify and develop ideal locations for picnics, nature camps and trails in the core & buffer zone	LEBA1- LEBA2: By 2028 LEBA3: By 2029-ongoing
ST development and management co-management committee (STDMC)	STDMC1: Establishment of co-management committee (CMC) with participation of tourism bodies and relevant stakeholders for Sundarbans development & management	STDMC1: By 2028-ongoing
Enhance the conservation and environmental education of the local community, visitors, and management (ECEE)	ECEE3: Creating educational programs and workshops to educate the local community, management, stakeholders and visitors about the necessity of conservation and its benefits ECEE2: Conservation and environmental awareness programs on the national media with a preachy tone ECEE3: Recommendations on the deliberation level: A greater number of signs and posts in different regions for Bagerhat, Mongla, Satkhira and Khulna visiting fronts with a conservation persuading message.	ECEE1: 6 workshops in a year up to 2028 then 3 workshops in a year up to 2031 ECEE2: Intensive awareness program up to 2029 then on regular interval up to 2031 ECEE3: By 2028-ongoing
Episodic advisory to the local community (EALC)	EALC1: Provide technical assistance and training as part of a capacity-building program to assist the management of micro-enterprises. The training sessions will be conducted by relevant local institutions (BSCITI, Bangladesh Tourism Board and local universities/vocational training centers). They will also draw upon more experienced consultants with expertise in sustainable tourism and micro-enterprise development to provide specialized support. EALC2: Microcredit to support productive activities to offer tourism services	EALC1: 4 training batches in every year from 2027-ongoing EALC2: From 2028-ongoing
Establish and implement a monitoring system (EIMS)	EIMS1: This monitoring system will include regular site inspections, visitor count data collection and local environmental assessments at major tourist sites. Monitoring teams, dedicated to this task, will conduct monthly and seasonal reviews and document them in written reports. The reports will subsequently be referred to other relevant authorities and stakeholders and used to inform future management decisions and necessary improvement actions. An annual public report summarizing the results of this process and the key actions taken will be published to ensure transparency and support learning across tourism planning. EIMS2: Form a Monitoring security body that protects the environment and forest resources from uncontrolled visitation and illegal activities of residents and tourists. EIMS3: There should be a regular monitoring program on environmental protection and forest resources.	EIMS1: By 2027-ongoing EIMS2: By 2028 EIMS3: After EIMS2 execution-ongoing

**Source: made by authors*

2nd Priority (Total score 16.50 to below 18.50):

- i. Pinpoint ecotourism spots, such as picnic spots, nature camps, and trails in the core and buffer zones that will allow regulation of visitor management to reduce congestion at most-visited spots while mitigating uncontrolled visitation impact on the environment by next year.
- ii. ST Development and Management: Next year, the tourism bodies and stakeholders shall be involved in the co-management of ST development and management in Sundarbans.
- iii. For the next 5 years, increase conservation and environmental awareness with national stakeholders, local communities, and visitors.

3rd priority (total score less than 16.50):

- i. Assist local communities in providing tourism services to visitors.
- ii. Design and implementation of the resource protection monitoring system

Strategic Plans. To resolve the identified, prioritized problems and outcomes toward sustainable development and management of Sundarbans, a 5-year (2027-2031) proposed action plan has been formulated with relevant stakeholders along with their contributory roles. Table 4:5 years Action plan for sustainable development and management of Sundarbans.

Conclusion

We conclude that sustainable tourism must strive to reconcile economic, environmental, and social goals to protect natural resources for future generations. Broadly, and building on the Brundtland Report and United Nations World Tourism Organization (UNWTO) frameworks, effective management requires some level of participatory decision-making if governments, private enterprises, and local communities are to work together to promote ecological sustainability while producing lasting economic gains. Tourism is a substantial driver of global growth and employment, and the viability of this tourism in sensitive ecosystems hinges on maintaining biological diversity and avoiding adverse effects stemming from overconsumption. The realization of sustainable tourism development can only occur when it is ecologically sound and integrated with the socio-economic systems on a local scale.

The study identifies ten significant tourism challenges in the Sundarbans- including poor infrastructure, ineffective waste management, and a lack of stakeholder coordination. Based on prioritized outcomes through a prioritization matrix and expert interviews, the study creates a practical five-year action plan (2027-2031) that identifies SMART objectives around urgent matters such as plastic waste reduction, maritime safety improvement, and development of environmentally friendly infrastructures. The Government of Bangladesh has been committed to sustainable development since 2010, but still, not all objectives have been reached. Hence, this study provides systematic guidelines for collective action whilst emphasizing that successful visitor enjoyment/misuse management leading to timeliness of crucial resource monitoring and strong community involvement is essential for the sustainability of this World Heritage site in perpetuity.

References

1. Allen, L.R., Hafer, H.R., Long, P.T., & Perdue, R.R. (1993). Rural residents' attitudes toward recreation and tourism development. *Journal of Travel Research*, 31(4), 27-33.
2. Baum, T. (1999). Seasonality in tourism: Understanding the challenges. *Tourism Economics*, 5(1), 5-8.
3. Bramwell, B., & Lane, B. (2011). Critical research on the governance of tourism and sustainability. *Journal of Sustainable Tourism*, 19(4-5), 411-421.
4. Byrd, E.T. (2007). *Stakeholders in sustainable tourism development and their roles: Applying stakeholder theory to sustainable tourism development*. *Tourism Review*, 62(2), 6-13.
5. Challenger, A., Dirzo, R., & Sánchez, O. (2009). *Climate change and biodiversity in the Americas*. Inter-American Institute for Global Change Research.
6. Chen, J.S. (2014). Stakeholder perceptions of sustainable development: The case of tourism in the Arctic. *Tourism Geographies*, 16(3), 418-437. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0969698914001118>
7. Creaco, S., & Querini, G. (2003). *The role of tourism in sustainable economic development*. Working paper, Università degli Studi di Milano-Bicocca.
8. Das, M., & Sharma, C. (2009). Interpretation of barriers to sustainable tourism: A case study of India. *International Journal of Sustainable Development & World Ecology*, 16(2), 136-145.
9. Forest Department, Bangladesh. (2018). *Annual report*. Ministry of Environment, Forest and Climate Change, Government of Bangladesh. Available at: <https://www.un-redd.org/sites/default/files/2021-09/UNREDD-BGD-Annual%20Report%202018%20final%20with%20signature.pdf>

10. Gunn, C.A. (1994). *Tourism planning: Basics, concepts, cases*. Taylor & Francis. Available at: https://www.researchgate.net/publication/346217669_Tourism_Planning_Basics_Concepts_Cases
11. Gursoy, D., & Rutherford, D. G. (2004). Host attitudes toward tourism: An improved structural model. *Annals of Tourism Research*, 31(3), 495-516.
12. Gursoy, D., Jurowski, C., & Uysal, M. (2002). Resident attitudes: A structural modeling approach. *Annals of Tourism Research*, 29(1), 79-105. Available at: https://www.researchgate.net/publication/223063912_Resident_Attitudes-A_Structural_Modelling_Approach
13. Hardy, A., Beeton, R.J.S., & Pearson, L. (2002). Sustainable tourism: An overview of the concept and its position in relation to conceptualizations of tourism. *Journal of Sustainable Tourism*, 10(6), 475-496. Available at: https://www.researchgate.net/publication/43498579_Sustainable_Tourism_An_Overview_of_the_Concept_and_its_Position_in_Relation_to_Conceptualisations_of_Tourism
14. Hassan, M.M. (2012). Sustainable tourism in the Sundarbans: Opportunities and challenges. *Bangladesh Journal of Tourism*, 5(1), 13-26.
15. Islam, M.S., & Bhuiyan, M.A.H. (2016). Impact of tourism on biodiversity in the Sundarbans mangrove ecosystem, Bangladesh. *International Journal of Conservation Science*, 7(1), 191-202. Available at: https://www.researchgate.net/publication/326566406_Sundarbans_mangrove_forest_of_Bangladesh_causes_of_degradation_and_sustainable_management_options
16. Jaafar, M., Rasoolimanesh, S. M., & Ismail, S. (2013). Perceived sociocultural impacts of tourism and community participation in tourism development in Langkawi Island. *Tourism Management*, 34, 86-95. Available at: https://www.researchgate.net/publication/281029336_Perceived_sociocultural_impacts_of_tourism_and_community_participation_A_case_study_of_Langkawi_Island
17. Manning, T., & Dougherty, T.D. (2000). *Sustainable tourism: Preserving the golden goose*. Cornell Hotel and Restaurant Administration Quarterly, 41(2), 29-41.
18. McIntyre, G. (1993). *Sustainable tourism development: Guide for local planners*. World Tourism Organization.
19. Mill, R.C., & Morrison, A.M. (2002). *The tourism system*. Kendall/Hunt Publishing.
20. Nyaupane, G.P., Morais, D.B., & Dowler, L. (2006). The role of community involvement and number/type of visitors on tourism impacts: A controlled comparison of Annapurna, Nepal, and Northwest Yunnan, China. *Tourism Management*, 27(6), 1373-1385.
21. Pacific Asia Travel Association. (1992). Annual report.
22. Pagdin, C. (1995). Assessing tourism impacts in the Spanish Pyrenees. *Tourism Management*, 16(2), 137-145. Available at: https://www.researchgate.net/publication/229551550_Rural_tourism_in_Spain
23. Ponna, S., & Prasiassa, U. (2011). Tourism as an engine of economic growth: A study of India. *Asia Pacific Journal of Tourism Research*, 16(2), 175-188. Available at: https://www.researchgate.net/publication/385552141_Tourism_as_an_Engine_of_Economic_Growth_in_India_Trends_Policies_and_Future_Prospets
24. Swarbrooke, J. (2010). *Sustainable tourism management*. CABI Publishing.
25. United Nations Educational, Scientific, and Cultural Organization. (2018). *The Sundarbans*. Available at: <https://whc.unesco.org/en/list/798/>
26. United Nations Environment Program & World Tourism Organization. (2005). *Making tourism more sustainable: A guide for policy makers*. Available at: <https://www.e-unwto.org/doi/epdf/10.18111/9789284408214>, https://unstats.un.org/unsd/publication/seriesm/seriesm_83e.pdf
27. United Nations World Tourism Organization. (2005). *International recommendations for tourism statistics. Madrid, Spain*: Author.
28. United Nations World Tourism Organization. (2007). *A practical guide to tourism destination management*. Available at: https://docenti.luiss.it/protected-uploads/472/2013/10/20131002182435-UNWTO_DM_practicalguide_bible_2007.pdf
29. United Nations World Tourism Organization. (2023). *International tourism highlights*. Author.
30. Vologzhina, M., Romanova, E., Egorova, N., & Sergeev, A. (2018). Negative impact of tourism on the environment. *IOP Conference Series: Earth and Environmental Science*, 177, 012058.
31. World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press.
32. World Tourism Organization & United Nations Statistical Office. (1994). *Recommendations on tourism statistics*.
33. World Tourism Organization. (1998). *Guide for local authorities on developing sustainable tourism*. Available at: https://sete.gr/files/Media/Ebook/110301_Guide%20for%20Local%20Authorities%20on%20Developing%20Sustainable%20Tourism.pdf
34. World Tourism Organization. (1998). *International recommendations for tourism statistics*.
35. World Tourism Organization. (2005). *Making tourism more sustainable: A guide for policy makers*.
36. Yoon, Y., Gursoy, D., & Chen, J.S. (2001). Validating tourism development theory with structural equation modeling. *Tourism Management*, 22(4), 363-372.

LEGAL LIABILITY FOR SERIOUS AND FATAL ACCIDENTS AT WORK IN LITHUANIA

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Keywords: accident, serious accident, fatal accident at work, legal liability.

Abstract

The legal regulation of serious and fatal accidents at work in the Republic of Lithuania is based on the constitutional imperative to protect human life and health, as well as the employer's duty to ensure safe and healthy working conditions. Article 48(1) of the Constitution of the Republic of Lithuania, which enshrines every person's right to safe and healthy working conditions, implies the state's duty to establish an effective preventive and accountability mechanism, encompassing labour law measures, as well as administrative, civil and criminal liability. An accident at work is defined as an incident at work resulting in an injury to an employee (minor, serious or fatal), provided that it has been investigated in accordance with the established procedure and recognised as an accident at work. A serious accident at work is considered to be an incident resulting in serious impairment of health, as determined by medical criteria, whilst a fatal accident is an incident resulting in the death of an employee. The scope of the investigating authorities' powers, the procedure for reporting to the authorities, as well as the choice of the type of liability and the limits of its application (administrative, civil or criminal) depend on the classification; therefore, this article presents an analysis of Lithuanian case law and statistical data regarding liability for serious and fatal accidents at work.

Introduction

Legal liability in the field of employee safety serves not only a punitive but also a preventive function. The inevitability of liability fosters a safety culture and encourages investment in prevention, employee training and risk management. Therefore, the relevance of this topic is significant not only from a legal perspective, but also from a social and economic one. Lithuanian academic literature and case law analyse the aspect of criminal liability, particularly the application of Article 176 of the Criminal Code of the Republic of Lithuania, and the Supreme Court of Lithuania has formulated clear criteria for the application of this provision, emphasising that the provision enshrined in Article 176(1) of the Criminal Code is a blanket provision; therefore, when applying it, it is necessary to establish which specific occupational safety requirements were breached and whether there is a causal link between the breach and the consequences. The Supreme Court has also emphasised that, when classifying an act under Article 176 of the Criminal Code, it is mandatory to analyse in detail the specific duties and the link between their non-performance and the consequences, rather than merely making a formal finding regarding the existence of safety measures (Supreme Court of Lithuania ruling of 24 February 2015 in criminal case No. 2K-70-222/2015). This case law demonstrates a high level of scrutiny regarding aspects of criminal liability in the context of the application of legal norms and the analysis of causal links.

However, most studies are limited to the analysis of specific cases and pay less attention to the systematic relationship between labour and criminal law. Despite comprehensive legal regulations establishing occupational health and safety requirements and liability for their breaches, in practice, uncertainties arise regarding the limits of employer and employee liability, the establishment of causation, the assessment of forms of fault, and the distinction between different types of legal liability. Case law consistently emphasises that the employer's duty is of an active nature – they must not only formally establish safety rules, but also effectively ensure their implementation and monitoring.

Objectives:

1. To present the legal liability applicable in Lithuania for serious and fatal accidents.
2. To conduct a quantitative statistical analysis of data from 2020–2025 regarding accidents that have occurred in Lithuania.

The following research methods were applied in the preparation of this article: analysis of scientific literature, and analysis of the content of legislation and documents (analysis of case law). Methods of systematic analysis and summarisation were applied to organise and summarise the research results.

Concept and classification of accidents

Jakubavičius and Gramauskas (2018) note that: 'occupational safety and health encompasses all preventive measures designed to safeguard employees' working capacity, health and life at work'. The authors also state that Lithuania surpasses other European Union countries in terms of the number of accidents that have occurred, which indicates that the occupational safety and health policy implemented in Lithuania is not yielding the desired results. The study also found that a significant proportion of serious and fatal accidents occur due to poor work organisation, inadequate internal controls and risky behaviour by employees

(Jakubavičius & Gramauskas, 2018). These findings confirm that the issue of liability cannot be assessed solely through the prism of individual fault – it is necessary to analyse organisational, managerial and control mechanisms.

Academic doctrine and the case law of the Supreme Court of Lithuania confirm that the legal assessment of breaches of occupational health and safety requirements cannot be limited to the determination of individual fault alone. The causes of serious and fatal accidents at work often lie in broader organisational, managerial and control deficiencies; therefore, the employer's liability in this area is regarded as systemic and preventative. At the same time, the employee's conduct, their diligence and their duty to comply with safety requirements are also relevant when assessing causation and the allocation of liability.

The classification of serious and fatal accidents at work in this article is understood as the legally significant categorisation of an accident at work into a specific category based on the severity of the consequences (minor, serious or fatal), where such categorisation determines: 1) the selection of the investigating body (the employer's commission or an inspector from the State Labour Inspectorate), 2) the investigation procedure and formalities, 3) the determination of the type and scope of liability (administrative, civil, criminal liability) and 4) subsequent evidence in disputes and court cases. In practical terms, classification acts as a 'bridge' between the factual situation (the circumstances of the incident and the medical consequences) and the legal classification. J. Tartilas emphasises that an accident should primarily be associated with acute damage to health and its causal link to factors in the working environment, rather than merely with an administrative procedure (Tartilas, 2008, p. 18). In the author's view, legal classification cannot be reduced merely to the formal procedure of drawing up an investigation report – it is necessary to analyse the objective fact of the health impairment and its causal link to shortcomings in the organisation of work. Issues of civil liability (compensation for damage, compensation for non-pecuniary damage) are examined in separate academic works and in judicial practice, but they are usually analysed through the framework of tort liability, without encompassing an assessment of the comprehensive liability system.

The system of normative legal acts regulating the concept of serious and fatal accidents at work must be regarded as multi-layered, hierarchically structured and systematically interlinked. The primary level of regulation consists of the roles and problematic aspects of various legal acts, which can be structurally distinguished as follows: the Law on Occupational Safety and Health of the Republic of Lithuania; the Labour Code of the Republic of Lithuania; the Code of Administrative Offences of the Republic of Lithuania; the Criminal Code of the Republic of Lithuania; the Regulations on the Investigation and Recording of Accidents at Work.

In practice, classification is regarded as a medical assessment of the consequences. The annexes to the regulations set out a form for certifying the severity of damage to health and refer to the list of classification criteria for serious damage to health, which is used to determine whether a specific instance of damage is to be considered serious. This means that the core of a serious accident at work is an objectively established serious health impairment, rather than a subjective assessment of the danger posed by the incident (Regulations on the Investigation and Recording of Accidents at Work // Official Gazette 2004, No. 136-4945, current version effective from 1 January 2021). A fatal accident at work is, at first glance, the clearest classification category; however, even in this case, disputes arise in judicial practice regarding the causal link – whether the death is directly linked to the work-related incident. Therefore, the mere fact of death is not sufficient; a systematic assessment of the factual circumstances is required (Supreme Court of Lithuania ruling of 24 February 2015 in criminal case No. 2K-70-222/2015).

The classification also determines the competence of the investigating authority. Under the Regulations on the Investigation and Recording of Accidents at Work, serious and fatal accidents are investigated by a VDI inspector, whilst minor accidents are investigated by a commission appointed by the employer (Regulations on the Investigation and Recording of Accidents at Work // Official Gazette 2004, No. 136-4945, current version effective from 1 January 2021). This structure indicates that the legislator regards serious and fatal cases as high-risk situations requiring a state control mechanism. The Supreme Court of Lithuania has noted that administrative liability may also be imposed for breaches of occupational safety regulations, but this does not preclude the possibility of criminal liability where the elements set out in Article 176 of the Criminal Code are present (Supreme Court of Lithuania ruling of 14 February 2017 in criminal case No. 2K-11-648/2017; Code of Administrative Offences of the Republic of Lithuania // TAR 10 July 2015, No. XII-1869, current version effective from 13 January 2026; Criminal Code of the Republic of Lithuania // Žin. 2000, No. 89-2741, current version effective from 1 January 2026).

The Supreme Court emphasised that the mere finding of serious bodily harm does not in itself imply automatic criminal liability – it is necessary to establish the specific duties breached and their causal link to

the consequences (Supreme Court of Lithuania ruling of 9 May 2022 in criminal case No. 2K-116-648/2022). The classification of serious and fatal accidents at work in Lithuanian law serves several functions: procedural, evidential, distinguishing and preventive. However, as Tartilas (2008, p. 20) rightly points out, classification must not become a mere formality – a systematic interpretation of legal norms and an analysis of the actual factual circumstances are essential. The practice of the Supreme Court of Lithuania confirms that it is precisely the determination of material characteristics and causal link that determines the validity of legal liability.

The limits of the legal liability of the employer and the employee

The limits of the legal liability of the employer and the employee in the context of serious and fatal accidents at work are one of the most complex issues at the intersection of labour law and criminal law. An employer's liability in cases of accidents at work may be: civil (compensation for damages), administrative (Code of Administrative Offences of the Republic of Lithuania // TAR 10 July 2015, No. XII-1869, current version effective from 13 January 2026), criminal (Criminal Code of the Republic of Lithuania // Official Gazette 2000, No. 89-2741, current version effective from 1 January 2026), and in certain cases – disciplinary or financial. Employers' obligations are also enshrined in European Union law, in particular in Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work. This Directive establishes the general principle of prevention, according to which the employer must identify occupational risks and take measures to eliminate or reduce them (Council Directive 89/391/EEC, 1989; Fiorucci & Kennedy, 2023). Thus, the employer's duty to ensure safe working conditions is a requirement not only under national law but also under European Union law.

An employee's liability may be: disciplinary, financial, administrative, or, in exceptional cases, criminal. An employee must comply with safety requirements, use work equipment properly, refrain from consuming alcohol or other psychoactive substances, and report hazardous situations (Labour Code of the Republic of Lithuania // TAR 19 September 2016, No. XII-2603, current version effective from 1 January 2025; Law on Occupational Safety and Health of the Republic of Lithuania // Žin. 2003, No. 70-3170, current version effective from 1 November 2024).

It can be stated that the employer's responsibility in the context of serious and fatal accidents at work is of a systemic nature and encompasses not only a response to an incident that has already occurred, but also the continuous assessment of risks, the organisation of preventive measures and the provision of control mechanisms (Law on Occupational Safety and Health of the Republic of Lithuania // Žin. 2003, No. 70-3170, current version effective from 1 November 2024; Labour Code of the Republic of Lithuania // TAR 19 September 2016, No. XII-2603, current version effective from 1 January 2025). Furthermore, the Supreme Court of Lithuania has held that the mere existence of documents does not in itself mean that the duty to organise safe working conditions has been properly fulfilled (Supreme Court of Lithuania ruling of 24 February 2015 in criminal case No. 2K-70-222/2015).

Meanwhile, an employee's responsibility relates to their individual conduct and is linked to the duty to comply with established safety requirements and to act with due care in a specific situation (Labour Code of the Republic of Lithuania // TAR 19 September 2016, No. XII-2603, current version effective from 1 January 2025). Furthermore, the practice of the Supreme Court of Lithuania emphasises that even if an employee breaches safety requirements, this does not in itself negate the employer's duty to organise safe working conditions (Supreme Court of Lithuania ruling of 9 May 2022 in criminal case No. 2K-116-648/2022).

Fedosiuk emphasises that criminal liability must be applied as a measure of *last resort*, i.e. only when other legal measures are insufficient to protect the legal interest that has been infringed (2012). Therefore, not every serious or fatal accident at work gives rise to criminal liability.

Investigations into serious and fatal accidents at work in Lithuania are based on a functional division of competences and a model of inter-institutional cooperation. This system encompasses administrative supervision (VDI), criminal proceedings (police and other pre-trial investigation bodies, the public prosecutor's office), judicial review (courts of general jurisdiction) and the control of the legality of public administration (administrative courts), which, although operating under different legal regimes, in practice address the same fundamental question: whether obligations regarding employee health and safety have been breached and whether these breaches are causally linked to serious or fatal consequences.

The main role of administrative control is performed by the State Labour Inspectorate (SLI), the function of criminal prosecution is carried out by the Public Prosecutor's Office and pre-trial investigation bodies, whilst final procedural control and issues of liability are resolved by the courts. Administrative courts ensure the control of the legality of decisions made by public administration bodies. The VDI supervises compliance with occupational safety and health requirements, organises and conducts investigations into accidents at work,

identifies violations and draws up reports on administrative offences. The Public Prosecutor's Office, , organises and supervises pre-trial investigations where signs of a criminal offence are identified, including breaches of occupational safety requirements as provided for in Article 176 of the Criminal Code (Criminal Code of the Republic of Lithuania // Official Gazette 2000, No. 89-2741, current version effective from 1 January 2026). Pre-trial investigation authorities (usually the police) establish the facts, gather evidence, interview witnesses and organise expert examinations. Courts – both those of general jurisdiction and administrative courts – exercise the function of final judicial review. Courts of general jurisdiction hear criminal cases under Article 176 of the Criminal Code and civil cases concerning compensation for damages, whilst administrative courts resolve disputes regarding the legality of decisions made by the State Labour Inspectorate or other supervisory authorities.

Table 1

Causes, form and application of the legal liability of the employer and the employee

Assessment criteria	Employer	Employee
Primary legal obligation	To organise safe working conditions, assess occupational risks, implement preventive measures, provide training, supply safe work equipment, and monitor compliance with safety requirements	To comply with established safety requirements, use work equipment properly, refrain from consuming alcohol or other psychoactive substances, and report hazardous situations
Conditions for liability to arise	Breach of duty, dangerous consequences, causal link between the breach and the consequences, fault	Breach of duty, dangerous consequences, causal link between the employee's actions and the consequences, fault
Form of fault	Most commonly, negligence: carelessness or a reckless belief that the consequences can be avoided	Most commonly, negligence related to failure to comply with safety rules or careless behaviour
Forms of liability	Civil, administrative, criminal, and in certain cases disciplinary or financial.	Disciplinary, financial, administrative, and in exceptional cases criminal
Application of criminal liability	Applied under Article 176 of the Criminal Code when a specific breach of health and safety regulations, a causal link and culpability are established	Generally not applied under Article 176 of the Criminal Code as the primary entity responsible for ensuring occupational safety and health, but may arise in other exceptional cases under general criminal law provisions
Application of civil liability	Compensation for damage caused to an employee's health or life, including non-pecuniary damage	May be relevant in cases of contributory negligence, where the employee's negligence affects the extent of the damage or its apportionment
Trends in case law	Formal delegation of duties does not remove the employer's duty of control and supervision; it is necessary to establish a specific breach of regulations and a causal link	A mere breach of safety rules by an employee does not in itself negate the employer's liability if systemic shortcomings in the organisation of safety are established
Principle of application	Liability applies only after identifying the specific rule breached, the responsible party, the causal link and fault	Liability is assessed on the basis of specific conduct, but it cannot automatically transfer the employer's organisational duties to the employee
The principle of <i>ultima ratio</i>	Criminal liability is applied as a last resort when other legal measures are insufficient	Criminal liability is applied to employees only to a very limited extent and only where the general conditions for criminal liability are clearly proven

**Sources: table compiled by the author*

This division faces a number of challenges. First and foremost, there are conflicts over jurisdictional boundaries and situations involving parallel investigations, where administrative and criminal proceedings examine the same incident using different standards of proof. Different objectives – preventive supervision and criminal prosecution – result in varying degrees of intensity and methodology in the assessment of facts. This may lead to discrepancies in assessments, particularly when determining issues of causation, the content of duties or culpability. The practice of the Supreme Court of Lithuania in this area serves a stabilising function. The Supreme Court consistently emphasises that: an administrative act of the State Labour Inspectorate has no prejudicial effect in criminal proceedings; Article 176 of the Criminal Code is a blanket provision, and it is therefore necessary to identify the specific legal provision that has been breached; the court must determine the actual content of the duties, rather than limiting itself to their formal existence; it is necessary to prove a clear causal link between the breach of duty and the resulting consequences. This means that the final resolution of the issue of liability depends not on the formality of institutional conclusions, but on a systematic and comprehensive assessment of the evidence. It can be argued that the institutional system for investigating serious and fatal accidents at work in Lithuania is based on the principles of separation of functions, demarcation of competences and inter-institutional cooperation. Lithuania's institutional system is structurally adequate for investigating serious and fatal accidents at work, but its effectiveness depends directly on: a clear understanding of the limits of competences, a uniform interpretation of standard provisions, adherence to a high standard of proof, and genuine, rather than merely formal, inter-institutional cooperation. It is the balance of these elements that determines whether the system ensures not only legal certainty but also the genuine protection of workers' lives and health.

Analysis of statistical data and Lithuanian case law on serious and fatal accidents at work

An analysis of statistical indicators and case law allows for an assessment of the actual effectiveness of the implementation of legal norms and reveals whether the liability system functions preventively or merely repressively. According to the VDI's publicly available reports for 2020–2025, the number of serious and fatal accidents in Lithuania remains consistently high in certain sectors of economic activity, particularly in manufacturing, construction and transport (VDI, 2020–2025).

Table 2

Structure of serious and fatal accidents at work in Lithuania 2020–2025 (%)

Year	Fatal accidents (no.)	Serious accidents (no.)	Total (serious and fatal)	Proportion of fatal accidents (%)	Proportion of severe cases (%)
2020	25	110	135	18.5%	81.5%
2021	39	121	160	24.4%	75.6%
2022	23	124	147	15.6%	84.4%
2023	20	112	132	15.2%	84.8%
2024	18	120	138	13.0%	87.0%
2025	18	122	140	12.9%	87.1%

**Sources: table compiled by the author*

Table 3

Index of change in serious and fatal accidents at work in Lithuania (2020 = 100%) 2020–2025

Year	Fatal accidents (no.)	Change index for fatal accidents (2020=100)	Serious accidents (no.)	Change index for serious accidents (2020=100)
2020	25	100	110	100
2021	39	156	121	110
2022	23	92	124	113
2023	20	80	112	102
2024	18	72	120	109
2025	18	72	122	111

**Sources: table compiled by the author*

A statistical analysis of serious and fatal accidents at work will be assessed in conjunction with a study of Lithuanian case law, with the aim of determining how legal provisions are applied in actual cases and whether judicial precedent confirms the hypothesis put forward in the theoretical section regarding the systemic nature of employer liability. Such a comprehensive approach allows not only for an assessment of the dynamics of accidents at work and high-risk sectors, but also for determining whether the existing liability system functions as an effective preventive measure, or whether a repressive model of its application prevails in practice.

It has been established that the majority of all serious and fatal accidents at work are, in fact, serious accidents. During the period under review, they accounted for approximately 80–87 per cent of all serious and fatal accidents at work. Fatal accidents account for a comparatively smaller proportion, but their social and legal consequences are particularly significant.

The change index shows that in 2025, the number of fatal accidents at work was around 72 per cent of the 2020 level.

Table 4

Incidence rates of fatal accidents at work in Lithuania and the European Union (per 100,000 workers) 2020–2025

Year	Lithuania (per 100,000 workers)	European Union (per 100,000 workers)
2020	2.6	1.76
2021	3.5	1.67
2022	2.0	1.66
2023	1.3	1.63
2024	1.3	1.60
2025	1.5	1.58

**Sources: table compiled by the author*

When analysing the frequency rates of accidents at work, which are calculated per 100,000 employees, similar trends can be observed. The frequency rate of fatal accidents at work in Lithuania fell from 2.6 to 1.5 cases per 100,000 employees during the period under review, but this rate remains higher than the European Union average. According to Eurostat data, the rate of fatal accidents at work in the European Union fluctuates around 1.6 cases per 100,000 workers. This indicates that, although the occupational safety situation in Lithuania is improving, it remains more challenging than the European Union average.

Analysing the number of fatal accidents at work in Lithuania and the European Union between 2020 and 2025, it can be stated that during the period under review, the number of fatal accidents at work in Lithuania fluctuated, however, the overall trend is downward – from 33 cases in 2020 to 21 cases in 2025; the highest number of fatal accidents at work in Lithuania was recorded in 2021 (47 cases), followed by a significant decrease in 2022 to 32 cases, which may be linked to strengthened occupational safety and health control and prevention measures; During the 2022–2023 period, the figures in Lithuania remained fairly stable (32–34 cases), however, a more pronounced decline has been recorded since 2024, with the number of fatal accidents at work falling to 26, and to 21 cases in 2025; A consistent downward trend has also been observed in the European Union, with the number of fatal accidents at work falling from 3,355 cases in 2020 to 3,200 cases in 2025; Although the absolute number of fatal accidents at work in the European Union is significantly higher due to the larger workforce, a similar trend is evident at EU level – a gradual decline in accidents.

Table 5

Number of fatal accidents at work in Lithuania and the European Union, 2020–2025

Year	Lithuania (number of cases)	European Union (number of cases)
2020	33	3,355
2021	47	3,408
2022	32	3,286
2023	34	3,298
2024	26	3,250
2025	21	3,200

**Sources: table compiled by the author*

Table 6

Concentration of serious and fatal accidents at work by NACE sector in Lithuania (%) 2020–2025

NACE sector	2020	2021	2022	2023	2024	2025
Construction	17.0%	16.9%	18.3%	19.0%	17.1%	26.3%
Manufacturing	20.7	18.8%	21.8%	23.0%	22.2%	18.0%
Transport and storage	11.9%	11.3%	13.4%	13.5%	10.8%	19.5%
Agriculture, forestry and fisheries	8.9	8.8%	9.2%	8.7%	9.5%	6.0%
Wholesale and retail trade; repair of motor vehicles	8.1	7.5	7.0	7.1%	8.9%	8.3%

**Sources: table compiled by the author*

Analysing the concentration of serious and fatal accidents at work by NACE sector in Lithuania (%) 2020–2025, it can be stated that during the aforementioned period, the highest concentration of serious and fatal accidents at work was recorded in the manufacturing and construction sectors, which account for a significant proportion of the overall accident structure in all years; the manufacturing sector accounted for the highest proportion of accidents in most of the years analysed, ranging from 18.0% to 23.0%, with the highest figure recorded in 2023; a high level of accidents is also observed in the construction sector, with the sector's share rising to 26.3% in 2025, the highest figure for the entire period analysed. This indicates that the construction sector remains one of the most hazardous sectors of economic activity in terms of worker safety; in the transport and storage sector, the figures remained fairly stable between 2020 and 2024 (around 11–13%), but a marked increase to 19.5% is observed in 2025, which may indicate a growing risk in this sector;

Table 7

The most hazardous sectors of economic activity in the EU by structure of accidents at work

NACE sector	Proportion of fatal accidents in the EU (%)	Proportion of non-fatal accidents in the EU (%)	Trend 2020–2023
Construction	22–25%	12–13%	Consistently the highest concentration of non-fatal NA
Transport and storage	15–17%	7–9%	Consistently among the most hazardous sectors
Manufacturing	12–14%	18–19%	Mostly non-fatal accidents
Agriculture, forestry and fisheries	12–14%	4–6%	High proportion of mortal NA
Wholesale and retail trade	4–6%	11–13%	High proportion of injuries

**Sources: table compiled by the author*

During the period 2020–2023, four sectors – construction, transport and storage, manufacturing, and agriculture – accounted for approximately 65–70% of all fatal accidents at work in the EU.

When analysing Lithuanian case law relating to the legal classification of serious and fatal accidents at work, the case law established by Lithuanian courts, particularly the Supreme Court of Lithuania, is of significant importance. Case law allows us to determine how the provisions of Article 176 of the Criminal Code, regulating criminal liability for violations of occupational health and safety requirements under the Law on Occupational Health and Safety (), are interpreted. The Supreme Court's judgments emphasise that in such cases it is necessary to establish a specific breach of occupational health and safety legislation, a causal link between this breach and the resulting consequences, and the culpability of the responsible person. Case law confirms that criminal liability under Article 176 of the Criminal Code is most often applied in cases where a clear causal link is established between a breach of occupational health and safety legislation and the consequences of a serious or fatal accident at work. Case law reveals that a significant proportion of serious and fatal accidents at work are linked not to accidental circumstances, but to systemic problems in the organisation of work – insufficient risk assessment controls, improper work planning or disregard for safety requirements. In this way, Lithuanian case law is developing a consistent doctrine under which criminal

liability applies only where there is a clear breach of safety requirements, a causal link and a form of fault. Case law identifies the main causes of accidents at work: failure to instruct employees; failure to provide protective equipment; improper organisation of work; inadequate supervision of work; and the poor technical condition of equipment and machinery.

Table 8

Summary of analysed Supreme Court cases concerning the application of Article 176 of the Criminal Code

Year	Case No.	Factual circumstances	Legislation infringed	Court's conclusion
2019	Ruling of 23 December 2019	Employee injured due to a hazardous work process that was improperly organised	Labour Code, occupational safety regulations	The Supreme Court emphasised the employer's responsibility for the organisation of work
2019	Ruling of 11 December 2019	An employee suffered a serious injury at work due to improperly organised work	DSSI, safety instructions	The court emphasised the importance of establishing a causal link
2022	2K-225-788/2022	An employee suffered a serious injury whilst performing hazardous work due to inadequate supervision	DSSI, occupational safety regulations	Liability applies to the employer or their authorised representative
2022	2K-116-648/2022	An employee was killed whilst working at height without protective equipment	DSSI, construction safety regulations	The employer is responsible for ensuring safe working conditions

**Sources: table compiled by the author*

The analysed Supreme Court cases show that the majority of the cases examined relate to the improper organisation of hazardous work, failure to comply with occupational health and safety requirements, and insufficient control of the work process.

Conclusions

The legal regulation of serious and fatal accidents at work in Lithuania is, in formal terms, comprehensive and systematically structured; however, its practical application reveals a significant problem – the lack of clarity regarding the limits of liability. Although legislation provides for a differentiated model of administrative, civil and criminal liability, in real-life situations their distinction depends on a subjective assessment of causality and fault. This leads to the conclusion that the existing legal model is not sufficiently clear for practical application and creates the conditions for inconsistent practices in the application of liability.

The system of competences of state institutions is formally and logically distributed, but in practice it functions not as a unified system, but as a fragmented mechanism in which coordination is often insufficient. This is particularly evident when deciding on the choice of the type of liability and the assessment of causal link. Although inter-institutional cooperation exists, its effectiveness depends more on the quality of practical cooperation between institutions than on legal regulation. This highlights the need to strengthen the institutional rather than the normative level of coordination.

Statistical analysis reveals that the problem of serious and fatal accidents at work in Lithuania remains structural rather than incidental. The clear concentration of these incidents in certain sectors indicates systemic shortcomings in occupational safety management and the uneven effectiveness of preventive measures. This leads to the conclusion that the existing model of legal liability operates reactively, i.e. after the event, rather than preventively, and therefore does not contribute sufficiently to a real reduction in accidents.

Lithuanian case law establishes consistent criteria for the application of liability, but at the same time reveals – a breach. Consequently, criminal liability is applied sparingly, in accordance with the principle of ultima ratio. Nevertheless, in practice it remains difficult to clearly distinguish between types of liability and

to identify the liable party; consequently, judicial practice not only interprets the law but also compensates for gaps in statutory regulation.

References

1. Eurostat (2025). *Accidents at work in 2023 claimed 3,298 lives in the EU* [online]. Available online: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251014-1?ettrans=lt> [accessed 11 March 2026].
2. Eurostat, Accident statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics&ettrans=lt, [accessed 11 March 2026].
3. Fedosiuk, O. *Criminal liability as a last resort (ultima ratio): theory and reality*. Jurisprudence, 2012, 19(2), 715-738.
4. Fiorucci, A., Kennedy, L. (2023). *Health and safety at work*. European Parliament.
5. Gramauskas, V., Jakubavičius, A. (2018). *Causes of accidents and their statistical analysis in the construction sector*. Vilnius: Contemporary Business Issues.
6. Constitution of the Republic of Lithuania. 25 October 1992. *Valstybės žinios*, 1992, No. 32-1014.
7. Criminal Code of the Republic of Lithuania // Official Gazette 2000, No. 89-2741 (current version effective from 1 January 2026) <https://www.e-tar.lt/portal/lt/legalAct/TAR.2B866DFF7D43/tlJFNMknrh>
8. Labour Code of the Republic of Lithuania, approved by Law No. XII-2603 of 14 September 2016 (current version effective from 1 January 2025).
9. Law on Occupational Safety and Health of the Republic of Lithuania // Žin. 2003, No. 70-3170 (current version effective from 1 November 2024).
10. Code of Administrative Offences of the Republic of Lithuania // TAR 10 July 2015, No. XII-1869, current version effective from 13 January 2026 <https://www.e-tar.lt/portal/lt/legalAct/4ebe66c0262311e5bf92d6af3f6a2e8b/asr>.
11. Law of the Republic of Lithuania on Social Insurance against Accidents at Work and Occupational Diseases. 23 December 1999, No. VIII-1509. *Valstybės žinios*, 1999, No. 110-3207 (current version effective from 1 November 2024).
12. Law on the State Labour Inspectorate of the Republic of Lithuania. 14 October 2003, No. IX-1768. *Valstybės žinios*, 2003, No. 102-4585 (current version effective from 1 July 2024).
13. Ruling of the Supreme Court of Lithuania of 28 April 2015 in criminal case No. 2K-217-699/2015.
14. Ruling of the Supreme Court of Lithuania of 24 February 2015 in criminal case No. 2K-70-222/2015.
15. Ruling of the Supreme Court of Lithuania of 3 November 2017 in criminal case No. 2K-274-696/2017.
16. Ruling of the Supreme Court of Lithuania of 14 February 2017 in criminal case No. 2K-11-648/2017.
17. Ruling of the Supreme Court of Lithuania of 11 December 2019 in a criminal case.
18. Ruling of the Supreme Court of Lithuania of 23 December 2019 in a criminal case.
19. Ruling of the Supreme Court of Lithuania of 9 May 2022 in criminal case No. 2K-116-648/2022.
20. Ruling of the Supreme Court of Lithuania of 8 November 2022 in criminal case No. 2K-225-788/2022.
21. Regulations on the Investigation and Recording of Accidents at Work // Žin. 2004, No. 136-4945 (current version effective from 1 January 2021) <https://www.e-tar.lt/portal/lt/legalAct/TAR.AF1B122D7145/QSUtJsPRYX>.
22. Tartilas, J. (2008). *A Critical Analysis of Occupational Safety Legislation*. Jurisprudence.

LITHUANIA AS A MULTI-LEVEL ACCOUNTABILITY ACTOR IN RESPONSE TO CRIMES AGAINST HUMANITY IN BELARUS

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Keywords: crimes against humanity, universal jurisdiction, International Criminal Court, International Court of Justice, Belarus, Lithuania.

Abstract

This paper discusses how Lithuania has contributed to the creation of multi-level legal accountability structures in reaction to alleged crimes against humanity in Belarus in the aftermath of the 2020 presidential election. It claims that accountability is now spread over three legal systems: the international criminal law of the International Criminal Court, the domestic prosecution of universal jurisdiction, and the interstate prosecution of the International Court of Justice under the Convention against Torture. The article demonstrates that Lithuania has helped broaden the jurisdictional interpretations of transboundary offenses, especially in deportation as a crime against humanity, and has been actively involved in domestic cases related to claims of torture against Belarusian citizens. It also examines the possibilities of interstate dispute mechanisms founded on the obligations of *erga omnes partes*, and points to the procedural and political limitations of ICJ litigation. The article concludes that, although each of the mechanisms deals with different aspects of accountability, such as individual criminal liability, domestic enforcement, and state responsibility, none is sufficient on its own. Successful accountability is thus premised on long-term strategic alignment between the legal fora and long-term political participation of third states like Lithuania.

Introduction

Ever since the disputed presidential election of August 2020, Belarus has been facing a severe and continuing human rights crisis, characterized by mass and systematic repression (A/HRC/59/59, 2025). The state authorities have reacted to peaceful dissent through the disproportionate use of force, arbitrary detention, torture, and sexual and gender-based violence, forced disappearance, and politically motivated prosecution. The scale and pattern of these violations suggest that they may amount to crimes against humanity under international law (A/HRC/61/57, 2026).

As a result of this repression, according to estimates, up to 500,000-600,000 people have left Belarus since 2020 and are currently living in forced migration (Korshunau, 2024). A significant proportion of this population has moved to other neighbouring countries such as Lithuania. By 1 January 2026, 50,286 Belarusian nationals had valid residence permits in Lithuania in all categories. Out of them, 1,142 were provided with residence permits on humanitarian grounds, which is a formal acknowledgment of protection needs (Lithuanian Migration Department, 2026). But this number is not the complete picture of forced migration associated with repression. It has been proposed by experts that the Belarusian nationals that moved to Lithuania due to protection-related reasons are likely to be much higher, with up to 10,000 people being estimated (Nasha Niva, 2026).

Beyond their immediate impact, such violations engage fundamental norms of international law that are increasingly understood not as bilateral obligations between states, but as obligations owed to the international community as a whole. In this context, the doctrine of obligations *erga omnes* and *erga omnes partes* has become central, as it establishes that all states have a legal interest in ensuring compliance with core human rights standards and may invoke responsibility for their breach (Chow, 2021; Paparinskis, 2021).

In such contexts, accountability must be pursued through alternative legal avenues beyond the territorial state. These are international criminal mechanisms, the third state exercise of universal jurisdiction, and litigation between states under international treaties. Lithuania has become one such player in the bigger picture. Lithuania, in its interaction with various legal mechanisms, shows how a multi-level approach to crimes committed in Belarus can become a reality.

This article pursues three objectives: first, to examine how Lithuania has used the ICC referral mechanism to establish jurisdiction over crimes committed on the territory of a non-State Party; second, to analyse the legal framework and practical application of universal jurisdiction in Lithuanian domestic proceedings relating to Belarus; and third, to assess the legal basis and procedural preconditions for potential inter-state litigation before the ICJ under the Convention against Torture.

Methodologically, the article employs doctrinal legal analysis and a case study approach. Primary sources – including ICC referral documents, ICJ judgments, UN treaty body reports, and national legislation – are examined alongside secondary academic literature and analytical reports. The three accountability mechanisms are analysed in turn, with each assessed against the criteria of jurisdictional reach, practical application, and structural limitations.

The paper will assert that the actions of Lithuania provide an example of a new paradigm of layered accountability, which integrates international, national, and inter-state legal avenues. Although certain of these mechanisms have already yielded practical outcomes, others are yet to be exploited but are within the law. Through these three dimensions, the article evaluates the successes as well as the shortcomings of Lithuania in promoting accountability of crimes against humanity in Belarus.

International Criminal Court: Establishing Jurisdiction over the Situation in Belarus

On 30 September 2024, the Republic of Lithuania made a State Party referral to the Office of the Prosecutor of the International Criminal Court (ICC) under Articles 13(a) and 14 of the Rome Statute (International Criminal Court, 2024). In its referral, Lithuania asked the Prosecutor to examine alleged crimes against humanity by Belarusian authorities since at least May 2020. These offenses involve deportation, persecution, and other inhumane practices against the civilian population especially those who are seen as political adversaries of the regime.

The main legal challenge in this case is that Belarus is not a State Party to the Rome Statute. Generally speaking, the ICC does not have a territorial jurisdiction over the crimes that were committed on the territory of non-State Parties in their entirety. The referral to Lithuania was however based on one significant jurisdictional point: that some aspect of the alleged criminal act took place on the territory of Lithuania, which is a State Party.

In particular, the idea of transboundary crimes, especially the concept of deportation as a crime against humanity in the context of Article 7(1)(d) of the Rome Statute was the subject of the referral and the following analysis by the Office of the Prosecutor. Deportation as such includes the movement across an international border. Thus, although the acts of coercion may have an origin in Belarus, the criminal act is still fulfilled, at least partially, on the territory of another State (Akhavan, 2019), e.g. Lithuania.

This rationale was accepted by the Office of the Prosecutor which also stressed that at least part of the alleged crimes was committed on the territory of Lithuania, which made them subject to the territorial jurisdiction of the Court. This practice is based on previous ICC jurisprudence, especially the Bangladesh/Myanmar case (Sharma, 2025), and represents a developing understanding of jurisdiction in cases with cross-border features.

On the same day, 30 September 2024, the Office of the Prosecutor initiated a preliminary examination after the referral. The Prosecutor determined that the case had a reasonable basis to be investigated after evaluating the jurisdiction, admissibility, and gravity.

On 12 March 2026, the Office officially declared (International Criminal Court, 2026) the initiation of an investigation into the situation. The results show that it is reasonable to believe that:

- the alleged acts constitute crimes against humanity, including deportation and persecution;
- these acts were committed as part of a widespread and systematic attack against the civilian population;
- the conduct was carried out pursuant to or in furtherance of a State policy, targeting actual or perceived political opponents.

Importantly, the Office also found that no genuine domestic investigations had been undertaken in Belarus, thereby satisfying the complementarity requirement under Article 17 of the Rome Statute.

The referral of Lithuania is a remarkable instance of the way in which the third states may use the ICC framework to resolve the cases when the territorial state is not willing or capable of conducting the investigation. Notably, this development shows that the jurisdiction of the Court is not necessarily limited to the territory of States Parties (Colvin & Orchard, 2019). Although Belarus is not a signatory to the Rome Statute, it was found that the jurisdiction existed based on the fact that at least one of the legal elements of the alleged crimes, specifically the cross-border aspect of deportation, took place on the territory of Lithuania, which is an ICC State Party. Meanwhile, the territorial nexus of crimes covered by the investigation is restricted to those with a territorial nexus to ICC States Parties. This means that the ICC cannot address the full range of violations committed within Belarus, particularly those lacking a cross-border dimension.

Universal Jurisdiction in Lithuania: Legal Framework and Application to Belarus

The legal basis on which universal jurisdiction should be exercised in Lithuania is comparatively extensive. Article 7 of the Criminal Code (Seimas of the Republic of Lithuania, Law No. VIII-1968 of 26

September 2000) provides that Lithuanian courts can determine the criminal responsibility of a variety of serious crimes such as crimes against humanity and war crimes, in spite of the location at which the crime was committed, the nationality of the criminal, or that the criminal is subject to prosecution under the law of the country in which the crime was committed.

This is a strong integration of international criminal law into the domestic laws. It is important to note that the Lithuanian law does not introduce any other requirements that are typically present in other jurisdictions, including the presence of the suspect on the territory or the limitations of subsidiarity. Moreover, the introduction of trials in absentia in 2010 further strengthens the practical reach of universal jurisdiction in Lithuanian law – a development consistent with broader trends in the doctrine (Colangelo, 2005).

Simultaneously, there are some restrictions. In Lithuanian law torture or enforced disappearance are not subject to universal jurisdiction in and of themselves, except when they are legally characterized as a crime against humanity or a war crime. This puts a greater evidentiary burden on prosecutorial authorities, which must prove an additional contextual factor.

Lithuania has already shown its readiness and ability to use universal jurisdiction, including in situations involving historical offenses and more recent international disputes, including the investigation of crimes committed in Ukraine after the full-scale invasion in 2022 (Reuters, 2022). These advancements show institutional experience as well as political willingness to seek accountability on international crimes.

But the use of universal jurisdiction concerning Belarus is a more complicated and continuous procedure. In December 2020, the office of the Lithuanian Prosecutor General began a pre-trial investigation of alleged acts of torture against a Belarusian citizen after the post-election protests (Prosecutor General's Office of the Republic of Lithuania, 2020). This case has since become a wider investigation which involves a number of victims and the testimonies have been pooled into one proceeding. Based on the available information, the case involves dozens of victims and is backed by the collaboration between law enforcement agencies and civil societies. In particular, the International Committee for the Investigation of Torture in Belarus has played a substantive role in contributing to these proceedings. According to its activity report, in 2025 the Committee submitted 20 complaints to the Prosecutor General's Office of Lithuania in the framework of the ongoing pre-trial investigation (Legal Initiative, 2025), thereby facilitating the documentation of evidence and the recognition of victims within universal jurisdiction cases.

The probe is a significant recognition by the Lithuanian government that the alleged crimes are not isolated cases but could be a part of a systematic state policy, which can be classified as crimes against humanity. Although this has been achieved, there are still a number of structural and procedural issues that restrict the practice of universal jurisdiction (Kravchuk & Dzhibladze, 2023):

- **Evidentiary constraints:** The inability to reach crime scenes or get cooperation of Belarusian authorities makes it extremely difficult to collect evidence and build a case.

- **Procedural barriers:** Some formal obstacles, including the necessity to send procedural documents to the Belarusian authorities, pose a threat to victims and may impede the process.

- **Low enforcement opportunities:** In jurisdictions where the suspects are known and arrest warrants are obtained, the chances of them being arrested are minimal, as they travel very little to jurisdictions that are ready to implement such warrants.

- **Institutional weakness and lack of coordination:** The civil society actors have expressed concerns over lack of transparency, lack of feedback by the authorities and lack of a long-term prosecutorial plan.

The Lithuanian case shows that universal jurisdiction can be a useful instrument of accountability in cases where national remedies are lacking. Simultaneously, it also demonstrates the structural constraints of this mechanism, especially when it comes to the cases of continued repression and non-cooperative states. This duality applies particularly to Belarus: although Lithuania has already developed a working legal and institutional framework, the shift between investigation and successful prosecution is not clear.

Inter-State Accountability before the ICJ: A Potential Path under the Convention against Torture

Besides individual criminal responsibility mechanisms, including the International Criminal Court or domestic trials in the framework of universal jurisdiction, the International Court of Justice provides a unique channel of proving the state culpability in the context of systematic human rights abuse. This is the route in Belarus, under the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, of which Belarus is a State party.

Article 30(1) of the Convention includes a compromissory clause that grants the ICJ jurisdiction over the disputes that relate to the interpretation or application of the Convention, under the condition that some procedural preconditions are fulfilled. Belarus has already accepted this jurisdiction by ratifying the Convention and later rescinding its reservation to Article 30(1).

Notably, the Convention creates *erga omnes partes* obligations. All States parties share a common legal interest in the compliance with the Convention as affirmed by the ICJ in *Belgium v. Senegal* (International Court of Justice, 2012). This greatly expands the standing, where an applicant State does not have to prove direct injury (Paparinskis, 2021). Nevertheless, it does not negate other jurisdictional limitations: the fact of a dispute, the knowledge of conflicting legal stances on the part of the respondent State, and the observance of procedural prerequisites are all strictly evaluated by the Court.

It is well-documented that since at least 2020, Belarus has been practicing torture on a large scale and systematically and has not investigated or prosecuted those involved. Thousands of complaints were reported to domestic authorities without any criminal action being taken and various international bodies have recorded patterns of abuse as indicated in the concept note. The United Nations Committee against Torture has also made the conclusion that torture in Belarus is a systematic practice (Committee Against Torture, 2024).

Such conduct can constitute numerous violations of the Convention, such as:

- failure to act effectively to prevent acts of torture (Article 2),
- lack of assuring criminalisation and prosecution of torture (Articles 4 and 7),
- inability to carry out timely and unbiased investigations (Article 12),
- inability to provide effective remedies and protection to victims (Articles 13 and 14).

Furthermore, since the international law forbids the use of torture absolutely, such infractions can also involve the violation of peremptory norms (*jus cogens*), which strengthens the seriousness of the suspected behavior (de Wet, 2004).

Although the legal foundation might seem obvious, the case in the ICJ is subject to a number of procedural conditions. The first one is that the parties must have a legally cognisable dispute, which usually involves the formal notification of claims and evidence that the respondent State knew, or could not have not known, of the contrary legal stance. Second, the applicant State should have made real efforts to settle the dispute by means of negotiations in good faith. Third, in case of negotiations, the dispute should be referred to arbitration with a six months time period in which the parties seek to agree on how such arbitration should be conducted. The case can be presented to the Court only after these steps have failed.

These formalities are not just mere formalities; they are major obstacles which have historically restricted access to the Court (Ingber & Wuerth, 2021). Although comparable requirements have been met within the recent cases, such as the case of *Canada and the Netherlands v. Syria* (International Court of Justice, 2023), it has been met through the long-term diplomatic involvement and planning of litigation.

Although jurisdiction is present, the legal implications of ICJ proceedings are based on entirely different principles as compared to criminal accountability. The Court does not establish personal criminal liability. Rather it can proclaim that a State has violated its international duties, demand the cessation of internationally wrongful acts, demand guarantees and assurances of non-repetition, and demand reparations, such as compensation, to be paid by the State.

In this regard, the ICJ proceedings cover the structural and state-centred aspect of the violations, unlike the individualised approach of the ICC or universal jurisdiction cases. Nonetheless, they are by their very nature limited in effectiveness due to the lack of enforcement mechanisms and the fact that the Court is dependent on State compliance.

In this respect, although the ICJ path is a legally based channel of redressing systemic abuses in Belarus, it is dependent on political goodwill. The commencement and progress of such proceedings are conditional on the willingness of a State, for instance Lithuania, to take the diplomatic and legal load of formulating and following up the dispute. The ICJ is, in other words, to be seen not as a self-executory accountability, but as a conditional and strategically deployed instrument, the practical effect of which is as much an outcome of political dynamics as an outcome of legal doctrine.

Conclusion

The analysis demonstrates that accountability for international crimes committed in Belarus is not absent, but structurally fragmented across multiple legal mechanisms operating at different levels.

The investigation initiated by the referral of Lithuania by the International Criminal Court is a major advancement in circumventing the jurisdictional constraints by the territorial connection to a State Party. It creates a channel of personal criminal accountability on the global scale. Meanwhile, it is restricted to particular crimes that have cross-border aspects and requires long-term investigative and prosecutorial procedures.

Lithuania uses universal jurisdiction, which offers a more direct and adaptable tool of accountability. The current legal system permits the prosecution of crimes against humanity irrespective of the nationality or place of location and the current investigations show some institutional commitment. Nonetheless, the evidence collection, limited resources, and the physical unavailability of suspects are the practical constraints that considerably restrict its efficiency in providing tangible results.

Conversely, the ICJ proceedings provide a qualitatively different accountability through dealing with state responsibility of systemic violations. The legal foundation of the Convention against Torture seems solid, particularly in the case of the *erga omnes partes* nature of the obligations and the documented trends of systematic abuse. However, this mechanism is still dependent on political will, and has not yet been triggered.

Combined, these processes demonstrate that the existing accountability environment is not characterized by the absence of legal instruments, but by the disproportionate use of them and structural constraints. All the mechanisms are concerned with another aspect of responsibility, individual, quasi-criminal, and state, but none of them separately is enough to adequately address the scale and character of the violations.

This fragmentation indicates that proper accountability does not need the creation of new legal tools, but the strategic and coordinated application of the current ones. In this regard, Lithuania can be considered a rather topical actor, as it has proven its involvement in a variety of legal paths. But the degree to which these mechanisms will yield significant results in the end is determined by the political commitment, institutional capacity and the capacity to match legal strategies with wider campaigns to combat impunity.

References

1. Akhavan, P. (2019). The Radically Routine Rohingya Case: Territorial Jurisdiction and the Crime of Deportation under the ICC Statute. *Journal of International Criminal Justice*, 17(2), 325-341. Available at: <https://academic.oup.com/jicj/article-abstract/17/2/325/5511596> [Accessed 2026-04-18].
2. Chow, P. Y. S. (2021). *On Obligations Erga Omnes Partes*. Georgetown Journal of International Law. Available at: <https://www.law.georgetown.edu/international-law-journal/wp-content/uploads/sites/21/2021/06/GT-GJIL210018.pdf> [Accessed 2026-04-05].
3. Colangelo, A. J. (2005). The new universal jurisdiction: In absentia signaling over clearly defined crimes. *Georgetown Journal of International Law*, 36(2). Available at: <https://ssrn.com/abstract=3279789> [Accessed 2026-04-18].
4. Colvin, V., & Orchard, P. (2019). The ICC pre-trial chamber decision on jurisdiction over the situation in Myanmar. *Australian Journal of International Affairs*, 73(1), 16-24. Available at: <https://www.tandfonline.com/doi/abs/10.1080/10357718.2018.1538316> [Accessed 2026-04-18].
5. Committee Against Torture. (2024). *Report of the Committee against Torture* (A/79/44). United Nations General Assembly, 21 June 2024. Available at: [https://documents.un.org/\(A/79/44\)](https://documents.un.org/(A/79/44)) [Accessed 2026-04-06].
6. de Wet, E. (2004). The prohibition of torture as an international norm of jus cogens and its implications for national and customary law. *European Journal of International Law*, 15(1), 97-121. Available at: <https://academic.oup.com/ejil/article/15/1/97/418241> [Accessed 2026-04-18].
7. Ingber, R., & Wuerth, I. (2021). *Erga omnes partes* before the International Court of Justice: From Belgium v. Senegal to The Gambia v. Myanmar and beyond. *ILSA Journal of International & Comparative Law*, 27(2). Available at: <https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=2005&context=ilsajournal> [Accessed 2026-04-20].
8. International Court of Justice. (2012). *Questions relating to the Obligation to Prosecute or Extradite (Belgium v. Senegal)*, Judgment. I.C.J. Reports 2012 (II), p. 449, para. 68.
9. International Court of Justice. (2023). *Dispute under the Convention Against Torture and Other Cruel, Inhuman Or Degrading Treatment Or Punishment (Canada And The Netherlands v. Syrian Arab Republic), Joint Application Instituting Proceedings*. Available at: <https://www.icj-cij.org/sites/default/files/case-related/188/188-20230608-APP-01-00-EN.pdf> [Accessed 2026-04-06].
10. International Criminal Court. (2024). *State Party Referral of the Situation in Belarus (Letter of 30 September 2024, Ms Ewelina Dobrowolska to Prosecutor Karim A. A. Khan KC)*. The Hague. Available at: <https://www.icc-cpi.int/sites/default/files/2024-09/2024-09-30-state-party-referral-lithuania.pdf> [Accessed 2026-04-06].

11. International Criminal Court. (2026). *Summary of Preliminary Examination Findings: Situation in the Republic of Lithuania / Republic of Belarus (ICC-01/19)*. The Hague. Available at: <https://www.icc-cpi.int/sites/default/files/2026-03/Summary-of-findings-Situation-Lithuania-Belarus.pdf> [Accessed 2026-04-06].
12. International Criminal Court. (2019) *Situation in the People's Republic of Bangladesh / Republic of the Union of Myanmar (ICC-01/19)*. The Hague. Available at: <https://www.icc-cpi.int/bangladesh-myanmar> [Accessed 2026-04-06].
13. Korshunau, H. (2024). Міграція з Беларусі: куды і колькі беларусаў выехала? In *Migracje jako problem polityczny, społeczny i ekonomiczny* (pp. 65–75). ISBN 978-83-967-529-4-9. Available at: <https://zenodo.org/records/12787282> [Accessed 2026-04-18].
14. Kravchuk, N., & Dzhibladze, Y. (2023). *Challenges in the Application of Universal Jurisdiction to Cases from Belarus: The Situation in Lithuania, Germany, Poland and the Czech Republic*. iSANS. p. 38. Available at: <https://isans.org/> (report, November 2023) [Accessed 2026-04-06].
15. Legal Initiative. (2025). *Annual Report 2025* (p. 8). Available at: https://torturesbelarus2020.org/wp-content/uploads/2026/02/godovoj-pi_2025.pdf [Accessed 2026-04-06].
16. Migration Department under the Ministry of the Interior of the Republic of Lithuania. (2026). *Imigrantai Lietuvoje: 2026 m. sausio 1 d. duomenys* [Immigrants in Lithuania: data as of 1 January 2026]. Available at: <https://migracija.lrv.lt/public/canonical/1767790317/1508/imig-2026-01.pdf> [Accessed 2026-04-18].
17. Sharma, V. (2025). ICC *ratione loci* jurisdiction for Belarus: The Bangladesh/Myanmar blueprint. *Opinio Juris*. Available at: <https://opiniojuris.org/2025/08/01/icc-ratione-loci-jurisdiction-for-belarus-the-bangladesh-myanmar-blueprint/> [Accessed 2026-04-18].
18. Nasha Niva. (2026). *Рекордный отток. Как за 2025 год изменилось количество белорусов в Литве*. Available at: <https://nashaniva.com/ru/385143> [Accessed 2026-04-06].
19. Paparinskis, M. (2021). Obligations erga omnes and the question of standing before the International Court of Justice. *Leiden Journal of International Law*, 34(1). Available at: <https://www.cambridge.org/core/journals/leiden-journal-of-international-law/article/abs/obligations-erga-omnes-and-the-question-of-standing-before-the-international-court-of-justice/2E969AB6512CCABEA2191BA9F544B798> [Accessed 2026-04-20].
20. Prosecutor General's Office of the Republic of Lithuania. (2020). *Pre-trial investigation launched into possible torture of a person in a foreign state*. Vilnius. Available at: <https://www.prokuraturos.lt/lt/pre-trial-investigation-launched-into-possible-torture-of-a-person-in-foreign-state-/7240> [Accessed 2026-04-06].
21. Reuters. (2022). *Lithuania prosecutors launch Ukraine war crimes investigation*. 3 March 2022. Available at: <https://www.reuters.com/world/europe/lithuania-prosecutors-launch-ukraine-war-crimes-investigation-2022-03-03/> [Accessed 2026-04-06].
22. Seimas of the Republic of Lithuania. (2000). Law No. VIII-1968 of 26 September 2000 on the approval and entry into force of the Criminal Code of the Republic of Lithuania (as amended in 2015). Available at: <https://e-seimas.lrs.lt/portal/legalActPrint/lt?jfwid=rivwzvpvg&documentId=a84fa232877611e5bca4ce385a9b7048&category=TAD> [Accessed 2026-04-06].
23. United Nations Human Rights Council. (2025). *Report of the Special Rapporteur on the situation of human rights in Belarus, Nils Muižnieks (A/HRC/59/59)*. Geneva. p. 84. Available at: <https://docs.un.org/ru/A/HRC/59/59> [Accessed 2026-04-05].
24. United Nations Human Rights Council. (2026). *Report of the Group of Independent Experts on the situation of human rights in Belarus (A/HRC/61/57)*. Geneva. p. 111. Available at: <https://docs.un.org/ru/A/HRC/61/57> [Accessed 2026-04-05].

LEGAL REGULATION OF TELEWORKING AND PRACTICAL PROBLEMS IN THE COUNTRY

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Keywords: telework, telecommuting, teleworking, distance working, remote work.

Abstract

Throughout the period of the development of modern work organization, more and more attention is paid to more flexible forms of work, which makes working from home an important part of the activities of modern organizations. The article defines the concept of remote work, analyzes the legal regulation of remote work and discusses the procedure for its organization. The study was conducted in 2019–2025. Analysis of the case law of the Lithuanian courts in the examination of disputes related to the application of telework in employment relations. The results of the analysis showed that the telework institute is increasingly becoming the subject of legal disputes, especially when solving issues related to work organisation, working time accounting, employee control and the employer's duty to ensure safe working conditions. The case law of the Lithuanian courts emphasizes that teleworking does not change the essential principles of employment relations – the employer remains responsible for the organization of work and ensuring the rights of employees, and the employee must follow the established work procedure. However, the analysis of the case law shows that there are still practical problems regarding the control of remote work, the limits of working and rest periods, and the protection of employee privacy, therefore the legal regulation in this area remains relevant.

Introduction

While remote work has existed for many years in various forms, and the technological infrastructure that ensures operational efficiency has evolved rapidly over the past half century, remote work was not used as often before the COVID-19 pandemic. This crisis has required the organization's employees to switch to remote work. Remote work is a form of work organization when an employee performs his or her work functions in a place other than the employer's usual workplace, usually using information and communication technologies.

It is noted that in the modern labour market, remote work is becoming an increasingly important model of flexible work organisation, which provides employees with greater independence, the opportunity to reconcile professional and personal life more effectively, and employers to optimise business processes and reduce infrastructure costs. However, employers do not always comply with the stipulated requirements in order to release an employee to work remotely, when there is non-compliance with the creation of instructions, the provision of the working time regime, and the filling in of answers, therefore, such problems often have to be solved through the courts.

The main aim of the article is to analyze its legal regulation in the law of the European Union and Lithuania and to present an analysis of the case law of the Lithuanian courts in cases regarding the challenges arising from remote work.

Objectives of the work:

1. To present the theoretical aspects of the concept of telework and its development trends.
2. To analyze the case law of the Lithuanian courts regarding the challenges and problems arising from remote work.

The following research methods were used in the preparation of this article: the method of analysis of the scientific literature, the method of analysis of the content of legal acts and documents (analysis of case law). Systematic analysis and summarization methods were used to systematize and summarize the results of the research.

Peculiarities of teleworking and legal regulation

While remote work has existed for many years in various forms, and the technological infrastructure that ensures operational efficiency has evolved rapidly over the past half-century, remote work was not used as frequently before the COVID-19 pandemic. This crisis has required an organization's employees to switch to remote work (Leonardi, Parker & Shen, 2024). If until now the introduction of digital flexible working arrangements has been steady and gradual, we are currently witnessing an acceleration of this phenomenon to an unprecedented extent. These changes have made the legal and practical aspects of telework particularly relevant for scientific research (Popovici and Popovici, 2020). According to Grincevičienė (2020), remote work is a new form of work organization, in which the presentation and performance of tasks works differently, and which causes problems of communication and cooperation as managers' responsibilities and employees' skills and abilities change.

The specifics of remote work receive a lot of attention both internationally and in our country's scientific space. Researchers such as Suliman (2025) and Grigonienė (2020) provide a definition that it is a flexible working model that allows employees to perform their tasks outside the office, often based on IT and communication tools. Pullokarana and Joseph (2023), Hunter (2018), Sava (2025) analyze the benefits of such work for both the individual employee and the company, emphasizing increased flexibility, autonomy and reduced costs. The legal approach to teleworking in Lithuania and the wider European Union has been examined in Grincevičienė's (2020) studies and official documents: these are the European Social Partners' Agreements, Directive 89/391/EEC and the provisions of the Labour Code of the Republic of Lithuania (specifically Article 52). These sources emphasize the need to ensure occupational safety, health protection, confidentiality of personal data, as well as to clearly define the fundamental rights and obligations of the employee and the employer. Social and organizational aspects related to working from home have been investigated by authors such as Aliushyna, Fedorenko and Šukvietienė (2021), Zabelevičius (2019) and Baltėnaitė (2021). They emphasize the importance of effective communication, close cooperation, maintaining the psychological state of employees and work results. In summary, the literature analyses telework through its organisation, technological adaptation and legal bases, revealing that for the harmonious implementation of telework it is necessary to introduce clear legal regulation in employment contracts and to set clear tasks.

The genesis of teleworking in Lithuania and the European Union

Remote work is a way of organizing work that allows an employee to perform their tasks not directly in the office, but in an area convenient for them. This type of work provides flexibility, allows employees to better plan their time, and helps them maintain a work-life balance. Similarly, the author Suliman (2025) describes the workplace, stating that telework is a form of work in which employees perform their work functions full-time instead of in the office, but at home or in another place of their choice. Such an employment arrangement is suitable for employees who do not need to regularly visit the physical workplace.

A person who carries out his or her professional activity not in an office or regular workplace, but at home or the like, is considered to be an employee working remotely. However, in today's context of the 21st century, remote work is increasingly associated with advanced technology, not just physical distancing. Across Europe and globally, many different terms are used when it comes to telework or its specific names, such as "telework", "telecommuting", "teleworking", "remote working" and others. (Grigonienė, 2020).

People's attitudes towards remote work can vary – some employees view it positively due to its convenience and independence, while others may experience difficulties depending on the support of colleagues, leadership style or work organisation model. Both employees and companies can benefit from this flexible work. Employees appreciate the ability to work from home for greater flexibility, autonomy, and convenience when they don't have to travel to the workplace every day. Companies, in turn, are promoting remote work to retain professionals, increase work efficiency, and reduce costs for offices and other infrastructure needs (Pullokaran and Joseph, 2023).

As Grincevičienė (2020) states, "In Europe, the beginning of teleworking could be linked to the July 1997 pandemic. Recommendations adopted by the European Commission on the development of the social dimensions of the labour market and the information society. Also, in July 2002. the European Union's social partners agreement on teleworking. The aforementioned agreement also defined such important principles as: employment and working conditions, work organisation, occupational safety and health requirements, training, workers' rights established by collective agreements, privacy and other aspects" (Grinevičienė, 2020).

European Union legislation and international documents have had a significant impact on the formation of national telework regulation. The European Social Partners' Agreement on Telework has enshrined key principles such as voluntary choice of teleworking, non-discrimination against workers, ensuring data protection and guaranteeing safe working conditions. These principles have become a guideline for national regulation, and Directive 89/391/EEC has further established the employer's obligation to ensure the safety and health of workers regardless of the place of work. (European Agreement of Social Partners on Telework; Council Directive 89/391/EEC of 12 June 1989).

In Lithuania, the stage of legal regulation of telework is associated with 2010, when the Ministry of Social Security and Labour of the Republic of Lithuania prepared a proposal on amendments to Articles 108 and 115 of the Labour Code of the Republic of Lithuania, which was approved by the Government in the same year. These amendments modernized the regulation of employment relations: the possibility of concluding telework contracts was consolidated, and the previously applied concept of homework was abandoned (Labour Code of the Republic of Lithuania // TAR. 19/09/2016, No. 2016-23709, current version from 01/01/2025)

For the first time, the aforementioned amendments entrench the concept of "telework" in Lithuanian law, which was linked to the telework (telework) used in international and European Union practice. *telework*). It was emphasized that the essence of such work is not the place where the work is performed, but the use of information and communication technologies for the performance of work functions. Thus, the legal regulation of Lithuania began to comply with the broader European trends of labour market flexibility (Labour Code of the Republic of Lithuania // TAR. 19/09/2016, No. 2016-23709, current version from 01/01/2025)

The essential regulation of telework currently in force is set out in the new Labour Code of the Republic of Lithuania, which came into force on 1 July 2017. Paragraph 1 of Article 52 of the Labour Code provides a relevant concept of teleworking, which further develops the previous regulation and focuses on the way of organising work and the technological means used, rather than on the physical workplace. Although the Code does not distinguish in detail individual types of telework, the legal basis allows for the application of both fully remote and hybrid (hybrid) work models (Labour Code of the Republic of Lithuania // TAR, 2016, No. XII-2603, Article 52 (1), current wording from 01/01/2025).

Article 52 of the Labour Code states that teleworking is a way of organising work when an employee performs all or part of his or her functions not in a workplace created by the employer, but in a place desired by persons or mutually agreed by them. Usually, information and electronic communication technologies are used for this. The Labour Code also provides that teleworking may be established at the request of the employee or by agreement of the parties, and refusal to work remotely may not become a reason to change working conditions to the detriment of the employee. All essential conditions of teleworking must be discussed in writing, the employee must be provided with work tools and rules for their use. If an employee incurs additional costs due to work equipment or teleworking conditions, they must be reimbursed. The Labour Code also regulates the accounting of working time – an employee can flexibly plan his or her working time in accordance with the requirements of maximum work and minimum rest periods. In addition, remote work does not distort the length of service, opportunities for qualification improvement or other rights of the employee, and the employer must ensure conditions for cooperation with other employees, receive information and periodically inform the works council or trade union about the status of teleworking in the organization (Labour Code of the Republic of Lithuania, TAR, 2025, No. XII-2603, Article 52(2-7)).

In conclusion, it can be said that the legal regulation of teleworking in Lithuania was formed gradually and for a long time did not correspond to the concept of this work model formed at the international and European Union level. The legislation in force until 2017 essentially linked teleworking to a form of homework, limiting the place where work is performed and not taking into account the significance of the use of information technologies. Although the Labour Code of the Republic of Lithuania currently in force establishes telework as an independent form of work performance, its regulation remains of a general nature and does not define in detail different models of telework organisation. For this reason, the legal regulation of teleworking in practice is based not only on the provisions of the Labour Code, but also on the legal norms of occupational safety and health, personal data protection and recommendations prepared by institutions, which together form a complex, but not always sufficiently clear regulatory framework for remote work. Such a situation of legal regulation determines the necessity to assess teleworking issues through the prism of case law in order to more accurately determine the scope of the rights and obligations of the employer and employee.

Procedure for organizing remote work

In recent times, an increasing number of employees have expressed a desire to work remotely, and institutions are increasingly developing and implementing teleworking rules. Especially the younger generation of professionals appreciate the flexibility provided by remote work, which allows them to maneuver more effectively between professional activities and personal priorities and family obligations. Meanwhile, employers also see financial benefits in such work, as the cost of renting and maintaining office space decreases (Hunter, 2018).

The transition to remote work has led to many changes in the organization of work, driving changes in conventional communication tools, leadership strategies, and performance management. As a result, the culture of communication and interaction in organizations has changed. Many employees had to quickly acquire new professional knowledge and maintain or create a favorable social and psychological climate in their teams (Aliushyna, Fedorenko and Šukvietienė, 2021).

According to the State Labour Inspectorate's methodological recommendations on telework (2025), the agreement of the parties to organise work from home or from the desired place is submitted in writing. Smooth remote work is ensured with the help of local regulatory acts, such as remote workflow, procedures for the

application of information and communication technologies and supervision and monitoring of employees, etc. By creating detailed local regulatory acts and letters, it can be expected that the process will go more smoothly and both sides will be able to avoid disagreements. (State Inspectorate of Tarbo, 2025)

When working from home is planned, it is mandatory to take care of an appropriate and legally justified point of performance of work, strictly defining it. The "workplace" itself becomes a dynamic idea that transforms from a single, clearly defined physical location into a possible number of different spaces, such as the residence of specialists, common workspaces or even a foreign country. This constant change of situation dictates the need to detail the conditions of teleworking in employment contracts, indicating whether permanent remote work, hybrid variant or temporary solution is applied. Without clear details in the document, uncertainty may arise regarding the workplace performed by the specialist. Also, to provide the employer with the exact information of the telework address (Sava, 2025)

The Supreme Court of the Republic of Lithuania, in its ruling of 8 October 2024 (civil case No. e3K-3-176-684/2024), also emphasized the importance of maintaining clarity in the establishment of remote work procedures. In this case, the issue of dismissal of an employee who had performed her duties from home was decided on the basis of a gross violation of labour discipline. The court expressed the position that in cases where remote work is applied in the company, the employer must consolidate and define in detail the entire system of organization of this work. This includes such essential elements as the registration of working hours, the established mechanisms for communication with employees, the procedure for submitting requests for telework, and other equally significant provisions of the regulation of employment relations. As the defendant, the company, did not provide evidence that it had clearly formed the rules of teleworking, the court decided that the mere absence of the employee at the established physical workplace could not establish a gross non-performance of work duties, which led to the recognition of the act of her dismissal as unfounded and illegal.

Another important aspect of organizing remote work is the provision of work tools. The employer must ensure and provide employees with appropriate work tools, rules for their use and include them. In addition, it is necessary to determine who buys and maintains the equipment used for the work, to indicate the person to contact in case of equipment failure. (State Labour Inspectorate, 2025)

Covering workers' costs as a result of work is also a key issue. If people work remotely, there are costs that would normally be covered by the company - talking about communication services, energy, heating, and even the use of personal tools. Employment contracts or internal company documents must define in detail what expenses are eligible for reimbursement, how to submit applications for their refund and to what extent this will be done. The legal obligation to cover these costs depends on the laws of a particular country, and there is a tendency for an increasing number of regions to oblige employers to partially finance the maintenance of employees' homework (Sava, 2025).

When preparing for remote work arrangements, one should not forget to set up working time accounting. In a normal office atmosphere, work is often limited to a strictly defined interval, which is determined by the physical arrival at the workplace. However, when work moves to home, this strictness disappears. Employees have the opportunity to work earlier by getting up, finishing later, or scattering their working hours throughout the day, combining this with personal needs. This flexibility, which is often desired by the employees themselves, causes concerns about compliance with the normative working time requirements. It is here that the principle of the 'right to disconnect' arises, which has become a decisive improvement in the field of law. Its purpose is to protect the worker from constant electronic interference outside of officially established working hours. It is necessary that employment contracts clearly define the expected working hours, the situations in which additional work is required and the aforementioned right of non-contact, in order to prevent burnout and ensure compliance with the Labour Code (Sava, 2025).

In general, the employee is responsible for the distribution of working time, without violating the requirements. However, if the employer has reason to believe that stricter controls are necessary, it may determine that the work should not be carried out after normal working hours, at night, on rest days and holidays, unless otherwise specified/agreed. In order to avoid disputes over payment for overtime work, it is important to discuss and clearly regulate the procedure for recording such work and payment in advance (State Labour Inspectorate, 2025).

Also, the employer must assess occupational risks, ensure proper working conditions and organise work in such a way that the safety and health of the employee is ensured regardless of the place where the work is performed. Such a position is in line with the provisions of the Law on Occupational Safety and Health of the Republic of Lithuania, according to which the employer must guarantee safe and healthy working conditions for all employees, regardless of whether the work is carried out at the employer's premises or at the employee's

home. (Law on Occupational Safety and Health of the Republic of Lithuania, TAR 19/09/2016, No. XII-2607; Guidelines for the organization of remote work according to the practice of the Supreme Court of Lithuania).

In internal documents, it is recommended to discuss the start and end time of work, the duration of work during which the employee must respond to e-mails and calls, at what time the employee must be available by means of electronic communications, and to check the incoming messages. You should also determine the main method of communication (e-mail, phone), an alternative phone number, and discuss who, in addition to the employee, will have access to the software, phone or other means used. In addition, it is necessary to agree on routine employee supervision, including the frequency of communication between manager and employee, constant feedback, and performance evaluation. This ensures not only work control, but also the efficiency of the employee's activities and smooth organization of remote work.

Sometimes, remote work can only be applied for a defined period of time. The goal is to check whether the employee is able to complete tasks on time, what will be the results both on an individual and collective level, whether he will be able to balance personal and career life, how calls will be handled, whether there will be real opportunities to participate in meetings, etc. (State Labour Inspectorate, 2025).

In conclusion, it can be said that when organizing telework, clear agreements and internal rules are necessary: definition of the workplace and time, provision and supervision of work tools, reimbursement of work-related expenses, accounting of working time, data protection. The employer must assess occupational risks and ensure a safe working environment regardless of location. In addition, communication tools, feedback, and performance evaluation need to be established to make remote work effective. Thus, teleworking requires structured rules, clear agreements, and ongoing operational oversight to align employee needs, productivity, and legal requirements.

Analysis of Lithuanian case law on telework disputes

In order to find out the practical challenges that arise in the application of teleworking and ways to overcome them, this work is based on the approach of examining case law. In the course of this research, Lithuanian court cases are reviewed, where issues related to the organisation of telework, the rights and obligations of employees and company managers, the guarantee of proper working conditions and other real problems were examined. Court acts that are publicly available in legal resources, such as the database of the Supreme Court of Lithuania and other official sources, are studied.

Recently, remote work has become popular in Lithuania as a way of organizing work, although it often takes place without a strong formation of legal acts and internal rules of procedure. Article 52 of the Labour Code of the Republic of Lithuania provides that remote work means that the employee performs his or her functions outside the employer's premises, however, this provision does not specify how the workflow should be managed, how the performance of duties should be supervised, or what characteristics determine the nature of the relationship. As a result of this gap, it happens that company managers misinterpret remote work as a complete increase in the employee's independence, while unjustifiably facilitating their duties to manage work processes. In its explanations, the State Labour Inspectorate, which is subordinate to the Ministry of Social Security and Labour, emphasized that in the case of a remote work model, the employer must clearly define the rules of the working regime, the ways in which the employee reports for his or her activities, and how his result will be evaluated. However, these requirements are not always met in life. This creates a basis for legal disagreements as to whether the employee duly fulfilled his obligations, whether the employer had an adequate motive to make a remark or terminate the employment relationship, therefore, the nuances of the organization of remote work increasingly fall into the field of judicial proceedings. (Labour Code of the Republic of Lithuania // TAR 2016-09-19, No. XII-2063, Article 52, current wording 2017-07-01; State Labour Inspectorate under the Ministry of Social Security and Labour "Telework, Employer and Employee Duties".)

The problems of qualification of employment relations and organisation of telework were clearly revealed in the case law in the ruling of the Supreme Court of Lithuania of 10 October 2024 in the civil case No. e3K-3-176-684/2024, in which the dispute regarding the legality of the dismissal of an employee was examined. It is established in the case that the employee performed work functions remotely, however, the employer did not approve a clear procedure for the organisation of remote work, did not define the criteria for assessing working time, availability of the employee and performance of work duties, although it assessed the employee's actions as a violation of work duties. The Supreme Court of Lithuania stated that teleworking does not deny the element of subordination inherent in employment relations, therefore, the employer must actively organise the work process and create conditions for the employee to clearly understand what actions are considered to be proper performance of work duties. The court emphasised that in cases where the employer itself does not

ensure clear regulation of employment relations, the employee's behaviour cannot be qualified as a violation of work duties, and the negative legal consequences for the employee are to be considered unfounded. This ruling reveals a fundamental problem in Lithuanian practice – deficiencies in the organisation of remote work directly lead to incorrect qualification of employment relations and create preconditions for the emergence of labour disputes, therefore, clear organisation of work becomes a prerequisite for lawful decisions of the employer. (Ruling of the Supreme Court of Lithuania of 10 October 2024 in civil case No. e3K-3-176-684/2024.)

Looking at the subtleties of qualification of employment relations and the organisation of telework in Lithuania, it can be seen that the main challenges arise not due to the poor legal basis of teleworking, but due to the fact that companies often fail to fulfil their obligation to properly structure business processes. A study of the case law allows us to state that companies that have introduced telework usually find it difficult to define precise qualification norms for the performance of tasks, do not regulate the procedure of shifts and do not discuss the limits of the employee's availability. All this forces the classification of labor relations to become dependent on personal interpretations, and subsequently becomes controversial. The rulings of the Lithuanian courts clearly show that teleworking does not automatically increase the autonomy of the employee or reduce the employer's responsibility, since the essential relationship of subordination to remote work remains, regardless of the physical location. For this reason, improperly organized remote work opens up opportunities for reckless decisions by the employer against employees and causes legal disputes. That is why, in order to avoid problems with the legal assessment of employment relations and to guarantee the appropriate application of teleworking in our country, it is necessary not only to legally legalize teleworking, but also to ensure in practice a transparent organizational structure that would be in line with the basic requirements of labor law and the protection of workers' rights.

The regulation of working time accounting and overtime work in Lithuanian labour law was based on the traditional model of work organisation, when the employee performed work functions at the employer's premises, and the control of working time was carried out directly. However, in recent years, especially with the increase in the use of teleworking, the boundaries between working time and rest time have become less clear, which has shown practical problems in accounting for working time and setting up overtime. Article 112 of the Labour Code of the Republic of Lithuania defines working time as the time during which an employee must be in the employer's sights and perform work functions, while Article 119 of the Labour Code of the Republic of Lithuania establishes the requirements for the authorisation and payment of overtime work. However, the application of legal norms in practice often poses difficulties, especially in cases where work is carried out remotely and the control of working time is not based on actual presence at the workplace, but on the deadlines set by the employer for tasks or the availability of the employee. The State Labour Inspectorate under the Ministry of Social Security and Labour has repeatedly noted in its explanations that improper accounting of working time and unaccounted overtime work are among the most frequently identified violations of labour law. For these reasons, the issues of accounting of working time and overtime work have become a significant object of case law, and the rules of interpretation of law formed by the courts acquire special importance in resolving disputes regarding the protection of workers' rights. (Labour Code of the Republic of Lithuania // TAR 2016-09-04, No. XII-2603, Article 112, current wording 2017-07-01; Labour Code of the Republic of Lithuania // TAR 2016-09-14, No. XII-2603, Article 119, current wording 2017-07-01).

The problems of working time accounting in the case law of the Lithuanian courts were clearly revealed in this ruling of the Supreme Court of Lithuania of 20 December 2023 in civil case No. e3K-3-328-684/2023, in which a dispute regarding the classification of an employee's on-call time as working time or rest time and the related accounting of working time was examined. In the case, the employee disputed the accounting of working time applied by the employer, pointing out that part of the on-call time actually limited his possibilities to freely use his time, therefore, it had to be considered working time and accounted for accordingly. The Supreme Court of Lithuania, analysing the circumstances of the dispute, noted that the accounting of working time may not be based solely on the formal procedure established by the employer or work schedules, but must reflect the real circumstances of the employment relationship. The court clarified that when deciding whether a certain working time is to be considered as working time, it is necessary to assess whether the employee was actually at the disposal of the employer at that time and whether the possibility for him to freely use the rest time was significantly restricted. It is emphasised in the ruling that in cases where the employee's on-call duty objectively limits his personal time and requires constant preparation for the performance of work functions, such time must be considered as working time and accordingly included in the accounting of working time. This case law reveals the fundamental problem of working time accounting in Lithuania, the tendency of

employers to formally separate certain working periods from working time, regardless of the factual circumstances. The conclusions formulated by the court are particularly relevant in the conditions of teleworking, when the limits of working time become less defined, and proper and objective accounting of working time becomes the main means of protecting the rights of the employee. (Ruling of the Supreme Court of Lithuania of 20 December 2023 in civil case No. e3K-3-328-684/2023; Labour Code of the Republic of Lithuania // TAR 2016-09-04, No. XII-2603, Article 112, current wording 2017-07-01).

The problems of overtime work in the case law of the Lithuanian courts were clearly revealed in this ruling of the Supreme Court of Lithuania of 27 November 2019 in the civil case No. e3K-3-359-701/2019, in which the dispute regarding the establishment of overtime work and its payment was examined. In the case of the Supreme Court of Lithuania, the employee claimed that he actually worked longer than established in the work schedules, but the employer refused to recognise such work as overtime, presenting his arguments that the employee himself chose to work after working hours without informing the employer. The Supreme Court of Lithuania, analysing the circumstances of the dispute, clarified that under the Labour Code of the Republic of Lithuania, overtime work is not considered to be every exceeding of working time, but only such work which is performed in excess of the established norm of working time and is performed on behalf of the employer or with the employer's knowledge. The court emphasized that an employer cannot avoid the obligation to pay for overtime work solely on the grounds that the employee arbitrarily decided to work longer himself, if the employer knew or should have known about the work actually performed and did not take measures to prevent it. It is also noted in the civil ruling that the proof of the fact of overtime work is closely related to the proper organisation of working time accounting, and the absence of working time accounting or its improper management cannot be assessed to the detriment of the employee. This case law reveals the fundamental problem of overtime work in Lithuania, the tendency of employers to formally deny the existence of overtime work, regardless of the factual circumstances of work, and such a situation is especially relevant in the case of remote work, when the boundaries of work and rest time become less clear and require greater employer activity in organizing the work process. (Ruling of the Supreme Court of Lithuania of 27 November 2019 in civil case No. e3K-359-701/2019; Countline, "The Supreme Court of Lithuania clarified the signs of overtime work and the conditions of proof; Labour Code of the Republic of Lithuania // TAR 2016-09-14, No. XII-2603, Article 119, current wording 2017-07-01).

Summarizing the issues of working time accounting and overtime in our country, we have to admit that the main difficulties arise from the fact that employers do not sufficiently effectively fulfill their obligation to take active steps in organizing activities and accurately recording the hours actually worked. When reviewing court rulings, there is a tendency that neither the recording of time worked nor the recognition of overtime can be based solely on schedules or instructions approved by the company. The judicial institutions consistently emphasise that in deciding these issues, the circumstances of the employment relationship of the real situation acquire essential importance, and any inaccuracies in the records of working time or refusal to recognise overtime may not be used as an argument against the employee. These positions become especially important when it comes to working from home, because in this case the employee often works longer than the standard working day, and the employer's responsibility for ensuring the balance between work and rest becomes more complex, although its legal power remains. Thus, in order to guarantee the right of employees to adequate rest and remuneration for overtime hours worked, it is necessary not only to read the acts of the Labour Code, but also to apply in reality the interpretative guidelines formed by the courts regarding official and overtime working time, especially when establishing the conditions of teleworking.

Conclusions

Remote work in Lithuania is a flexible form of work organization that allows employees to perform all or part of their functions outside the company's physical workplace using information and communication technologies. This form of work became particularly relevant during the pandemic period, but even after the end of the general quarantine conditions, it remained widely used due to employees' desire for flexibility and employers' desire to optimize operating costs. Remote work provides an opportunity to better balance work and personal life, helps employees plan their time more independently and can increase work productivity. At the same time, it changes the traditional processes of work organization and communication, so it is necessary to consistently take care of the quality of workflow and communication.

After reviewing the case law of the Lithuanian courts, it can be said that the courts consistently protect the rights of employees in teleworking relations and critically assess the actions or omissions of the employer when the deficiencies of the work organization are transferred to the employee. The courts emphasise that the

accounting of working time, the establishment of overtime work, the control of employees and the processing of personal data must be based not on formal documents, but on the factual circumstances of the employment relationship. This approach by the courts contributes to strengthening legal clarity and ensures that teleworking is not used as a tool to justify violations of workers' rights.

References

1. Advantages and disadvantages of working remotely at a social level. (n.d.). <https://remoteu.info/en/advantages-and-disadvantages-working-remotely-social-level>
2. Bailey, D. E., & Kurland, N. B. (2002). A review of telework research: Findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior*, 23(4), 383-400.
3. GDPR. Article 24. <https://gdpr-text.com/lt/read/article-24/>
4. Błaszczyk, M., Popović, M., Zajdel, K., & Zajdel, R. (2022). The Impact of the COVID19 Pandemic on the Organisation of Remote Work in IT Companies. *Sustainability*, 14(20), 13373. <https://doi.org/10.3390/su142013373>
5. Dutcher, E. G. (2012). The effects of telecommuting on productivity: An experimental examination. *The Journal of Economic Behavior & Organization*, 84(1), 355-363. *Engineering Technology and Management Sciences*, 7(1), 34-37. <https://doi.org/10.46647/ijetms.2023.v07i01.007>
6. Eurofound. (2020). Telework in the EU before and after the COVID-19 pandemic. <https://www.eurofound.europa.eu/en/topic/teleworking>
7. Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*, 35(5), 527-546.
8. Hill, E. J., Ferris, M., & Martinson, V. (1998). Does telecommuting enhance productivity? <https://journal.formosapublisher.org/index.php/fjst/article/view/8764/8966>
Human Resource Management, 37(3-4), 293-307.
Journal of Science and Technology, 3(4), 671-682. [K%C5%82opotek.pdf](https://www.researchgate.net/publication/349466059_tools_and_technology_for_effective_remote_work_general_terms/links/603158e0299bf1cc26dd9569/tools-and-technology-for-effective-remote-work-general-terms.pdf)
9. Lag, B. N. (2021). Tools and technology for effective remote work. *International Journal of Computer Applications*, 174(21), 1-13. https://www.researchgate.net/profile/Balu-n-i-lag/publication/349466059_tools_and_technology_for_effective_remote_work_general_terms/links/603158e0299bf1cc26dd9569/tools-and-technology-for-effective-remote-work-general-terms.pdf
10. Ruling of the Supreme Court of Lithuania of 27 November 2019 in civil case No. e3K-3-359-701/2019.
11. Ruling of the Supreme Court of Lithuania of 20 December 2023 in civil case No. e3K-3-328-684/2023.
12. Labour Code of the Republic of Lithuania. (2025)
13. The impact of the intensity of telework on the work-life balance of employees. (2021). *Baltic Anthropology Studies*. <https://www.zurnalai.vu.lt/batp/en/article/download/16768/15871>
14. Pros and cons of remote work: Key considerations before going remote. (2024). <https://www.webby.cloud/insights/pros-and-cons-of-remote-work-key-factors-to-consider-before-going-remote/>
15. Remote work burnout, professional job stress, and employee emotional exhaustion during the COVID-19 pandemic. (2023). *Frontiers in Psychology*. <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2023.1193854/full>
16. Sheveleva, A., & Rogov, E. (2021). Organization of remote work in the context of digitalization. *E3S Web of Conferences*, 49, 12042. [https://www.e3s-](https://www.e3s-conferences.org/articles/e3sconf/pdf/2021/49/e3sconf_interagromash2021_12042.pdf)
17. The advantages and disadvantages of remote working from the perspective of young employees. (2018). <https://oamquarterly.psl.pl/wp-content/uploads/2018/06/03->
18. State Labour Inspectorate. (2025). Methodological recommendations on the possibilities, advantages and implementation of the organisation of remote work in companies, institutions and organisations and on ensuring occupational safety and health. <https://www.vdi.lt/AtmUploads/Nuotolinisdarbas.pdf>
19. Working remotely: Employees benefits and challenges. (2023). *International Journal of Engineering Technology and Management Science*, 7(1).
20. Working: Examining benefits, challenges and organizational practices. (2024). *Formosa Journal of Science and Technology (FJST)*, 3(4).

CIVIL LIABILITY OF ARTIFICIAL INTELLIGENCE ENTITIES: ISSUES OF DETERMINING LIABILITY AND FAULT

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Keywords: artificial intelligence (AI), civil liability, strict liability, black box.

Abstract

The rapid development of artificial intelligence (AI) technologies poses significant challenges to traditional civil liability systems. This article analyzes the problem of determining liability and fault when damage is caused by autonomous AI systems. The study examines the legal framework of the European Union and Lithuania, highlighting the limitations of fault-based liability models. It is argued that due to AI autonomy and opacity, strict liability models should be applied. The article also presents empirical research results, revealing that experts support a mixed liability model involving developers, operators, and owners.

Introduction

Topic relevance. The development and integration of AI technologies into everyday life are rapidly increasing, creating significant economic and social benefits. However, the autonomy of AI systems and their ability to learn from experience pose fundamental challenges to traditional civil law frameworks. In cases where damage is caused by autonomous systems, the application of traditional legal norms becomes difficult, as such systems operate without direct human control.

The relevance of this issue is confirmed by recent European Union legal acts, including Regulation (EU) 2024/1689 (Artificial Intelligence Act) and Directive (EU) 2024/2853 (Product Liability Directive), which aim to adapt legal regulation to the development of digital technologies.

Relevance of the Article. The rapid expansion of AI technologies leads to an increasing number of disputes related to liability for damage caused by such systems. Traditional civil liability models based on fault and causation are becoming insufficient when applied to autonomous systems.

Therefore, there is a need to reconsider civil liability models and ensure effective protection of injured parties.

Researchability of the Topic. The challenges posed by AI to civil liability have been widely analyzed in scientific literature. Authors such as A. Bertolini, Y. Bathaee, D. Rimkutė, K. Povylis, and N. Gaubienė have examined the issues of the liability gap and the “black box” effect.

However, the practical application of these theoretical insights, especially in Lithuanian case law, remains underdeveloped, which confirms the relevance of further research.

Problem of the Article. According to Articles 6.246 – 6.249 of the Civil Code, civil liability arises only when unlawful actions, damage, causation, and fault are established. However, the autonomy of AI systems and the “black box” effect make it difficult to prove these elements.

As a result, a “liability gap” emerges, where it becomes unclear which subject – developer, operator, or user – should be held responsible.

Object of the Article. Civil liability of artificial intelligence entities: issues of determining the liable subject and fault.

Goal of the Article. To investigate how the use of artificial intelligence affects the application of civil liability, particularly in determining the liable subject and fault.

Objectives of the Article:

1. To analyze the concept of artificial intelligence, its legal status, and application features in civil law.
2. To examine the conditions of civil liability and the problems of their application in AI-related damage cases.
3. To evaluate models for determining the liable subject and fault and to propose improvements to legal regulation.

Data on methods. The research applies scientific literature analysis, legal analysis, case law analysis, comparative method, empirical research (expert survey), as well as synthesis and generalization methods.

Theoretical analysis of civil liability arising from artificial intelligence

In analyzing civil liability induced by artificial intelligence, it is essential to establish that this technology has evolved from a mythological aspiration to grant life to matter – symbolized by the Ancient Greek myth of

Pygmalion – into a strictly defined technological and legal “product” status (Gardner). The myth of Pygmalion is often used in scientific literature as a metaphor for humanity’s aspiration to create life-like artificial beings (Gardner, 2025).

The scientific breakthrough of this ambition began in 1950 when Alan Turing formulated the famous question “Can machines think?”, which laid the conceptual foundation for questioning whether machines should be treated solely as passive tools in legal relations (Bartkus, Stundys, 2018). As noted by N. Gaubienė, although the Turing test evaluates only external behaviour, the ability of a machine to manipulate symbols does not yet prove genuine understanding; however, modern artificial intelligence systems already surpass ordinary software because of their capacity to generate independent inferences (Gaubienė, 2020).

The current legal standard for defining artificial intelligence systems is established by the Regulation (EU) 2024/1689, which defines an AI system as a machine-based system designed to operate with varying levels of autonomy and capable of adaptivity after deployment, generating outputs such as predictions, recommendations or decisions that influence physical or virtual environments.

In civil law, liability is closely related to the ability of a person to control a source of risk. According to Moll and Yigitbasioglu, artificial intelligence may be described as a set of computational methods intended to support decision-making processes; however, its autonomy creates new interaction schemes between humans and technology (Moll, Yigitbasioglu, 2024). Scientific literature distinguishes three main levels of human – AI interaction: human-in-the-loop, where a human makes the final decision and traditional fault-based liability remains applicable; human-on-the-loop, where a human supervises the system and may intervene; and human-out-of-the-loop, where the system operates fully autonomously without direct human involvement (Moll, Yigitbasioglu, 2024).

It is precisely in this third model that the so-called “responsibility gap” becomes most visible (Gless, Silverman, Weigend, 2016). D. Rimkutė emphasizes that through machine learning artificial intelligence systems are capable of modifying their own algorithms based on accumulated experience, which makes their decisions objectively unpredictable - otherwise a traditional deterministic algorithm could have been created in advance (Rimkutė, 2021).

Such technological autonomy creates significant challenges for the application of Civil Code of the Republic of Lithuania, which regulates causation in civil liability. Establishing a natural causal link becomes significantly more difficult when a self – learning system intervenes between human action and the resulting damage. Scholars S. Gless, E. Silverman and T. Weigend argue that technological opacity may place a disproportionate burden of proof on the victim, therefore suggesting that it may be sufficient to establish a general probability that the autonomous system caused the damage (Gless, Silverman, Weigend, 2016).

A. Bertolini also notes that it would be unfair to require the injured party to “open the black box” and scientifically explain how a complex algorithm produced a harmful outcome. For this reason, liability should be directed towards the entity that controls the technology and benefits from its operation (Bertolini). Similarly, Y. Bathaee raises the question of whether certain AI decisions could be considered comparable to force majeure, since their predictability cannot be assessed based on the experience of a “reasonable person” (Bathaee, 2018).

Nevertheless, the Directive (EU) 2024/2853 confirms that software, including artificial intelligence systems, may be treated as a product within the meaning of product liability law, and in complex technological cases both product defects and causation may be rebuttably presumed.

These developments also affect the traditional concept of fault under Civil Code of the Republic of Lithuania. H. Fraser observes that the “black box” problem represents not only a technological but also an epistemological challenge for legal reasoning (Fraser, 2025). Similarly, J. Knetsch and M. Buiten argue that in highly complex AI systems proving individual fault may become an “impossible mission” (Knetsch, Buiten, 2025).

Furthermore, M. C. Elish and H. Nissenbaum identify a phenomenon known as the “moral crumple zone”, where human operators are forced to absorb responsibility for technological failures that they were not realistically able to prevent (Elish, Nissenbaum, 2016). To address these challenges, U. Pagallo and P. Opitz suggest comparing artificial intelligence systems to animals in civil liability law, thus applying strict liability principles (Pagallo, Opitz, 2025).

Within Lithuanian civil law, however, a more practical approach may be the application of Civil Code of the Republic of Lithuania, which regulates liability for damage caused by sources of increased danger. According to D. Rimkutė and K. Povylis, a person who chooses to employ high – risk technology for

economic benefit must also assume the residual risks associated with its operation, regardless of personal fault (Rimkutė, Povylus, 2021).

Finally, modern legal doctrine increasingly proposes a “one-stop-shop” compensation model, where the victim receives compensation from the operator of the system, who may subsequently redistribute the financial burden among other actors in the technological value chain through the right of recourse under Civil Code of the Republic of Lithuania.

Thus, theoretical analysis demonstrates that in the context of artificial intelligence civil liability is gradually shifting from a subjective fault-based model toward a more objective system of technological risk management.

Issues of determining the liable subject and fault in practice and empirical research

In analyzing the compensation mechanism for damage generated by artificial intelligence in practice, the Lithuanian legal system relies primarily on the civil liability of the controller of a source of increased danger regulated by Civil Code of the Republic of Lithuania and liability for unsafe products under Civil Code of the Republic of Lithuania (Šaltinytė, 2024).

Although direct jurisprudence of the Supreme Court of Lithuania concerning the autonomous actions of algorithms has not yet been established, existing legal norms are applied through legal analogy based on the doctrinal principle that a subject exploiting autonomous technologies must assume the technological risks associated with their operation (Rimkutė, Povylus, 2021).

This position is reflected in the ruling of the Supreme Court of Lithuania in case (No. 2K-183-628/2023), which clarified that liability for damage caused by a source of increased danger arises without fault and may only be excluded in cases of force majeure or the intentional actions of the victim. In the context of artificial intelligence, this means that an employer or operator cannot avoid liability by claiming that the algorithm acted independently, because the actions of an autonomous system are legally equated with the realization of the risk assumed by the controller (Rimkutė, 2021).

However, when two artificial intelligence systems interact, Civil Code of the Republic of Lithuania provides that liability arises on general grounds, requiring the establishment of all civil liability conditions, including fault. As noted by the Court of Appeal of Lithuania in case (No. 2A-492-910/2023), such a model may create an “evidentiary deadlock” in cases involving artificial intelligence, because the injured party must prove the fault of another controller, which in practice may be extremely difficult due to algorithmic opacity.

Foreign case law supplements this analysis by defining the limits of artificial intelligence as a technological tool rather than an independent legal subject. In the Canadian decision *Moffatt v. Air Canada*, the court rejected the defendant’s argument that a chatbot should be considered a separate legal entity responsible for its own statements. The court emphasized that a company must ensure the accuracy of all information provided through its technological systems, stating:

<...> “Air Canada argues that the chatbot is a separate legal entity that is responsible for its own actions. <...> However, the court notes that the chatbot is simply an interactive part of Air Canada’s website. The company must ensure that all information on its website (including chatbot-generated content) is accurate”.

Judicial practice in the United States also highlights the manufacturer’s duty to foresee technological risks. In *Benavides v. Tesla, Inc.*, the court examined the responsibility of the manufacturer for potential failures in an autonomous driving system. The court emphasized that:

<...> “if the manufacturer knew about possible AI system errors in recognizing obstacles but did not provide sufficient warnings or did not install additional safeguards, it may be found guilty of placing an unsafe product on the market”.

Meanwhile, the case of *Mata v. Avianca, Inc.* demonstrated the importance of professional responsibility when using artificial intelligence tools in legal practice. Attorneys who relied on AI generated but fabricated legal citations were sanctioned, and the court concluded that responsibility for the final legal submission cannot be transferred to an artificial intelligence system. The court ruled:

<...> “attorneys have a duty to verify every citation and claim. Responsibility for the information provided cannot be transferred to an AI tool”.

To test the applicability of these legal constructions, an expert survey was conducted involving 32 specialists, (53.1%) of whom were judges. The respondents were selected using a purposive sampling strategy to include professional groups capable of providing a reasoned evaluation of the civil liability challenges posed by AI: lawyers (21.9%), information technology specialists (18.8%), and academics or legal scholars (9.4%) (see Figure 1).

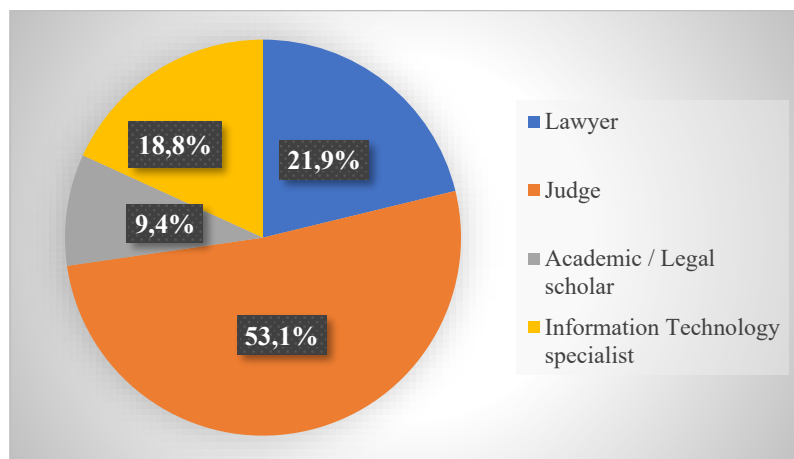


Fig. 1. Distribution of respondents by profession

**Source: compiled by the author*

The results revealed a prevailing conservative view: (41%) of respondents still treat AI as a "object/product," though a significant portion (31%) already supports an "electronic person" category with limited subjectivity (see Figure 2).

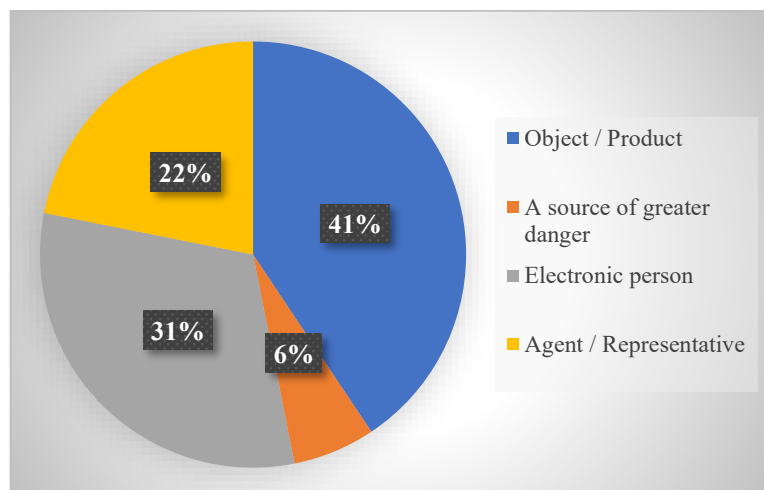


Fig. 2. Legal status of artificial intelligence systems

**Source: compiled by the author*

The empirical research results reveal a clear hierarchy in the allocation of civil liability for damage caused by artificial intelligence systems, with 62.5% of experts assigning the highest level of responsibility (rank 1) to the AI operator. This preference indicates that liability should be primarily linked to the entity that derives direct economic benefit and maintains actual control over the system's practical use. While AI owners (46.9%) and developers (43.8%) are identified as significant subjects, data providers (31.2%) are less frequently seen as primarily liable, suggesting their role is viewed as indirect (see Table 1).

Table 1

Distribution of liability ranking among AI stakeholders

Subject	1 rank	2 rank	3 rank	4 rank
Developer	43.8	25.0	15.6	15.6
Operator	62.5	21.9	6.2	9.4
Owner	46.9	15.6	21.9	15.6
Data provider	31.2	28.1	18.8	21.9

**Source: compiled by the author*

Crucially, an absolute majority (44%) of specialists support a solidary (joint) liability model, allowing victims to claim compensation from multiple subjects (see Figure 3).

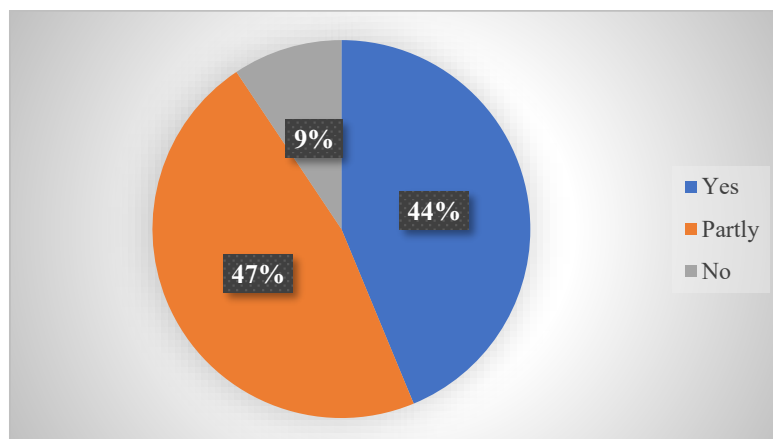


Fig. 3. Respondents' views on joint (solidary) liability in AI-related damage cases

**Source: compiled by the author*

Regarding the fault model, the study showed that only (25%) of experts favor traditional subjective liability. Instead, (62%) of respondents advocate for liability with a presumption of fault, where the defendant must prove they were not negligent (see Figure 4).

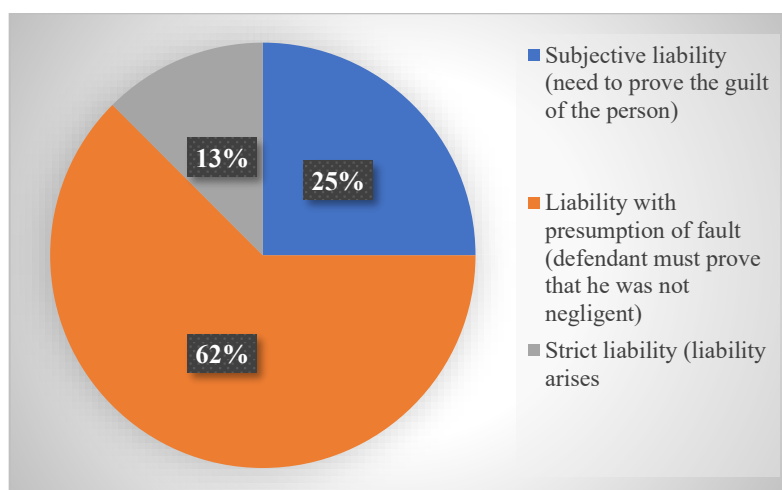


Fig. 4. Preferred civil liability models for AI-caused damage

**Source: compiled by the author*

This view correlates with the assessment of the "black box" effect: while (68.8%) of respondents maintain a neutral position on technological opacity as an absolute barrier, nearly half emphasize that AI autonomy should not be a basis for breaking the causal link. In the context of national regulation, (50%) of respondents support the application of Art. 6.270 of the Civil Code but only in specific high – risk areas. While (62.5%) agree that product liability should include a developer's duty of continuous human oversight even after market deployment (see Table 2).

Table 2

Evaluation of the Application of Civil Code Provisions (Articles 6.270 and 6.292) in the Context of AI

Regulatory Model	Approval (Yes / Specific Areas)	Neutral / Limited Application	Disapproval / Exemption
Civil Code Article 6.270 (Source of Increased Danger)	31.3% (Unconditionally)	50.0% (Only in specific areas)	18.8% (Would hinder innovation)

Civil Code Article 6.292 (Product Liability)	62.5% (Continuous supervision)	12.5% (Liability for all errors)	25.0% (Exemption if code was safe)
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**Source: compiled by the author*

Finally, the empirical research exposed a critical institutional gap: (52%) of respondents believe Lithuanian courts are not prepared to solve complex AI cases due to a lack of specialized knowledge, confirming the necessity for clearer specialized legal regulation (see Figure 5).

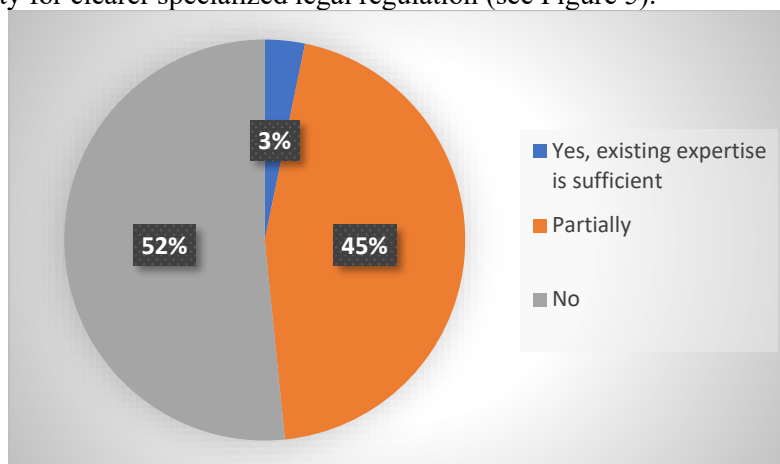


Fig. 5. Assessment of Lithuanian courts' preparedness to handle AI-related disputes

**Source: compiled by the author*

Thus, the synthesis of case law and empirical data indicates that civil liability in the AI context is evolving toward a hybrid model of strict liability and presumed fault, dominated by the priority of victim protection.

Conclusions

The analysis reveals that the conceptualization of artificial intelligence has transitioned from a theoretical "thinking machine" to a legally defined "product" status within the 2024 EU legal frameworks. Core AI characteristics - autonomy, self-learning, and algorithmic opacity, often referred to as the "black box" - distinguish these systems from traditional tools, as they possess the ability to make inferences and generate decisions that could not be fully predicted ex - ante during the programming stage. In the context of civil law, this signifies the end of AI's status as a passive object and a transition toward a model where the machine is treated as an independent source of risk.

Furthermore, the research highlights that information asymmetry severely limits the application of traditional civil liability elements - unlawful act, damage, causation, and fault - in the AI context. AI autonomy disrupts the natural causal chain between the developer's intent and the resulting damage, making it nearly impossible for the victim to prove that the harm was a direct consequence of a specific human action. Since the "black box" effect eliminates the possibility of tracing internal decision-making logic, the burden of proving subjective fault often becomes a procedural dead end, creating a potential "liability gap" where no subject can be held accountable for the resulting consequences.

After evaluating various models, it is concluded that the most effective path for the Lithuanian legal system is the application of strict (objective) liability, treating AI systems as sources of greater danger under Article 6.270 of the Civil Code or as products with potential defects under Article 6.292. Empirical data confirms that experts tend to assign the primary liability burden to the AI operator (controller), who gains from the system and is best positioned to manage the risk. To improve the regulatory framework and avoid a "liability gap," it is proposed to integrate rebuttable presumptions of fault and causation, establish a mandatory post - market surveillance duty for manufacturers, and implement compulsory civil liability insurance for high - risk AI sectors. Finally, the research underscores an urgent need to strengthen judicial competence through specialized legal and technical training, as current institutional readiness for AI - related litigation is evaluated critically by specialists.

References

1. 2024 m. birželio 13 d. Europos Parlamento ir Tarybos reglamentas (ES) 2024/1689 (*Dirbtinio intelekto aktas*) // OL L, 2024/1689, 2024-07-12.
2. 2024 m. spalio 23 d. *Europos Parlamento ir Tarybos direktyva (ES) 2024/2853 dėl atsakomybės už gaminius su trūkumais* // OL L, 2024/2853, 2024-11-18.
3. Bartkus, J., Stundys, T. (2018). Dirbtinio intelekto teisinė atsakomybė: ko galima tikėtis. *Teisės mokslo pavasaris*, 5-25.
4. Bathaee, Y. (2018). The Artificial Intelligence Black Box and the Failure of Intent and Causation. *Harvard Journal of Law & Technology*, 31(2), 889-938.
5. *Benavides v. Tesla, Inc.*, No. 21-cv-21940 (S.D. Fla., 2024).
6. Europos Parlamentas. *Artificial Intelligence and Civil Liability: A European Perspective*. [Accesed 2026-02-25]. Available at: [https://www.europarl.europa.eu/RegData/etudes/STUD/2025/776426/IUST_STU\(2025\)776426_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2025/776426/IUST_STU(2025)776426_EN.pdf)
7. Gardner, H.H. (2025). Pygmalion and His Ivory Maiden in Twenty-first Century Science Fiction. *Dictynna*, 22.
8. Gaubienė, N. (2020). Protingas dirbtinis intelektas, įveikęs Turingo testą, turi apsilankyti ir „kinų kambaryje“. *Spectrum*, 2(32), 14-17.
9. Gredka-Ligarska, I. (2025). Employer's Vicarious Liability for Damage Caused by an AI Worker: Comparative Law Perspective. *Utrecht Law Review*, 21(1).
10. Lapinskienė, G., Mačerauskas, E.; Achranovič, G., Danilevičienė, I. (2024). Dirbtinio intelekto naudojimo ir poveikio apskaitai galimybių tyrimas. *Mokslo taikomieji tyrimai Lietuvos kolegijose*, 20(2), 55-62.
11. Lietuvos apeliacinio teismo 2023 m. birželio 30 d. nutartis civilinėje byloje Nr. 2A-492-910/2023.
12. Lietuvos Aukščiausiojo Teismo 2023 m. gegužės 23 d. nutartis baudžiamojoje byloje Nr. 2K-183-628/2023.
13. Lietuvos Respublikos civilinis kodeksas. (2000). *Valstybės žinios*, Nr. 74-2262 (2024-10-24).
14. Ma, J. (2025). Causation in AI Tort Litigation: Legal Dilemmas of Algorithmic Black Boxes and Burden of Proof Allocation. *Legal Compliance*, 1(2).
15. *Mata v. Avianca, Inc.*, 678 F. Supp. 3d 443 (S.D.N.Y., 2023).
16. *Moffatt v. Air Canada*, 2024 BCCRT 149 (2024).
17. Rimkutė, D. (2021). Dirbtinis intelektas ir civilinė atsakomybė. *Teise.pro*. [Accesed 2026-02-17]. Available at: <https://www.teise.pro/index.php/2021/05/09/d-rimkute-dirbtinis-intelektas-ir-civiline-atsakomybe/>
18. Rimkutė, D.; Povilius, K. (2021). Civilinė ir baudžiamoji atsakomybė už savivaldžių automobilių sukeltą žalą. *Teisės mokslo pavasaris*, 182-210.
19. Schütte, B. (2025). Liability for Damage Caused by AI - The AILD and Existing Liability Concepts. Varju, M.; Mezei, K. (eds.). *The Challenges of Artificial Intelligence for Law in Europe*. Springer, 111-129.
20. Šaltinytė, L. (2024). Nesutartinės atsakomybės už dirbtinį intelektą reglamentavimo ES aspektai. *Lietuvos teisė 2024: esminiai pokyčiai*.

ISSUES REGARDING THE APPLICATION OF DISCIPLINARY LIABILITY FOR PUBLIC SERVANTS

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Keywords: civil servant, disciplinary liability, misconduct, disciplinary sanctions, case law.

Abstract

This article examines the concept of disciplinary liability for civil servants, explores various aspects of the definition of a civil servant, discusses the classification and types of disciplinary liability, and analyzes the influence of ethical standards on the application of disciplinary liability. It provides a detailed examination of the legal framework and analyzes the case law of Lithuanian administrative courts.

Introduction

Disciplinary liability for civil servants is one of the most important measures for ensuring proper professional discipline and public confidence in the civil service. Disciplinary liability is applied to prevent misconduct and ensure the fulfillment of official duties. However, in practice, problems often arise regarding the justification for imposing disciplinary liability, the selection of penalties, and their proportionality to the violation committed. The nature of the violation, its consequences, or the degree of the civil servant's fault are not always clearly assessed. Case law in this area is particularly significant, as administrative courts have repeatedly noted that the mere fact that a civil servant failed to perform their duties or performed them improperly is insufficient for holding them administratively liable. Case law consistently emphasizes that it is necessary to establish all elements of a disciplinary offense: the fact of the violation, the resulting consequences, the causal link between the act and the consequences, and the civil servant's fault. Only the totality of all these elements constitutes the basis for imposing disciplinary liability, and failure to assess them may result in the imposition of an unlawful or disproportionate disciplinary sanction.

The main objective of this article is to analyze the application of disciplinary liability for civil servants in Lithuania.

Objectives:

1. Present the concept of a civil servant and to analyse the types of disciplinary, material and criminal liability.
2. To analyze the imposition of disciplinary liability in judicial practice.

Research methods. The following research methods were used in this work: scientific literature analysis method, documentary content analysis method. Systematic analysis and generalisation method were used to structure the results of the research.

The Concept of a Civil Servant

A civil servant is a person who holds a position in a state or municipal institution or agency and performs public administration functions, or ensures the functioning of diplomatic service institutions or trade missions abroad, or assisting persons exercising state or local authority in performing their assigned functions, except for internal administrative functions as defined in the Public Administration Act (Law on the Civil Service of the Republic of Lithuania // TAR 1999, No. 66-2130, current version effective as of 2025-01-01).

As noted by D. Pranauskienė (2016, p. 34), Article 230 of the current version of the Criminal Code of the Republic of Lithuania (hereinafter referred to as the CC) states, among other things, that “[...] public servants are state politicians, state officials, judges, public servants under the Law on Public Service, and other persons who, while working or performing duties in state or municipal institutions or agencies on other grounds provided for by law, perform the functions of a representative of the government or have administrative powers, as well as official candidates for these positions (Criminal Code of the Republic of Lithuania. Official Gazette, 2011, No. 81-3959).

As stated by the author Deviatnikovaitė, according to the Court, the Constitution establishes a distinct status for persons working in institutions through which state functions are exercised: some persons perform functions of state authority (members of the Seimas, the head of state, members of the Government, and judges), while other persons working in institutions through which state functions are performed constitute the corps of civil servants. Public service for them is a professional activity involving the administration of public affairs and the oversight of public service provision. The Court also emphasized that the professional activities of civil servants must be remunerated from the state (municipal) budget. However, according to the

Constitutional Court, this does not mean that all persons who work in state or municipal institutions or whose activities are funded from the state or municipal budget should be treated as civil servants. The Court emphasized that civil servants are those who “make decisions in the course of public administration and/or the provision of public services (or participate in the preparation, implementation, coordination, and/or supervision of such decisions, etc.)” (Deviatnikovaitė, 2021, p. 313).

In Lithuania, civil servants are classified into statutory civil servants (police officers, firefighters, customs officers, etc.), heads of institutions, political (personal) appointees (deputy ministers, ministerial advisors, etc.), and career civil servants (<https://portalas.vtd.lt/lt/apie-valstybes-tarnyba-857.html>).

According to Article 3 of the Law on Civil Service of the Republic of Lithuania, several groups of civil servants are mentioned:

1. A career civil servant is an employee appointed to a position for an indefinite term or for a specific term, who has the right to advance through the career ladder and seek higher positions in the civil service. Career civil servants are divided into 9 job groups and include positions such as court clerk, deputy head, director of the commission’s administration, head of the commission’s secretariat, senior specialist, court session secretary, etc.;

2. A civil servant appointed on the basis of political (personal) trust is a civil servant who is appointed to a position at the discretion of a politician or a collegial state institution and holds office only for the term specified by the politician or by law. Civil servants appointed on the basis of political (personal) trust include positions such as deputy minister, advisor to the President of the Republic, deputy mayor, advisor to a minister, secretary of municipal council meetings, advisor to a member of the Seimas, etc.;

3. A head of an institution is a civil servant who holds a managerial position and is responsible for the activities of a specific state or municipal institution or agency. Heads of institutions are divided into three job groups and include positions such as Chancellor of the Seimas, head of a government agency, municipal controller, etc.;

4. A temporary civil servant is a civil servant appointed to a position for a specific period only, excluding the positions of head of an institution or civil servant appointed on the basis of political (personal) trust. As stated by the author Deviatnikovaitė, 2021, pp. 318–319, a temporary civil servant is appointed to the position of a career civil servant until a career civil servant is appointed to that position.

Officers in the internal service system are also referred to as statutory civil servants. Thus, pursuant to Article 2, Paragraph 11 of the Statute of the Internal Service of the Republic of Lithuania, an officer in the internal service system is defined as a statutory civil servant serving in statutory institutions, performing functions established by law that ensure the implementation of the tasks and functions assigned to the statutory institution by law, and possessing public administration powers granted by law over persons not subordinate to them and/or in managing other officers (Deviatnikovaitė, 2021, p. 354).

The terms “civil servant” and “employee working under an employment contract” are often confused, even though these two groups differ both in their functions and in their legal regulation. The fundamental difference between a civil servant and an employee lies in the nature of their work and the legal framework governing them. Civil servants perform public administration activities—they implement policies in a specific area of state governance or ensure the coordination of their implementation, coordinate the activities of institutions in a specific area of state governance, manage and allocate financial resources and control their use, conduct audits, adopt and implement legislation, as well as decisions of state and municipal institutions or agencies in the field of public administration; prepare or coordinate draft legislation, contracts, or programs and provide conclusions on them; manage personnel or exercise public administration authority over non-subordinate individuals. Meanwhile, employees working under an employment contract perform activities unrelated to public administration functions—these are typically technical, operational, or support-related tasks. Their activities are regulated by the Labor Code (Labor Code of the Republic of Lithuania // TAR 2016, No. 23709, current version as of 2025), while those of civil servants are governed by the Civil Service Law (Civil Service Law of the Republic of Lithuania // TAR 1999, No. 66-2130, current version effective as of 2025-01-01) (https://enmin.lrv.lt/uploads/enmin/documents/files/Pradziamokslis_2017_08_25.pdf).

The status of a civil servant differs from that of other employees in terms of the nature of their relationship with the state. A civil service relationship is a legal relationship between a civil servant and the state, which acts as the employer in relation to that person. These relationships (despite certain similarities) differ from employment relationships that arise between an employee who is not a civil servant and an employer (regardless of whether those relationships arise in state or municipal institutions, or in other companies, agencies, or organizations). Public service is understood as service to the State of Lithuania and the civic Nation, i.e., as a system of relations between the state and individuals who are entrusted with performing

certain state functions to ensure the execution of public administration and the provision of public services, thereby guaranteeing the public interest of the entire state community – the civic nation (Buišienė, 2023, pp. 437–438).

Compared to employees working under employment contracts, civil servants have significantly greater responsibilities, more duties and obligations, and are subject to high qualification and professional standards. They must adhere to the ethical and operational principles established in the Civil Service Law, such as ensuring the transparency of their decisions and actions. They are also subject to requirements of impeccable reputation and a number of various restrictions; for example, if they wish to hold a second job, they must ensure that such work does not create a conflict of public and private interests, does not prevent them from properly performing their duties as civil servants, and does not discredit the authority of the civil service, etc. (<https://portalas.vtd.lt/lt/apie-valstybes-tarnyba-857.html>).

In summary, it can be stated that the concept of a civil servant is clearly defined by law. Civil servants perform public administration functions and contribute to the implementation of state policy. The Civil Service Law also distinguishes several groups of civil servants, such as career civil servants, agency heads, and others, who differ in their duties and responsibilities. It is important to note that not all individuals working in state or municipal agencies are considered civil servants. Employees working under an employment contract typically perform technical, administrative, or support functions and do not participate in public administration processes; their legal regulation also differs.

Types of disciplinary liability

Under the Law on Civil Service of the Republic of Lithuania, civil servants may be subject to various disciplinary sanctions for misconduct, depending on the severity of the violation and its consequences (Law on Civil Service of the Republic of Lithuania // TAR 1999, No. 66-2130, current version effective as of 2025-01-01).

For misconduct, a civil servant may be subject to one of the following disciplinary sanctions: a warning; a reprimand; a severe reprimand; dismissal from office. The Civil Service Law establishes the circumstances under which a civil servant will be deemed to have committed a gross misconduct for which he or she may be subject to the disciplinary sanction of dismissal from office.

1) Note: In Case No. EA 950-556/2019 of the Supreme Administrative Court of Lithuania, dated November 13, while examining the application of disciplinary liability, it was noted that when assessing a civil servant's conduct and imposing a penalty, it is important to take into account the nature of the violation and its consequences; therefore, in the case of a formal violation that did not cause significant negative consequences, a milder penalty – a warning – may be imposed. As the Supreme Administrative Court noted, “a reprimand is the mildest form of disciplinary sanction.”;

2) Reprimand: In Case No. EA-3349-629/2019 of the Supreme Administrative Court of Lithuania, on December 4, the petitioner received a disciplinary sanction for failing to adequately disclose his interests and for improperly using work time for non-work-related matters. The court, having assessed all the circumstances of the case and the nature of the violations committed, determined that the disciplinary penalty imposed – a severe reprimand – was too severe and insufficiently individualized. In light of this, it was decided to replace it with a milder disciplinary sanction, as the Supreme Administrative Court noted that “a reprimand is not the mildest form of disciplinary sanction, and such a sanction will achieve the objectives of imposing a disciplinary sanction.”;

3) Severe reprimand: In Case No. A-5082-662/2018 of the Supreme Administrative Court of Lithuania, on October 23, while examining the application of disciplinary liability, it was noted that when assessing a civil servant's conduct and imposing a penalty, it is important to take into account the nature of the violation, its severity, and its consequences. In the case of a more serious violation that has caused negative consequences for the institution's operations or the environment, a more severe penalty – a severe reprimand – may be imposed. As the Supreme Administrative Court of Lithuania has noted, “a severe reprimand is one of the most severe disciplinary penalties, applied in cases of significant violations whose consequences may have a significant negative impact on the functions of the institution or the duties performed by the civil servant.”;

4) Dismissal from office: In Case No. A-333-146/2015 of the Supreme Administrative Court of Lithuania, on February 23, while examining the applicant's misconduct, it was noted that when assessing a civil servant's conduct and imposing a penalty, it is important to take into account the nature of the violation, its severity, and its consequences. In the case of a serious violation that has caused negative consequences for the performance of customs functions, the most severe penalty – dismissal from office – may reasonably be imposed. The Vilnius Regional Administrative Court stated that “Regarding the proportionality of the penalty

imposed on the applicant, the court noted that dismissal from office may be imposed, *inter alia*, for a disciplinary offense committed while a disciplinary penalty is in effect, as well as for other offenses that constitute a gross violation of the duties of a customs officer or professional ethics.”

The conditions for imposing the disciplinary sanction of dismissal from service under the Civil Service Law are regulated in greater detail than those for other disciplinary sanctions. This is because this sanction is the most severe. A disciplinary sanction – dismissal from office – may be imposed for a gross misconduct, as well as for other misconduct, if the civil servant has previously been subject to a disciplinary sanction – a severe reprimand – at least once in the last twelve months. Official administrative doctrine states that this provision prohibits the imposition of the disciplinary sanction of dismissal from office if the civil servant has not been subject to a disciplinary sanction – a severe reprimand – within the last twelve months. Furthermore, this provision does not require the dismissal of a civil servant in all cases where they commit a gross disciplinary offense (Deviatnikovaitė, 2021, pp. 338–339).

The following acts are considered serious misconduct:

1. Conduct related to official duties that discredits the civil service, damages the reputation of the institution or the civil servant themselves, violates human dignity, or infringes upon people’s constitutional rights.
2. Disclosure of state or official secrets.
3. Abuse of office.
4. Serious violation of the Law on the Coordination of Public and Private Interests.
5. Participation in activities incompatible with the duties of a civil servant.
6. Unjustified absence from work for one or more working days.
7. Being at work while intoxicated or under the influence of narcotic or psychotropic substances, as well as conduct in a public place outside of work hours, if it offends human dignity or discredits the authority of the institution.
8. Violation of accounting procedures for state or municipal funds and property that has a significant impact on the accuracy of financial statements, or significant unlawful use of funds and property.
9. Failure to comply with final court decisions related to the employee’s duties.

The conduct of civil servants in the workplace is governed by rules that specify how violations are assessed and what disciplinary actions may be imposed. This information helps to understand the potential consequences of failing to perform or improperly performing one’s duties.

When imposing a disciplinary penalty, the degree of the civil servant’s fault, the causes of the misconduct, the circumstances, and the consequences it caused are assessed. The civil servant’s prior service record, as well as mitigating and aggravating circumstances, are also taken into account (Law on Civil Service of the Republic of Lithuania // TAR 1999, No. 66-2130, current version effective as of 2025-01-01).

Failure to perform the duties of a civil servant refers to passive conduct in which a civil servant fails to comply with the provisions of the Civil Service Law or fails to perform the functions specified in their job description. Case law has established that when holding civil servants accountable for inaction, which manifests as a failure to perform procedural actions prescribed by law within the established time limits, not only the objective basis for liability for inaction — the duty to perform the actions prescribed by law — but also the subjective basis — the ability to act as required by law. When determining the subjective basis for a person’s inaction, it is necessary to take into account all factual circumstances existing at the time of the inaction, which:

- 1) allowed the person to act as required by law;
- 2) were beyond the person’s control, and the person was unable to act as required by law (Kuncevičius, Kosmačaitė, 2012, p. 1444).

In summary, it can be said that disciplinary liability in the civil service is one of the main measures for ensuring that civil servants fulfill their duties and that public administration runs smoothly. It applies to misconduct in the civil service and may result in various penalties, ranging from a reprimand to dismissal, depending on the severity of the violation, its consequences, and the civil servant’s conduct. Serious misconduct includes actions that discredit the civil service, violate laws or ethical standards, abuse of office, conflicts of interest, unjustified absence from work, public misconduct, or improper use of funds and property. Disciplinary liability also applies to a civil servant’s failure to perform their duties; however, when assessing such cases, it is mandatory to consider both the objective circumstances and the subjective ability to act in accordance with the law. In this way, disciplinary liability helps to uphold the accountability, transparency, and legality of civil servants’ activities.

Civil and Criminal Liability of Public Servants

One form of liability is: material liability. As author Deviatnikovaite states, material liability is an independent type of liability whose purpose is to compensate for financial damage related to the performance of official duties, caused to another party in an official legal relationship. In the broadest sense, material liability arises from a violation of the law whereby one party to a service relationship causes harm to another party by failing to perform the functions specified in their job description or by performing them improperly (Deviatnikovaitė, 2021, p. 342).

A civil servant's material liability is an independent type of liability, the purpose of which is to compensate for property damage caused by their unlawful culpable act, related to the performance of official duties and inflicted upon the state or an institution representing it. Financial damage most often occurs when courts award compensation to employees who have been unlawfully dismissed or order compensation for damage suffered by legal or natural persons due to unlawful actions by state or municipal institutions (<https://www.countline.lt/valstybes-tarnautoju-materialines-atsakomybes-ypatumai/>).

It should be noted that damage may be caused to a state or municipal institution or agency even in the absence of signs of misconduct by a civil servant. In any case, damage is considered a civil law category. Article 6.249(1) of the Civil Code provides that damage is the loss or injury to a person's property, expenses incurred (direct losses), as well as lost income that the person would have received had the unlawful acts not occurred. The monetary expression of damage is loss. If a party cannot precisely prove the amount of the loss, the court determines its amount. Article 6.247 of the Civil Code provides that only those losses are compensable that are related to acts (actions, omissions) giving rise to the debtor's civil liability in such a way that the losses, by their nature and that of civil liability, may be regarded as the result of the debtor's acts (action or inaction). Thus, civil liability applies only where such a causal link exists.

Pursuant to Article 6.251(1) of the Civil Code, damages must be compensated in full, except in cases where the law or a contract provides for limited liability; however, under Article 32(2) of the Civil Service Law, compensation for damages is limited to an amount equal to six times the average monthly salary of the civil servant in question, except in cases specified by law where full compensation is mandatory (Civil Code of the Republic of Lithuania, Official Gazette, 2000, No. 74–2262, current version effective as of January 1, 2026).

When applying the provisions of Article 32 of the Law on Public Service, reference should also be made to the provisions of the Labor Code. Article 245 of the Labor Code provides that material liability arises from a violation of the law whereby one party to an employment relationship causes harm to another party by failing to perform or improperly performing their work duties. Pursuant to Article 246 of the Labor Code, material liability arises when all of the following conditions are met: 1) damage is caused; 2) the damage is caused by an unlawful act; 3) there is a causal link between the unlawful act and the occurrence of the damage; 4) the offender is at fault; 5) the offender and the injured party were in an employment relationship at the time of the violation; 6) the occurrence of the damage is related to work activities (Labor Code of the Republic of Lithuania // TAR 2019, No. 2019–10338, current version effective as of 2035-01-01) (https://portalas.vtd.lt/upload/Dokumentai/ISTAIGOMS/Rekomendacijos/Rekomendacija_del_materialines_atsakomybes.pdf).

The most severe form of liability is criminal liability. It applies when the actions of a public servant meet the criteria for a criminal offense as defined in the Criminal Code of the Republic of Lithuania. Significant cases involving public servants typically involve crimes of a corrupt nature: bribery, trading in influence, solicitation of bribes, abuse of office, unlawful registration of rights to property, and failure to perform official duties (Criminal Code of the Republic of Lithuania. Official Gazette, 2011, No. 81-3959). A civil servant against whom charges or allegations have been brought for an intentional crime or a crime related to civil service or the public interest may be suspended from duty for up to three months, taking into account the nature of their current duties, the functions performed, and other relevant circumstances; if necessary, the suspension may be extended by one month as many times as required (Law on the Civil Service of the Republic of Lithuania // TAR 1999, No. 66-2130, current version effective as of 2025-01-01).

The liability of civil servants encompasses several types, depending on the nature and severity of the violation. Financial liability applies to compensate for property damage caused by a failure to perform or improper performance of official duties. The most severe form of liability is criminal liability, which applies when a civil servant's actions constitute a criminal offense, such as bribery, abuse of power, or dereliction of duty. When applying both civil and criminal liability, it is important to ensure the inevitability and

proportionality of liability, as well as the assessment of subjective and objective elements, in order to accurately determine the damage caused or the elements of a criminal offense.

Analysis of statistical data from 2020–2025 on disciplinary sanctions imposed on civil servants

A statistical analysis of employment disputes makes it possible to assess how often civil servants challenge institutional decisions regarding employment relationships, including the imposition of disciplinary sanctions. With this in mind, the following table presents the number of employment disputes heard by administrative courts.

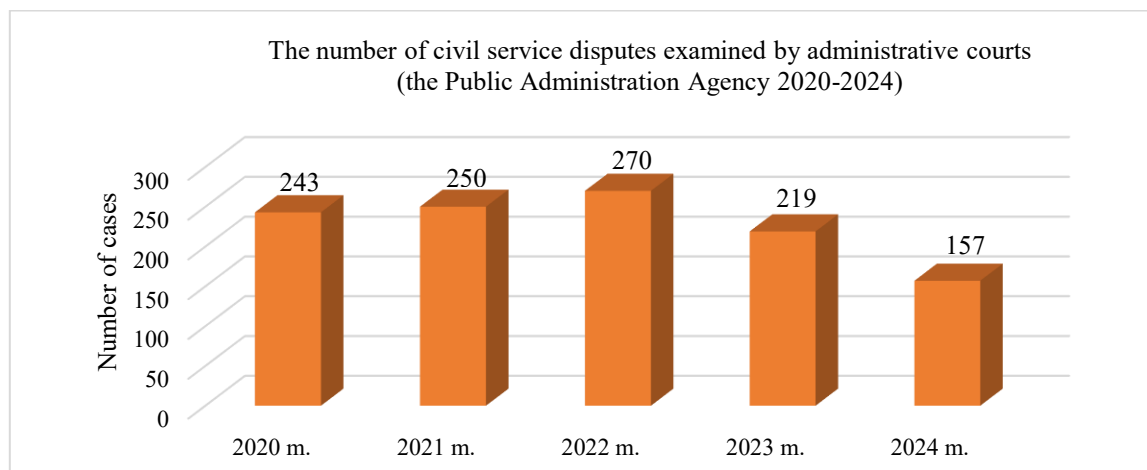


Fig. 1. The Public Administration Agency (2024)

Source: compiled by the authors

According to LITEKO data, in 2024, the Supreme Administrative Court of Lithuania heard 99 cases involving employment disputes (including those involving statutory civil servants):

1. Admission to the civil service – 12 (1 case lost);
2. Evaluation of civil servants and their performance – 4 (1 case lost);
3. Disciplinary sanctions – 23 (8 cases lost);
4. Social and other guarantees for civil servants, remuneration – 19 (10 cases lost);
5. Dismissal of civil servants – 20 (3 cases lost);
6. Recusal – 1 (1 case lost);
7. Disputes with trade unions regarding disciplinary actions, etc. – 2 (no cases lost);
8. Procedural issues such as case reopening, jurisdiction, remand for retrial, etc. – 18 (Public Administration Agency
(https://vva.lrv.lt/public/canonical/1736334017/1914/Teismu_praktika_2024%20m.pdf)).

An analysis of statistics on employment disputes in administrative courts shows that disputes concerning the employment relationships of civil servants have long accounted for a significant proportion of administrative cases. Based on data from cases heard by administrative courts between 2020 and 2024, there are noticeable fluctuations in the number of employment disputes. The highest number of such cases was recorded in 2016, when as many as 6,012 cases were heard. In 2024, the number of labor disputes examined dropped to 157 cases. This suggests that the regulation of labor relations has gradually stabilized, but certain categories of disputes, including those concerning disciplinary sanctions, remain relevant.

According to the data provided, in 2024, the Supreme Administrative Court of Lithuania heard 99 cases involving civil service disputes, including cases involving statutory civil servants. Of these, as many as 23 cases were related to the imposition of disciplinary sanctions. It is worth noting that in as many as 8 cases in this category, state institutions lost the case. These statistics suggest that, in practice, there are still instances where disciplinary sanctions are imposed in violation of legal requirements or following an improper assessment of the factual circumstances.

In addition to disputes over disciplinary sanctions, a significant portion of the cases involved other matters related to employment relationships, such as disputes concerning the dismissal of civil servants, social benefits, or wages. However, disciplinary penalty cases stand out in that they particularly often raise questions regarding procedural violations and the proportionality of the penalty. This indicates that the application of disciplinary liability requires particular attention from institutions and strict adherence to legal requirements.

According to official administrative doctrine, when examining administrative cases regarding the validity and legality of disciplinary sanctions, it is necessary in each specific case to verify and assess the compliance of the imposed disciplinary sanction with the general principles of imposing disciplinary sanctions (including the appropriateness and effectiveness of the sanction) as well as the criteria of fairness and reasonableness (Deviatnikovaitė, 2021, p. 338).

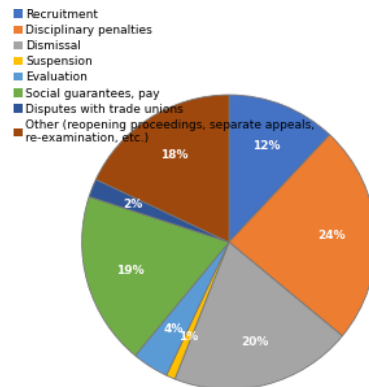


Fig. 2. Public Administration Agency (2024)

In 2024, the majority of cases involved the legality of disciplinary sanctions—24 percent (34 percent in 2023).

The number of cases involving dismissal from office remains high, but the number of unlawful dismissals has decreased (2015 – 41%, 2016 – 35%, 2017 – 20%, 2018 – 23%, 2019 – 27%, 2020 – 37.5%, 2021 – 24%, 2022 – 23.7%, 2023 – 33.3%, 2024 – 19% were found to be unlawful by the institution). Unlawful dismissals were due to disproportionate or unlawfully imposed disciplinary measures—dismissal—as well as errors in the performance evaluation process.

The number of cases regarding the legality of disciplinary measures remains high. However, in 2024, the court reduced the imposed disciplinary measures or ruled them unlawful in only 21% of cases (2015 – 36%, 2016 – 36%, 2017 – 44%, 2018 – 58%, In 2019 – 45%, 2020 – 74.5%, 2021 – 42%, 2022 – 56%, and 2023 – 34% of cases were found to have been imposed unlawfully by the authority).

During the period under review, 12 cases concerning the legality of competitive examinations and appointments to civil service positions were examined; in 11 of these cases, the court found that the competitive examinations had been conducted in accordance with procedures, transparently, and professionally; In one case, the court found that the decision to hire the candidate was insufficiently justified (Public Administration Agency, https://vva.lrv.lt/public/canonical/1736334017/1914/Teismu_praktika_2024%20m.pdf).

The chart below shows the percentage distribution of civil service cases related to disciplinary actions examined in 2024. According to the data, the largest share consists of cases regarding the imposition of disciplinary actions (24%) and cases regarding dismissal from office (20%). Also significant is the number of cases related to social security and remuneration issues (19%), disputes with trade unions (18%), recruitment (12%), and performance evaluation (4%). The smallest share consists of cases regarding recusal (1%) and other procedural actions (2%).

These statistics show that in 2024, the imposition of disciplinary sanctions remained one of the most actively examined aspects of civil service activities. The greatest attention was paid to the imposition of disciplinary measures and to disciplinary violations for which stricter sanctions are imposed, such as dismissal from office. This may indicate that institutions are conducting a consistent assessment of disciplinary conduct.

To summarize the statistical analysis of employment disputes presented above, it can be stated that employment disputes involving civil servants continue to account for a significant portion of the cases heard by administrative courts, although the total number of such cases has decreased noticeably in recent years. However, certain problematic areas, particularly those related to the application of disciplinary liability, remain relevant.

Problematic Aspects of the Application of Disciplinary Liability for Civil Servants in Lithuanian Case Law

The following cases, decided by the Supreme Administrative Court of Lithuania, concern the lawfulness and proportionality of disciplinary sanctions imposed on civil servants. Both disputes involve the application of disciplinary liability, the assessment of fault, and the principle of proportionality in determining appropriate sanctions. The Court examined whether the factual circumstances were sufficiently established, whether the applicants' guilt was proven, and whether the imposed penalties complied with fundamental principles of administrative.

In Case No. A-2450-815/2025 of the Supreme Administrative Court of Lithuania, a dispute arose on September 24 regarding an order issued by the Director of the Lithuanian Prison Service, pursuant to which the applicant, R. S., was given a disciplinary penalty – a reprimand – because he was accused of failing to ensure the security and supervision of inmates, failing to conduct a partial search, and failing to perform other duties at his post.

The court ruled that the disciplinary penalty of a reprimand imposed on the applicant was unfounded. The court found that although the order was issued in accordance with procedure, all factual circumstances had not been sufficiently investigated, the applicant's guilt had not been specifically established, and no causal link had been established between his actions and the resulting consequences. Furthermore, the applicant was objectively unable to comply with safety rules due to the employer's failure to ensure safe working conditions, and therefore the Order was revoked "The court noted that the case file shows that the applicant objectively had no opportunity to comply with the requirements of the safety rules, specifically because the employer failed to ensure safe working conditions"

The court ruled that the court of first instance had acted correctly. The court noted that the defendant, as the employer, was obligated to ensure safe working conditions, and the applicant's violations did not constitute sufficient grounds for disciplinary liability. Therefore, the appeal was dismissed, and the disciplinary sanction – a reprimand – was revoked.

In Case No. EA-950-556/2019 of the Supreme Administrative Court of Lithuania, dated November 13, the applicant was given a disciplinary penalty because, on March 28, 2017, he left his workplace during working hours and spent several hours at the Seimas without the explicit consent of his immediate supervisor, the Director of the Agency. In the defendant's view, the applicant failed to prove that the departure was for official purposes and that he had been authorized to represent the Agency at the Seimas. Consequently, it was determined that the applicant had failed to comply with the Agency's internal rules, violated the principles applicable to civil servants, and improperly performed his duties. Based on these circumstances, his actions were deemed a disciplinary offense, for which he was given a disciplinary sanction – a severe reprimand.

The court found that the court of first instance had rightly determined that, on March 28, 2017, the applicant had gone to the Seimas without the consent of his immediate supervisor, had not provided sufficient information about the purpose of the meeting, and had failed to comply with the Agency's internal rules of procedure. It was determined that the penalty imposed by the court of first instance – a severe reprimand – was disproportionate, as the violation was of a formal nature and had no negative consequences. In light of this, the final court amended the decision and imposed the mildest penalty on R. Š. – a reprimand: "The Supreme Administrative Court of Lithuania has previously noted that the imposition of a disciplinary penalty is, first and foremost, the application of legal liability. The principle of the inevitability of legal liability requires that a penalty proportionate to the severity of the offense be imposed on the person who committed the violation. It is the court's duty to assess the gravity of the violation itself, the negative consequences it caused, the form and degree of the person's fault, and the aggravating and mitigating circumstances."

These cases illustrate the Supreme Administrative Court of Lithuania's consistent approach to disciplinary liability: sanctions must be legally justified, based on thoroughly established facts, and proportionate to the gravity of the violation. Employers must properly investigate circumstances and prove fault and causation. At the same time, even when a violation is established, courts must ensure that the imposed penalty corresponds to the seriousness of the misconduct and its consequences.

Together, the cases highlight the importance of procedural fairness, evidentiary sufficiency, employer responsibility, and the principle of proportionality in administrative disciplinary proceedings.

Conclusions

An analysis of the disciplinary liability of civil servants suggests that it is an important tool for ensuring the efficiency and transparency of the civil service, as well as public trust in government institutions. The status

of a civil servant is clearly regulated by law, and civil servants are classified into career civil servants, political (personal) appointees, heads of institutions, and statutory civil servants. They perform public administration functions and act on behalf of the state; therefore, their responsibility is greater than that of employees working under employment contracts, who typically perform technical or support functions. The liability of civil servants includes administrative (disciplinary), financial, and criminal liability. Administrative liability applies for failure to perform or improper performance of duties and may result in a reprimand, a warning, a severe reprimand, or dismissal from office. Financial liability arises when damage is caused to the institution, while criminal liability applies when the act constitutes a criminal offense. In all cases, liability must be applied in accordance with the principles of legality and proportionality.

Lithuanian case law shows that administrative courts consistently consider both the fact of the disciplinary offense and its consequences, the degree of fault, length of service, previous reputation, and other circumstances. In cases where civil servants were found to have violated service regulations, courts often commuted the most severe penalties to milder ones, taking into account the principle of proportionality. This confirms that disciplinary accountability should serve not only as a punitive measure but also as an educational one, encouraging public servants to correct their behavior rather than merely punishing them. Judicial practice also shows that even intentional violations, if they do not cause actual harm, should not be assessed too harshly.

Literature

1. Bučiūnas, G. (2021). *Selection for the Civil Service and Its Improvement*. Vilnius: Mykolas Romeris University.
2. Countline. (2024). *Specifics of Civil Servants' Financial Liability*. [Accessed 2026-03-29]. Available online: <https://www.countline.lt/valstybes-tarnautoju-materialines-atsakomybes-ypatumai/>.
3. Deviatnikovaitė, I. (2021). *Administrative Law*. Vilnius: Mykolas Romeris University.
4. Kuncevičius, G., Kosmačaitė, V. (2012). *Problematic Aspects of the Application of Official Liability*. Vilnius: Mykolas Romeris University.
5. Criminal Code of the Republic of Lithuania. TAR 2000, No. 89-2741 (current version effective as of 2026-01-01).
6. Labor Code of the Republic of Lithuania. TAR 2016, No. 2016-23709 (current version effective as of 2025-01-01).
7. Law on Civil Service of the Republic of Lithuania. TAR 1999, No. 66-2130 (current version effective as of January 1, 2026).
8. Ruling of the Supreme Administrative Court of Lithuania of February 23, 2015, in Administrative Case No. A-333-146/2015.
9. Ruling of the Supreme Administrative Court of Lithuania of October 23, 2018, in Administrative Case No. A-5082-662/2018.
10. Ruling of the Supreme Administrative Court of Lithuania of November 13, 2019, in Administrative Case No. EA-950-556/2019.
11. Ruling of the Supreme Administrative Court of Lithuania of December 4, 2019, in Administrative Case No. EA-3349-629/2019.
12. Ruling of the Supreme Administrative Court of Lithuania of September 24, 2025, in Administrative Case No. A-2450-815/2025.
13. Pranauskienė, D. (2016). *Civil Service Reform in Lithuania*.

COMPARISON OF CYBER SECURITY VULNERABILITY SCANNING AND PENETRATION TESTING METHODOLOGIES

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Keywords: IT, cybersecurity, vulnerability scanning, penetration testing.

Abstract

Nowadays, cyberattacks are increasing in complexity and numbers. Cyberattacks are an extremely dangerous issue for any organization. It is important to assess one's own cybersecurity for organizations. The most widely used security assessment methods are vulnerability scanning and penetration testing. However, these two methods have different objectives, scopes, and testing results. In this study, we compare these methodologies by identifying their objectives, tools, effectiveness, and future trends. The study provides a better understanding of cybersecurity testing methods. Moreover, it demonstrates the most appropriate application of testing methods. Also, how these methods can complement one another to strengthen an organization's overall cybersecurity.

Introduction

The increasing number of cyberattacks, their growing complexity, and the damage they cause to businesses indicate that security measures are not always sufficient to identify and eliminate cybersecurity vulnerabilities promptly (Alhamed & Rahman, 2023). For this reason, it is essential to apply advanced cybersecurity assessment methods to evaluate a company's current IT security posture. Vulnerability scanning and penetration testing are among the most widely used methods for assessing the security of IT systems (Bennouk et al., 2024). However, the purpose, scope of application, and results of these tests differ. Incorrect selection of these methodologies can lead to ineffective management of cybersecurity vulnerabilities and inaccurate assessment of the situation. Therefore, it is essential to understand how vulnerability scanning and penetration testing methodologies differ, in which cases they are most effective, and how they can complement each other.

This paper examines vulnerability scanning and penetration testing methodologies, evaluates their objectives, tools, effectiveness, and future trends. Such a comparison enables more informed decision-making, enhances the organization's preparedness against cyber threats, and strengthens overall IT security.

Research problem: With cyberattacks becoming increasingly sophisticated, it is crucial for organizations to choose the right IT security assessment methods. Failure to understand the differences between vulnerability scanning and penetration testing may result in selecting an inappropriate assessment method. This leads to ineffective identification and elimination of security gaps.

Research aim: comparison of vulnerability-scanning and penetration-testing methods.

Research objectives:

1. Identify the essence and objectives of the methodologies.
2. Determine the tools used for vulnerability scanning and penetration testing.
3. Evaluate the effectiveness of the methodologies.
4. Review future trends.

Information Security Assessment

Information security assessment is a process for identifying potential vulnerabilities and risks in information systems. The number of new vulnerabilities is increasing significantly every year, but vulnerability databases do not always provide information about new security incidents quickly and comprehensively enough (Bennouk et al., 2024). For this reason, organizations are increasingly applying preventive strategies to protect their data and infrastructure by using vulnerability management systems, which play an important role in reducing the impact of cyberattacks (Bennouk et al., 2024). Cybercriminals pose a threat to organizations' activities, ranging from blocking internet access to stealing confidential data, causing direct damage to both finances and reputation (Alhamed & Rahman, 2023). To ensure a secure environment, cybersecurity experts recommend regularly assessing an organization's information security status using methods such as vulnerability scanning and penetration testing (Sarker et al., 2023). This paper will examine vulnerability scanning and penetration testing, including their objectives, tools, effectiveness, and future trends.

Vulnerability Scanning

Vulnerability scanning is an automated process that identifies known security vulnerabilities in information systems (Jagtap, 2020). During this process, specialized scanning tools are used to check the system against vulnerabilities registered in the CVE (Common Vulnerabilities and Exposures) database (Bennouk et al., 2024). CVE is a publicly available database that contains information on documented cybersecurity vulnerabilities (Bennouk et al., 2024). During vulnerability scanning, the most commonly detected issues include outdated software versions, improper configurations, open network ports, insecure protocols, and other security weaknesses (Jagtap, 2020).

The main objectives of vulnerability scanning are to identify cybersecurity vulnerabilities in IT systems. These tools continuously monitor the cybersecurity status of IT systems and produce a comprehensive report detailing discovered vulnerabilities and a prioritized remediation list (Stevenson, 2025).

Vulnerability scanning can be performed using various methods, such as network scanning, system vulnerability scanning, web application scanning, and configuration scanning (Jagtap, 2020). During network scanning, open ports are identified, through which malicious actors could gain unauthorized access to the organization's internal network, disrupt operations, and obtain sensitive information. When performing IT system vulnerability scanning, the software versions of operating systems (e.g., "Windows", "macOS"), servers, and other devices are evaluated, along with their associated security vulnerabilities. Web application scanning identifies the most common web vulnerabilities, while configuration scanning checks encryption, password requirements, protocols used, and firewall rules.

Table 1

Vulnerability Scanning Tools

Tool	Purpose	Distinctive feature
Nessus	Scanning of systems, networks, and applications.	Automatically ranks vulnerabilities found by severity, helping to determine what to fix first.
Nmap	Network scanning.	Detects open ports and identifies the services running on them, along with their versions.
OpenVAS	Open-source scanning of networks, servers, and web application vulnerabilities.	Completely free and open source, available to any organization.
OWASP ZAP	Web application scanning.	Intercepts traffic between the browser and the website, allowing analysis of how the program processes requests.
Qualys	Cloud-based vulnerability scanning.	Works in a browser without installation, suitable for centralized management of large-scale infrastructure.

**Source: compiled by the author based on drata.com*

Vulnerability scanning has its advantages. By scanning for vulnerabilities, known security flaws in an organization's computer networks and systems can be quickly detected. Scans can be performed frequently because they require fewer resources than penetration testing (Jagtap, 2020). Therefore, a company can continuously monitor the cybersecurity status of its IT infrastructure. However, vulnerability scanning also has disadvantages. It is not tailored to a specific IT system, so it may be inaccurate, leading to false positives. Additionally, scanning cannot evaluate logical errors in programs and IT systems.

Penetration Testing

Penetration testing is a process in which a real intrusion is simulated to find vulnerabilities and ways to exploit them (Zhang et al., 2025). This helps assess how an attacker could exploit the vulnerabilities in practice. This method allows not only the identification of vulnerabilities but also the determination of the impact of their exploitation, the sensitivity of accessible information, the resilience of IT systems, and potential risks (Sarker et al., 2023).

Penetration testing objectives: to determine how existing vulnerabilities can be exploited, how much information can be extracted, how the IT system responds to an intrusion, and to provide solutions that improve cybersecurity (Zhang et al., 2025; HackerOne, n. d.).

Penetration testing can be performed using different methods. During black-box testing, the tester has no prior information about the IT system. Under such conditions, a real intrusion scenario is simulated. In white-box testing, the tester is provided with complete information about the IT system, allowing for a comprehensive security analysis. Grey-box testing is conducted when the tester is given only partial information about the IT system, such as user access (Alhamed & Rahman, 2023).

Based on the testing environment, there are both external and internal tests. During external testing, services accessible via the internet are evaluated. During internal testing, the security assessment is performed while connected to the system as an authorized user. Web application testing covers the most common web vulnerabilities, API security, and session management testing. Social engineering testing is also applied, during which it is assessed how users respond to deceptive messages, etc. During IT infrastructure testing, the security of networks, servers, VPNs, firewalls, and other components is analyzed (Sarker et al., 2023).

Table 2

Penetration Testing Tools

Tool	Purpose	Distinctive feature
Burp Suite	Web application penetration testing.	Allows interception and modification of requests between the browser and the server, simulating attack scenarios.
John the Ripper	Password security testing.	Checks password strength by attempting to guess passwords using dictionaries and brute-force methods.
Kali Linux	Penetration testing toolkit.	An operating system with numerous pre-installed security tools.
Nmap	Network analysis and scanning.	Identifies which operating systems and services are running on the network, and assists in test planning.
Wireshark	Network traffic analysis.	Shows all network traffic, every data packet sent and received in real time.

**Source: compiled by the author based on hackerone.com*

Penetration testing allows for the identification of potential exploitation of IT systems. The results obtained are tailored to a specific IT system – logical errors that vulnerability scanning tools do not detect can also be evaluated. However, penetration testing also has disadvantages: it cannot cover all systems at once, and it can disrupt organizational operations if poorly planned or executed (Zhang et al., 2025).

Comparison of Vulnerability Scanning and Penetration Testing

Both vulnerability scanning and penetration testing are methods of information security assessment. They aim for the same goal – to identify and reduce information system security risks, but this is done in different ways (Bennouk et al., 2024). Scanning is a process that identifies potential system vulnerabilities. Penetration testing is a deeper analysis during which discovered vulnerabilities are attempted to be exploited to assess their real impact (Zhang et al., 2025).

Vulnerability scanning is designed to detect known security weaknesses in systems using automated tools. This process helps organizations regularly monitor the status of their IT infrastructure, assess risk levels, and prioritize remediation of vulnerabilities (Stevenson, 2025). Scanning results are usually presented in reports that indicate found vulnerabilities and their criticality level.

Penetration testing simulates an intruder's actions. Testers, using both automated and manual methods, aim to prove that a detected vulnerability can be used to gain unauthorized access to data or systems (Sarker et al., 2023). This method allows evaluation not only of technical vulnerabilities but also of human and logical factors, such as the impact of social engineering or improper access management.

Comparing these methods, scanning is more suitable for continuous system monitoring, but the results are less specific. Meanwhile, penetration testing yields more detailed, specific results but requires more time and resources. Therefore, when choosing what to apply, it is essential to consider the situation. Often, both methodologies are used together – scanning enables continuous monitoring of the company's infrastructure security, while penetration tests help assess the true resilience against cyberattacks (Alhamed & Rahman, 2023).

Future Trends

New challenges and opportunities drive the development of more advanced cybersecurity assessment methodologies. Artificial intelligence, cloud technologies, automation, and the integration of security into software development processes influence this (Achuthan et al., 2024). These trends directly affect the future of vulnerability scanning and penetration testing, as well as their application.

The use of artificial intelligence and machine learning in cybersecurity assessment is becoming increasingly relevant (Achuthan et al., 2024). Tools such as “Darktrace” use machine learning algorithms to detect unusual events in network traffic (Devoteam, n.d.). SIEM (Security Information and Event Management) solutions can compare events and distinguish real threats from false alerts. Predictive algorithms help assess which vulnerabilities are most likely to be exploited. The capabilities of artificial intelligence are rapidly expanding, but challenges remain. AI models require large amounts of data for training, and their results are not always sufficiently transparent or explainable (Achuthan et al., 2024).

Cloud services and container technologies are fundamentally changing traditional IT infrastructure, requiring new testing methodologies (Opeyemi, 2025). Tools such as “Prisma Cloud” are designed to assess cloud security by scanning configurations across “AWS”, “Azure”, and “Google Cloud” (Nomios UK, 2023). Cybersecurity vulnerabilities can exist not only in software but also in access management, container images, and container management environments. Some tools analyze infrastructure-as-code files before deployment (Abdiukov, 2024).

Implementing DevSecOps (Development, Security, and Operations) principles means integrating cybersecurity into the entire software development and deployment process (Abdiukov, 2024). Cybersecurity tests are performed not only at the end of a project but at every stage. SAST (Static Application Security Testing) tools analyze code at every code commit, while DAST (Dynamic Application Security Testing) solutions, such as “OWASP ZAP”, automatically test applications after each deployment (Abdiukov, 2024; StackHawk, 2025).

Automation is becoming a necessity for effectively managing the ever-increasing number of vulnerabilities. Continuous scanning platforms scan systems continuously, rather than once per quarter or at another set interval. SOAR (Security Orchestration, Automation, and Response) solutions combine data from firewalls, antivirus programs, SIEM systems, and other security tools. These solutions recognize recurring threat patterns and automatically perform specific actions, such as blocking suspicious IP addresses or disconnecting compromised devices from the network to stop the spread of a cyberattack. Other tools, such as “Ansible”, are designed for configuration management, allowing the automation of server configuration changes, software updates, and security rule implementation (Spacelift, 2025).

In summary, cybersecurity assessment methodologies will become even more automated, integrated into IT system development processes, and supported by artificial intelligence capabilities. Organizations seeking to protect themselves from cyber threats must actively monitor and implement the latest technologies and methodologies.

Conclusions

1. The essence of vulnerability scanning and penetration testing is to detect information system security risks. However, the objectives differ: scanning detects known vulnerabilities, while testing evaluates how they can be exploited.

2. The security testing tools used provide the ability to assess the cybersecurity of IT systems. This is useful for detecting security vulnerabilities and for performing organizational cybersecurity assessments more effectively.

3. After evaluating the effectiveness of the methodologies, it was determined that scanning is faster and helps detect known vulnerabilities, but may produce false results and does not detect logical errors. Penetration testing allows for assessing the real impact of vulnerability exploitation and is tailored to a specific system, but it requires more time, resources, and expertise.

4. After reviewing future trends, it can be stated that cybersecurity assessment methodologies are evolving alongside new technologies: artificial intelligence enables more effective threat detection, and the expansion of cloud technologies requires new testing methodologies. Automation is becoming a necessity in managing the ever-increasing number of cybersecurity vulnerabilities.

References

1. Abdiukov, T. (2024). Automated security testing in DevSecOps pipelines: Integrating AI-based vulnerability discovery and compliance validation. *World Journal of Advanced Research and Reviews*, 22(01), 2083-2093. <https://doi.org/10.30574/wjarr.2024.22.1.1083>
2. Achuthan, K., Ramanathan, S., Srinivas, S., & Raman, R. (2024). Advancing cybersecurity and privacy with artificial intelligence: current trends and future research directions. *Frontiers in Big Data*, 7, 1497535. <https://doi.org/10.3389/fdata.2024.1497535>
3. Alhamed, M., & Rahman, M.M.H. (2023). A Systematic Literature Review on Penetration Testing in Networks: Future Research Directions. *Applied Sciences*, 13(12), 6986. <https://doi.org/10.3390/app13126986>
4. Bennouk, K., Ait Aali, N., El Bouzekri El Idrissi, Y., Sebai, B., Faroukhi, A.Z., & Mahouachi, D. (2024). A Comprehensive Review and Assessment of Cybersecurity Vulnerability Detection Methodologies. *Journal of Cybersecurity and Privacy*, 4(4), 853-908. <https://doi.org/10.3390/jcp4040040>
5. Devoteam. Darktrace: The Future of AI-Powered Cybersecurity Solutions <https://www.devoteam.com/expert-view/darktrace-future-of-cyber-security/>
6. hackerone. 7 Pentesting Tools You Must Know About <https://www.hackerone.com/knowledge-center/7-pentesting-tools-you-must-know-about>
7. Jagtap, P.S. (2020). Vulnerability Scanning. <https://rjwave.org/ijedr/papers/IJEDR2001037.pdf>
8. Nomios UK. (2023). What is Palo Alto Networks' Prisma solution? <https://www.nomios.co.uk/news-blog/what-is-palo-alto-networks-prisma-solution/>
9. Opeyemi. (2025). AI + Cloud + Cybersecurity: The 2025 Trends You MUST Know <https://www.techternet.com/post/ai-cloud-cybersecurity-the-2025-trends-you-must-know/>
10. Sarker, K.U., Yunus, F., & Deraman, A. (2023). Penetration Taxonomy: A Systematic Review on the Penetration Process, Framework, Standards, Tools, and Scoring Methods. *Sustainability*, 15(13), 10471. <https://doi.org/10.3390/su151310471>
11. Spacelift. (2025). Configuration Management with Ansible. <https://spacelift.io/blog/ansible-configuration-management>
12. StackHawk. (2025). The Best Practices for Using OWASP ZAP in Web API Security <https://www.stackhawk.com/blog/guide-to-zap-application-security-testing/>
13. Stevenson, R. (2025). 15 Popular Vulnerability Scanning Tools to Consider <https://drata.com/blog/vulnerability-scanning-tools>
14. Zhang, W., Xing, J., & Li, X. (2025). Penetration Testing for System Security: Methods and Practical Approaches. *arXiv*. <https://arxiv.org/html/2505.19174v1>

INTEGRATING SPATIAL.IO WITH MOODLE: A CASE STUDY ON ENHANCING STUDENT ENGAGEMENT THROUGH IMMERSIVE 3D VIRTUAL LEARNING ENVIRONMENTS

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Abstract

The expansion of modern online education has revealed the limitations of traditional online learning platforms in promoting active student engagement. While these traditional 2D learning platforms, such as the Moodle system, are essential for lectures, they often lack some social and interactive features required for effective student engagement and participation during classes. These limitations often result in reduced interaction, participation, and motivation of students in remote learning environments. This study examines the incorporation of Spatial.io, a 3D virtual learning platform from the Metaverse, as a supplementary educational tool alongside Moodle to improve student collaboration and engagement during lectures. A twin-window framework is proposed as a solution, allowing access from the Moodle system to the virtual classroom via an embedded URL link. This research paper is based on a practical case study conducted during a two-month internship at the Extended Reality Laboratory (XR Lab) of the University of La Laguna (Spain), where a virtual classroom was developed for Lithuania Business College (LTVK). This study examines how immersive technologies through personalized environments, avatar integration, spatial communication, and digital content sharing can improve interaction, collaboration, and engagement, thereby transforming passive online learning into active participation. The findings of this research suggest that integrating a metaverse platform into a traditional learning system can significantly improve student participation and engagement in online classes.

Introduction

The coming of the COVID-19 pandemic made remote learning a fundamental component of modern education. Learning platforms such as Moodle, along with communication tools like Google Meet, Zoom, and Microsoft Teams, became essential tools for remote lectures delivered by institutions while maintaining the academic calendar. Despite their usefulness, these platforms often result in passive learning experiences, where students consume lectures from lecturers without actively participating.

One major challenge that most institutions face in online learning is maintaining students active during lectures rather than just passive content consumers. In most online classes, students attend lectures with their cameras and microphones turned off, which reduces their level of interaction, making them observers rather than participants. This negatively affects their motivations and limits knowledge retention. As a result, this brings to a crucial point the need for more interactive and immersive learning environments to encourage students to participate actively during lectures.

In recent years, metaverse technologies have transformed the education sector with the introduction of 3D virtual classrooms as innovative solutions. Metaverse platforms like Spatial.io allow users to create 3D environments that allow participants to connect and interact through avatars, collaborate, communicate in real-time, and share experiences. These environments aim to replicate physical classrooms while also providing advanced interactive features that traditional video communication tools cannot offer.

As digital education evolves, the integration of immersive technologies into traditional learning systems becomes increasingly important. A research by Meliande et al. (2024) introduced a new concept of education, Meta-education, which emphasised the use of 3D worlds as a solution to help students learn and participate better during lectures instead of old-fashioned 2D platforms. Similarly, Beal University (2025) emphasizes that most modern online learning platforms now provide sophisticated features that improve the educational experience while also improving technical skills required in today's workplace. These technologies keep students exposed to innovative tools such as virtual reality, artificial intelligence, Internet of Things, and human-computer interface (Meliande et al., 2024). As a result, integrating a 3D virtual environment, such as Spatial.io, as a twin-window learning extension into Moodle can provide a stronger sense of presence while also significantly improving student engagement and participation during lectures compared to using a traditional video conferencing tool.

Relevance of the Article. This article addresses the challenges of students' participation in remote 2D learning environments. Although Moodle and Google Meet are useful for online classes, they lack interactive features that support active learning. This study contributes to existing research by investigating how immersive 3D learning platforms can improve students' engagement and participation in online lectures.

Problem of the Article. The main problem identified in this study is a lack of active participation and interaction among students in 2D learning environments. Although platforms like Moodle and Google Meet are useful for course material delivery and lectures, they are limited, which makes them not supportive of active students' participation. These limitations reduce students' involvement during lectures, leading to passive learning behaviour, raising the question of how digital learning environments can be improved to promote active participation and meaningful interaction.

Object of the Article. The object of this research is the integration of Spatial.io within Moodle as a 3D virtual learning environment designed to support student engagement.

Goal of the Article. The goal of this research is to evaluate the effectiveness of integrating Spatial.io as a 3D virtual learning platform within Moodle to improve student participation and engagement during online lectures.

Objectives of the Article:

1. To analyse the limitations of traditional 2D online learning platforms;
2. To use an existing 3D virtual classroom created in Spatial.io during the internship;
3. To evaluate the benefits and challenges of integrating immersive virtual environments into online classes.

Background. The Metaverse and Student Engagement. Traditional 2D learning platforms have significantly impacted education by increasing flexibility and allowing students to access lectures from anywhere. However, because of their use of static content, these 2D platforms limit student participation (Hrastinski, 2008). Immersive learning environments, on the other hand, have gained popularity over these years as innovative educational tools, enabling collaboration and engagement through real-time communication and shared digital spaces that allow students to interact (Radianti et al., 2020).

Metaverse 3D environment technologies enhance interaction by enabling social connection through customized avatars. According to research, student participation in lectures is a key factor in active learning because it directly influences motivations and knowledge retention (Kahu, 2013). Unlike a standard Google Meet class, where students often remain passive behind black screens, the use of an avatar in 3D virtual classrooms creates a stronger sense of presence. Makransky and Petersen (2019) suggest that when a student is represented in a 3D body in a classroom, they feel more involved and less like they are just watching a video like passive observers. In the design of the LTVK Lecture Room, avatars play a vital role in creating a sense of physically sitting in the college while also enhancing focus and motivation.

From Traditional Learning Management Systems (LMS) to Meta-Education

The goal for adopting immersive technologies in higher education aims to improve students' interaction and engagement during lectures (Samala et al., 2025). Unlike traditional platforms, these technologies encourage active participation rather than just passive content consumption. Integrating these immersive environments into education represents a shift from simple online classes to what was previously referred to as meta-education.

Research by Livingstone et al. (2008) on their SLOODLE platform integrated within Moodle shows how immersive environments can be used as an extension to traditional learning systems. Similarly, platforms like Spatial.io can be used alongside Moodle to provide virtual spaces for discussions and collaboration during learning activities. This shows that these environments have the potential to improve student engagement, motivation, and knowledge retention by providing experiential learning opportunities that are difficult to obtain in traditional classrooms (Latif & Kamrozzaman, 2025).

Research Methodology

This research is a practical case study conducted during a two-month internship at the University of La Laguna Extended Reality Laboratory (XR Lab) in Spain. The study employs an exploratory action research design that follows an action learning approach, progressing from theoretical analysis to practical implementation of an immersive learning environment for Lithuania Business College (LTVK).

1. **Research Design.** This research adopts a qualitative approach supported by a preliminary quantitative test using an Emotiv EEG-based tool to examine student engagement in online learning environments. The design is structured into four distinct development stages:

1.1. **Theoretical Analysis and Platform Selection:** This stage involves a literature review on student engagement, immersive learning environment and metaverse technologies. Student engagement during lectures is widely recognized as a key factor influencing learning outcomes in digital environments (Kahu,

2013). In addition, a comparative study on three immersive platforms; Spatial.io, Twinmotion, and Meta Horizon was conducted to determine the most suitable platform to use for the development of the 3D virtual classroom. This comparative analysis was conducted based on usability, accessibility, technical requirements and educational applicability of each platform.

1.2. Implementation and System Integration: In this stage, Spatial.io was the selected platform due to its ease of use, accessibility across devices and suitability for educational use without requiring specialized hardware. The LTVK 3D classroom was developed to stimulate a real lecture environment, incorporating avatar-based interaction and real-time communication. Integrating Spatial.io into the Moodle LMS is proposed through a Twin Window framework, where a permanent URL link to the virtual classroom would be embedded within the course page, enabling students to access the virtual environment from the Moodle interface.

1.3. Preliminary Evaluation: This stage focused on testing the environment functionality, platform usability (navigation, accessibility and interaction), and user presence within the virtual classroom environment. This aligns with previous research highlighting the importance of interaction and presence in immersive learning environments (Makransky & Petersen, 2019).

1.4. Synthesis of Insights: Based on the preliminary evaluation, findings were analyzed to identify usability strengths and challenges of the virtual classroom. These insights contributed to better understanding of how immersive 3D environments can enhance student engagement, leading to the proposal of an integration framework as a solution to improve students' interaction and participation during online lectures.

2. Evaluation Method

To evaluate the effectiveness of the proposed framework, two main methods were applied:

2.1. Comparative Platform Analysis: A systematic comparison was conducted in two stages. The first stage involved evaluating immersive 3D platforms (Spatial.io, Twinmotion, and Meta Horizon) based on usability, hardware independence, and educational applicability. The results, presented in Table 1 supported the selection of Spatial.io as the most suitable platform.

The second stage involved a comparison between Spatial.io and traditional 2D platforms (presented in Table 2), demonstrating that 3D environments offers enhance interactive features, making them more suitable for immersive educational environments compared to 2D systems.

2.2. Cognitive Engagement Pilot (EEG): A preliminary quantitative test was conducted using an Emotiv 5-channel EEG headset to measure the user's emotional state and focus. This device tracked real-time mental states such as stress level, attention, focus, and fatigue. This provided initial biometric insights into how users interact emotionally with the 3D virtual environment and their level of engagement during the experience.

Platforms Analysis and Selection

Four distinct immersive platforms were theoretically studied during the internship: Spatial.io, Twinmotion, Meta Horizon, and Emotiv. Based on the outcome needed to develop the virtual classroom, three of the distinct platforms were compared to determine the usability, accessibility, and relevance to education. Spatial.io was identified as the most suitable platform due to its ease of use and availability without requiring specialized hardware. Table 1 compares the three platforms.

Table 1

Comparison Analysis of Immersive Platforms

Platform	Usability and Accessibility	Technical Requirements	Primary Strength	Limitation	Educational Use
Spatial.io	High usability; accessible via desktop, mobile, and VR devices	Low to moderate; no specialized hardware required	Easy to use and LMS integration	Limit participants on a free plan and limit editing features	Virtual classrooms; collaborative and interactive learning
Twinmotion	Moderate usability; requires prior knowledge for optimal use	High-performance hardware is required for rendering	Produce high visual realism and light effects	Requires high-performance hardware, not designed for real-time collaboration	Architectural visualization and 3D presentation

Meta Horizon	Moderate usability; dependent on VR ecosystem	Requires VR headset and compatible hardware	Strong social interaction	Regional connectivity restrictions and headset dependency	Interactive gaming and social collaboration
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**Source: compiled by the author*

The comparison of Table 1 above shows that Spatial.io provides the best balance between accessibility and functionality. Each tool had its strengths and weaknesses in helping create a virtual environment. Unlike other platforms, Spatial.io does not require high-performance hardware or the necessity of a VR headset, which makes it suitable for general usage and for education. The platform can be accessed either from a web browser or its mobile app. The platform supported educational use cases such as virtual classrooms, exhibition spaces, and informal student gatherings. However, it also has limitations for options like complex customization, spatial design to be implemented and limiting participants in a free plan.

Table 2

2D and 3D platforms Comparison based on their characteristics and requirement

Characteristics	Google Meet	Zoom	Microsoft Teams	Spatial.io
Voice Communication	✓	✓	✓	✓
Video Communication	✓	✓	✓	✓
Screen Sharing	✓	✓	✓	✓
Customizable Avatars	✗	✗	Limited	✓
Customizable Environments	✗	✗	Limited	✓
Spatial Audio	✗	✗	✗	✓
Audio Subgroups	✗	✗	✗	✓
Free Tier Available	✓	✓	✓	✓
Open source	✗	✗	✗	✗
Interoperability	✓	✓	✓	✓
Hardware Independence	✓	✓	✓	✓

**Source: compiled by the author base on Meliande et al. (2024)*

Comparing the characteristics of traditional 2D platforms with the 3D platforms, such as Spatial.io, Table 2 shows that immersive environments allow for a more relaxed and natural presence.

Framework: Twin Window Integration Model

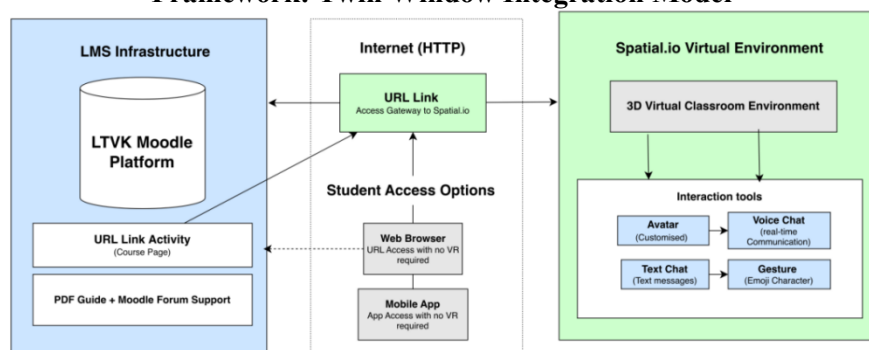


**Fig. 1. System integration framework:
LTVK Moodle linked to Spatial.io virtual classroom via permanent URL**

**Source: compiled by the author*

The proposed framework illustrates the integration of Spatial.io as a Twin Window to the Moodle system through a URL-based access gateway. This approach shows that any student connected to a course activity can easily transit from the Moodle platform to the virtual environment through the URL link provided on that course activity without requiring any backend administrative assistance. Students can access the virtual environment either through a web browser or the mobile app.

Case Study: LTVK Virtual Classroom

The 3D virtual classroom created in Spatial.io during the two-month internship is used as a practical case study for the implementation of the architectural design of the proposed framework.

To adapt the 3D environment for LTVK students, the implementation followed a strategic workflow focused on accessibility and ease of use within the existing Moodle system. Instead of requiring expensive server-side development or administrator access, the integration is done through a simple permanent URL link. In this framework, the lecturer can create a link activity at the top of their Moodle course page, allowing students to click on the link and be instantly transported into the LTVK 3D Classroom.

Inside the virtual classroom, students have access to their avatars, which they can personalized at their own will, enabling real-time communication, voice chat, text chat, and gesture use for interaction during lectures. The platform can be accessed via a web browser and mobile application, eliminating the need for expensive VR headsets. The system allows a zero-install approach, and students as well as lecturers can access the platform easily, removing the need for technical backend support. In the virtual classroom, the lecturer can present course materials as a PowerPoint presentation or video. To ensure students' smooth navigation and gestures during lectures, the following table presents shortcuts for navigation.

Table 3

Navigation and Control Keyboard Shortcuts

Characteristics	Keyboard Commands	Functionality
Movement	W, A, S, D	Move forward, left, backward and right respectively
Mobility	F, Shift/Space	F to sit, hold Shift to run and space twice to jump
Camera	Q, E	Rotate the camera left and right respectively
Reactions	C, Y, N	For Clap, yes, and No during a lecture respectively
Animation	1 - 5	To trigger customized avatar emotes and animations

**Source: compiled by the author*

Table 3 above presents some shortcuts required for movement and camera controls within the classroom. These navigation controls are designed to ensure ease of use for students with no prior experience in virtual environments and active participation during lectures. This also contributes to the accessibility and usability of the platform during lectures. To support the smooth navigation for the students, a more detailed short PDF guide will be available explaining the basic controls for movement and reactions.

Result

The implementation of the virtual classroom demonstrated that Spatial.io provides an accessible and interactive learning environment. Students can fully participate in real-time communication as in a physical classroom, collaborate through avatars and interact with multimedia content.

The platform supported educational use cases such as virtual classrooms, exhibition spaces, and informal student gatherings. However, it has certain limitations that were identified. These include restricted customization options for complex spatial design and the absence of advanced editing features. Despite these constraints, the platform proved effective for creating an interactive and accessible virtual classroom environment.



Fig. 2. LTVK Virtual Classroom designed on Spatial.io platform (view 1)

**Source: compiled by the author*



Fig. 3. LTVK Virtual Classroom designed on Spatial.io platform (view 2)

**Source: compiled by the author*

Figures 2 and 3 show the LTVK 3D virtual classroom created in Spatial.io. The environment includes interactive elements such as a presentation screen, framed pictures, seats for students, and avatar positioning, which support real-time collaboration during lectures. With the camera on the avatar, we can see the surroundings of the classroom.



Fig. 4. Avatar-Based Interaction within a workshop presentation Virtual Classroom during

**Source: Meliande et al. (2024), Meta-Education: A Case Study in Academic Events in the Metaverse*

Figure 4 above from the Meliande et al. (2024) workshop shows an example of an interactive classroom design in Spatial.io where the lecturer displays his lectures in the form of PowerPoint and students connect, attend the lecture, and interact in real-time. Each student is represented with an avatar and the student's name

on the avatar's head for easy identification. The virtual classroom feels natural as a physical class, which creates a stronger sense of presence compared to traditional online platforms. This setting encouraged students to be active during lectures.

Discussion

While a full student survey is previewed for future work, a preliminary test was conducted to test the cognitive engagement aspect of the room using an Emotiv 5-channel EEG headset. This device is used to measure the emotional state and focus of a user. It was used to measure the emotive state and focus of my supervisor while navigating the created virtual classroom. It allows real-time tracking of mental states such as attention, stress, and interest, providing initial evidence that 3D environments can be monitored to adapt to a student's emotional needs.

The findings of this research highlight several advantages of using immersive virtual environments in education. First, the use of avatars, which reduces fatigue commonly associated with traditional videos from 2D platforms. The use of avatars in Spatial.io allows for a more relaxed and natural learning experience, allowing students to interact and engage naturally as in a real physical class.

Another important aspect is the sense of presence created through spatial interaction. The use of spatial audio and avatar-based communication allows students to experience a form of virtual proximity in which they can approach each other, engage in discussions, and interact in a way like a real-life classroom. This helps to increase engagement and participation.

Additionally, Susilana, R. et al. (2024) found that students reported high satisfaction, usefulness, and ease of use when using Spatial.io. This shows that immersive virtual environments can offer engaging and effective learning opportunities, thereby increasing academic achievement.

The transition from passive to active learning is so evident. Traditional platforms like Moodle are often used for just reading, submitting assignments, and downloading lectures, which makes it passive. In contrast, 3D platforms offer the ability for students to personalize their avatars and to move and interact in lectures, which supports active learning processes.

Design considerations are also important to consider during the creation of a virtual classroom. This is because research has revealed that smaller, more focused virtual spaces are more effective than large environments. While large virtual halls can be visually appealing, smaller discussion areas encourage better communication, collaboration, and visibility of shared content among students.

Overall, the integration of Spatial.io into online learning environments has a high potential for increasing student engagement.

Conclusions

This study demonstrates how integrating immersive 3D virtual environments with traditional learning systems can significantly enhance student engagement. While Moodle provides essential academic structure, it lacks interactive features necessary for active learning.

The use of Spatial.io introduces a more engaging and collaborative learning experience through avatar-based interaction and real-time communication. The proposed framework integrating Spatial.io alongside the Moodle system offers a simple and accessible solution to low student engagement during lectures by improving their participation, communication, and overall learning experience.

Spatial.io may create immersive and engaging experiences, but it also has some limitations that make it challenging to work freely, especially from the creator side. One key limitation is the limited options for customizing an environment in the free plan. Also, in a free plan, the number of students accessible at the same time is limited compared to a paid plan. While the platform is hardware-independent, it still requires a stable internet connection and a modern web browser, which may be a barrier for students with older equipment. The platform is the easiest tool to use and is suitable for creating a collaborative virtual classroom with all the necessary features for students and lecturers to gain access. With its browser-based interface, it enables quick setup of any 3D classrooms where users can access them in the form of an avatar, use the built-in audio feature from the platform for real-time voice chat communication, and have different gestures for interaction and the possibility to share media.

With all the advantages that immersive technologies such as Spatial.io offer, future research should focus on investigating long-term implementation, scalability of these platforms, and the integration of emerging technologies such as artificial intelligence into the Moodle system to enhance the learning experience for students.

References

1. Meliande, R., Ribeiro, A., Arouca, M. G., Amorim, A. M., Pestana, M. C., & Vieira, V. (2024). Meta-education: A case study in academic events in the metaverse. In *Simpósio Brasileiro de Sistemas Colaborativos (SBSC)*, 28-41). SBC.
2. Beal University. (2025). *10 Benefits of Online Learning: How Flexibility Turns into Real Progress*. <https://beal.edu/benefits-of-online-learning/>
3. Hrastinski, S. (2008). *Asynchronous & Synchronous E-Learning*. *Educate Quarterly*, 31, 51-55.
4. Radianti, J., Majchrzak, T. A., Fromm, J., & Wohlgenannt, I. (2020). A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda. *Computers & education*, 147, 103778.
5. Kahu, E. R. (2013). Framing student engagement in higher education. *Studies in Higher Education*, 38(5), 758-773. <https://doi.org/10.1080/03075079.2011.598505>
6. Makransky, G., & Petersen, G. B. (2019). Investigating the process of learning with desktop virtual reality: A structural equation modeling approach. *Computers & Education*, 134, 15-30.
7. Samala, A. D., Rawas, S., Rahmadika, S., Criollo-C, S., Fikri, R., & Sandra, R. P. (2025). Virtual reality in education: global trends, challenges, and impacts – game changer or passing trend? *Discover Education*, 4(1), 229.
8. Livingstone, D., Kemp, J., & Edgar, E. (2008). From multi-user virtual environment to 3D virtual learning environment. *ALT-J*, 16(3), 139-150.
9. Latif, A. A., & Kamrozzaman, N. A. (2025). Reimagining student engagement in metaverse-flipped classroom using Spatial.io. *International Journal of Research and Innovation in Social Science*. <https://doi.org/10.47772/IJRISS.2025.909000819>
10. Susilana, R., Dewi, L., & Rullyana, G. (2024). Exploring student perceptions of virtual learning experiences: A study of the use of the spatial. io 3D metaverse platform. *Journal of Education Technology*, 8(4), 673-683.
11. Uddin, M. M., Karim, A., Islam, M. S., Hasan, S., Dipu, H., Islam, M. R., & Azam, S. (2025). Metaverse on education: Reviewing opportunities and challenges. *IEEE Open Journal of the Industrial Electronics Society*. <https://doi.org/10.1109/OJID.2025.3592612>
12. Dede, C. (2009) Immersive Interfaces for Engagement and Learning. *Science*, 323, 66-69. <http://dx.doi.org/10.1126/science.1167311>
13. Seock, Y. K., & Shin, J. (2025). Beyond the classroom walls: Leveraging virtual platform to enhance student engagement and learning. *International Journal of Fashion Design, Technology and Education*, 1-14.
14. Illi, C., & Elhassouny, A. (2025). Edu-metaverse: A comprehensive review of virtual learning environments. *IEEE Access*.
15. Mukred, M., Mokhtar, U. A., Hawash, B., AlSalman, H., Zohaib, M., & Abuzawayda, Y. I. (2025). Exploring the potential of metaverse adoption in higher education: A diffusion of innovation model approach to enhancing student engagement. *SAGE Open*, 15(3), 21582440251363668.

RAINWATER HARVESTING ENGINEERING SYSTEMS: SUSTAINABLE WATER MANAGEMENT SOLUTIONS

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Keywords: rainwater harvesting, engineering systems, IoT, sustainability, water scarcity, hydraulic calculations, cybersecurity.

Abstract

Rapid urbanization and climate change drive an urgent transition toward decentralized infrastructure models in response to escalating global water scarcity. Rainwater harvesting systems (RWHS) are increasingly recognized as a key engineering intervention for sustainable urban water management. This article provides a comprehensive evaluation of decentralized harvesting infrastructure, emphasizing critical mechanical and hydraulic components, including initial runoff diversion facilities and volumetric storage optimization. Furthermore, the transformative integration of the Internet of Things (IoT) is explored as a mechanism to enable real-time predictive management and continuous water quality monitoring. To complement these technical assessments, empirical survey data collected from 32 respondents are presented to evaluate public acceptance and technological readiness. Despite a demonstrably high baseline of environmental awareness among the sample, the empirical results reveal a pronounced "trust gap" precipitated by the inherent cybersecurity vulnerabilities of digitalized water networks. Consequently, it is concluded that embedding a "Security by Design" framework within modern rainwater harvesting architectures is paramount for fostering widespread institutional and public adoption. The investigation highlights that successful deployment necessitates a holistic configuration that balances mechanical engineering precision with robust digital safeguards to support the emerging paradigm of "sponge cities".

Introduction

Relevance of the Article. Rapid urbanization and climate change are fundamentally changing the global water management landscape. Traditional centralized water supply systems, developed for the 20th century, are increasingly unable to meet the rapidly changing water needs of modern society (Noriega et al., 2026). As highlighted by Lepcha et al. (2024), rainwater harvesting systems (RWHS) have evolved from a niche ecological alternative to a key pillar of sustainable urban infrastructure. This shift is necessary because municipalities struggle to address localized water shortages and surges in runoff during extreme rainfall events.

Decentralized stormwater management systems serve a dual purpose: they reduce reliance on energy-intensive municipal wastewater systems and act as essential buffers against urban heat island effects and flash floods in densely populated cities (Silva et al., 2021).

The reduction of municipal infrastructure pressure is achieved by capturing and utilizing precipitation at the source for non-potable demands (such as toilet flushing and landscape irrigation). This mechanism intercepts runoff before it enters public sewer networks, directly decreasing the aggregate volume of water that municipal utilities must mechanically pump, aerate, and chemically treat at centralized facilities - processes that represent a major portion of a city's electrical grid energy consumption. Furthermore, by retaining peak stormwater volumes during heavy downpours, these decentralized systems act as distributed hydraulic buffers. This micro-storage capability dampens the sudden hydraulic surges ("peak flows") that overwhelm storm sewers, effectively mitigating the structural frequency of urban flash flooding without requiring costly upgrades to centralized underground pipe diameters.

Concurrently, the mitigation of the urban heat island (UHI) effect is driven by basic thermodynamic and microclimatic processes. Traditional dense urban configurations rely heavily on dark, impermeable surfaces (such as asphalt and concrete) that possess low albedo and high thermal mass, causing them to absorb solar radiation and radiate sensible heat into the lower atmosphere. Rainwater harvesting networks counteract this thermal accumulation by redirecting stored water to support urban green infrastructure, including living green roofs, rain gardens, and bioswales. This continuous water supply maximizes the rate of evapotranspiration - the combined process where moisture is evaporated from the soil surface and transpired by plants. Because water has a remarkably high latent heat of vaporization, the phase transition from liquid to water vapor absorbs a substantial amount of ambient thermal energy from the surrounding air. This cooling effect lowers the local microclimatic temperature, decreases surface thermal storage, and directly reduces the structural intensity of the urban heat island effect in dense building environments. The practical application of these systems is best understood by looking at diverse global climatic environments. Problem of the Article. Inadequate engineering design and the absence of cybersecurity measures in digital rainwater harvesting systems reduce operational efficiency, threaten water quality, and undermine infrastructure reliability.

For instance, the application of "Sponge City" concepts is tested in high-density, rapidly developing urban environments where traditional "grey" infrastructure (deep concrete sewers) is often failing (Kłopotek & Ociecek et al., 2025). A critical benchmark for how Low Impact Development (LID) measures can be adapted

for tropical, high-precipitation environments is found in Conakry City, Republic of Guinea. In Conakry, research demonstrates that the adoption of decentralized RWHS, when combined with permeable paving and bio-swales, acts as a primary flood defense mechanism (Bah et al., 2023). From an engineering perspective, this case proves that the Sponge City concept is a philosophy of "topographic intelligence" where grading the terrain slows water down at the point of impact and infiltrates it into the ground, effectively reducing the flood risks.

Contrasting this tropical flood-mitigation model, the application of smart RWHS in arid climates - specifically residential developments in Saudi Arabia - offers a different lens on infrastructure necessity. In water-stressed regions, an RWHS functions as the core component of a circular water economy rather than just a flood mitigation tool (AlGhamdi & Sharma, 2022). In these settings, automated resource optimization through smart management is essential to balance the water budget. The residential IoT architecture deployed in Saudi Arabia utilizes a sophisticated array of sensors to combat extreme environmental stressors, such as heat and sand accumulation, which can compromise system accuracy. By linking storage tanks to irrigation systems via digital control logic that accounts for soil saturation, weather forecasts, and tank levels simultaneously, water wastage is minimized (AlGhamdi & Sharma, 2022).

These cases confirm that whether an RWHS is deployed for tropical flood resilience or arid conservation, modern stormwater assets are highly complex, multidisciplinary systems that integrate hydraulic engineering with digital technologies. As the world moves toward "smart city" models, the integration of the Internet of Things (IoT) enables vital real-time monitoring. However, this digitalization also poses an engineering paradox: while digital controls increase efficiency, they expand the infrastructure's attack surface (Bello et al., 2022). If systems are connected to the Internet without robust security measures, they are vulnerable to unauthorized access, which can compromise water quality and physical integrity (Raza & Moazeni et al., 2025). This intersection requires an engineering balance that reconciles water storage chemistry with cyber-physical protection metrics (Gao et al., 2023).

Object of the Article. The engineering processes, hydraulic components, and digital management architectures of decentralized urban rainwater harvesting systems.

Aim of the Article. To analyze the mechanical precision and IoT-based optimization of rainwater harvesting systems in order to propose a secure-by-design framework that balances hydraulic efficiency with digital infrastructure resilience.

Objectives:

1. Evaluate the core engineering requirements for hydraulic efficiency;
2. Investigate the role of IoT in optimizing system performance;
3. To propose a "Security by Design" framework that mitigates the risks associated with digitalization.

Method of research: Case study analysis and empirical quantitative research. To assess public acceptance, digital literacy, and trust regarding smart water infrastructure, a quantitative survey was executed. Empirical data were gathered from 32 higher education students in Lithuania (N = 32) using a convenience sampling methodology. The survey instrument evaluated three core axes: public awareness of water conservation priorities, consumer trust in automated infrastructure, and specific apprehensions regarding data privacy and network cybersecurity. The resulting datasets reveal a distinct "trust gap" that impacts the adoption rates of digitalized water management technologies.

The Mathematical Foundation: Calculating Hydraulic Efficiency

To shift from conceptual frameworks to exact physical design, systems must be built upon the empirical rigor of hydraulic modeling. Accurately sizing a system determines whether a decentralized installation functions as a sustainable urban asset or an operational liability.

The total predictable annual water yield (R) of an urban catchment surface is determined by the fundamental hydrologic equation:

$$R = P \cdot A \cdot \eta \cdot C$$

Where:

R = Annual rainwater yield (m³/year).

P = Average annual precipitation (mm).

A = Available catchment surface area (m²)

η = System hydraulic efficiency factor (dimensionless, typically calibrated between 0.8 and 0.9 to account for minor filter losses).

C = Runoff coefficient of the catchment material (dimensionless).

The most critical and variable factor within this model is the runoff coefficient (C). The designer's selection of surface materials heavily influences this value; for instance, a smooth, impermeable metal roof exhibits a high coefficient ($C \approx 0.90 - 0.95$), whereas an extensive green roof can drop to a low coefficient ($C \approx 0.30 - 0.50$) because its living substrate retains most of the initial rainfall for biological uptake.

Rigorous engineering design requires modeling the site-specific Intensity-Duration-Frequency (IDF) curves rather than relying on flat regional averages. Sizing the physical guttering networks and volumetric first-flush diverters must be calibrated against the 95th percentile storm event. If the gutter or diversion systems are undersized, water completely bypasses the storage asset during high-intensity flash events - precisely when capturing runoff is most critically needed for urban flood mitigation. By applying this hydrologic equation alongside localized stormwater IDF data, engineers can precisely calculate optimal storage tank volumes to guarantee building autonomy during dry spells (Maniquiz-Redillas et al., 2022).

The Science of Catchment: First-Flush Diverters

The effectiveness of any rainwater harvesting system (LRVSS) is fundamentally dependent on the quality of the water entering the reservoir. Precipitation in urban landscapes is rarely “pure”. As rainwater enters the atmosphere and meets collection surfaces such as roofs, gutters and downspouts, it accumulates a wide range of pollutants. These pollutants include atmospheric pollutants (particulate matter), biological waste (bird droppings, plant debris) and physical debris. The phenomenon of “first run” refers to the portion of the initial runoff that contains the highest concentration of pollutants accumulated during previous dry periods (Maniquiz-Redillas et al., 2022).

According to a comprehensive bibliometric review by the *First Flush Stormwater Runoff in Urban Catchments: A Bibliometric and Comprehensive Review* (Maniquiz-Redillas et al., 2022), the effective management of the first flush is the most critical determinant of water quality in decentralized harvesting. Without a mechanism to isolate this initial, highly contaminated volume, the stored water becomes a breeding ground for microorganisms and heavy metal accumulation. The engineering of a first-flush diverter is therefore not an optional feature but an essential component of public health protection.

Mechanically, a first-flush diverter functions on the principle of volumetric isolation. As rain begins to fall, the initial runoff – containing the “dirtiest” water – is directed into a separate bypass chamber. Once this chamber is filled to a pre-calculated capacity, a floating ball or a similar mechanism seals the bypass, allowing subsequent, cleaner rainwater to flow into the primary storage reservoir. The sizing of this diverter is an exact science; too small, and the contaminated water enters the tank; too large, and valuable water is wasted.

Table 1

Comparison of First-Flush Diversion Effectiveness by Catchment Material

Material Type	Typical Runoff Coefficient	Recommended Diverter Volume per m ²	Pollution Mitigation Rate
Metal Roofing (e.g., Galvalume, Steel)	High 0.90 - 0.95	Moderate 0.5 - 1.0 L/m ²	High 60 - 80%
Concrete & Clay Tiles	Moderate-High 0.80 - 0.90	High 1.0 - 1.5 L/m ²	Moderate-High 50 - 70%
Asphalt Shingles	Moderate 0.65 - 0.80	High 1.2 - 2.0 L/m ²	Moderate 40 - 60%
Green Roofs	Low 0.20 - 0.50	Low <0.5 L/m ²	High 70 - 90%
Pervious Pavements	Low 0.15 - 0.40	Low <0.3 L/m ²	Very High 80 - 95%+
Impervious Concrete/Paving	High 0.85 - 0.95	High 1.5 - 2.5 L/m ²	High 70 - 85%

*Source: Synthesized from recent research on roof runoff quality (Gao et al., 2023; Li et al., 2021).

Analyses of hydraulic design parameters show that designers must account for the specific material of the catchment surface. As highlighted in the comprehensive review *First Flush Stormwater Runoff in Urban Catchments: A Bibliometric and Comprehensive Review* (Maniquiz-Redillas et al., 2022), porous surfaces – such as aged bitumen roofs – possess a higher retention capacity and may release pollutants over a longer

duration, thereby necessitating a larger first-flush volume compared to non-porous metal roofing. Furthermore, the length of the antecedent dry period is a major variable. In regions with long dry spells, the accumulation of dust and debris is exponentially higher, requiring the diverter to be sized for a "worst-case scenario" rather than an average rainfall event.

This engineering precision is vital for the longevity of the storage system. As the study *Evolution of water quality in rainwater harvesting systems during long-term storage in non-rainy seasons* (Gao et al., 2023) suggests, the degradation of water quality inside the tank is heavily influenced by the initial organic load. If the first-flush diverter fails, the organic matter introduces biological oxygen demand (BOD) into the system, leading to anaerobic conditions and rapid water spoilage. Therefore, the diverter acts as the first, and most important, line of defence. Designers must prioritize durable, corrosion-resistant materials for these diverters to ensure they do not become maintenance burdens, as failure in this component compromises the entire system's viability.

As demonstrated in Table 1, the effectiveness of first-flush diversion varies significantly depending on the catchment surface material, which directly influences the volume of contaminants diverted from the storage tank. Surfaces with higher porosity or surface roughness, such as concrete or unglazed tiles, tend to accumulate a greater load of particulate matter and atmospheric pollutants compared to smooth, impermeable surfaces like coated metal (Gao et al., 2023). Consequently, the engineering design of the diversion mechanism must be precisely calibrated to these surface characteristics; failing to align the diversion volume with the catchment substrate can result in either excessive water loss or, conversely, inadequate pollutant removal. By optimizing these parameters based on the catchment material, operators can achieve a higher baseline of water quality before the water enters the storage asset, thereby reducing the burden on subsequent filtration and treatment stages.

The "Sponge City" Concept in Urban Planning

The integration of RWHS into the urban fabric is increasingly aligned with the 'Sponge City' concept - a paradigm shift in landscape architecture and civil engineering that views urban surfaces as absorptive sponges rather than impervious, runoff-generating planes. As demonstrated by Bah et al. (2023), the Sponge City approach prioritizes Low Impact Development (LID) measures over traditional 'hard' engineering, such as concrete channels and oversized pipes, to effectively mitigate flood risks in rapidly developing urban areas.

In this concept, the RWHS acts as a micro-storage unit that contributes to a larger, decentralized network of flood mitigation assets. When thousands of buildings in a city function as active participants in water management, the cumulative effect is a drastic reduction in the "peak flow" that overwhelms municipal sewers during flash floods.

A critical aspect of the Sponge City concept is public perception. As highlighted in the study *Public Perception of Innovative Technical Solutions for the Development of the 'Sponge City' Concept in Poland: A Case Study of the Tri-City Area* (Kłopotek & Ociczek et al., 2025), technical solutions - regardless of how innovative they are - will fail if they are not aesthetically and functionally integrated into the landscape. For an RWHS to be a successful 'Sponge' component, it must go beyond hidden underground tanks. It involves the use of permeable pavements, rain gardens, and green roofs that feed into the harvesting system. This turns the building from a runoff generator into a runoff consumer.

The engineering challenge here is scale and integration. A standalone RWHS at a single-family house is a minor mitigation tool, but when coupled with urban green infrastructure, it becomes part of a "System-of-Systems." As noted in the study about *Water sector infrastructure systems resilience: A social-ecological-technical system-of-systems and whole-life approach* (Sinha et al., 2023), we must view these systems through a socio-ecological-technical lens. This means that a landscape architect designing a plaza or a residential complex must account for the hydrological connectivity of the site. Can the overflows from the storage tanks be directed into a rain garden? Can the site layout ensure that catchment areas are maximized while maintaining pedestrian flow? New requirements such as these add another layer into the planning and execution of any new projects, as well as the modernization of older sites.

The Sponge City concept also emphasizes the economic value of water. In traditional engineering, rainwater is treated as a nuisance to be disposed of as quickly as possible. In a Sponge City, rainwater is a raw material. By harvesting this water for non-potable uses (irrigation, flushing, cooling), we reduce the demand for treated municipal water, which is a significant operational cost-saving measure for municipalities and property owners alike (Silva et al., 2021). Recent systematic reviews confirm that integrating these systems into the early stages of site development planning is far more cost-effective than retrofitting them into dense,

built-up areas (Noriega et al., 2026). Therefore, this model necessitates a collaboration between hydrologists, urban planners, and landscape architects, moving away from siloed engineering disciplines toward a holistic design approach.

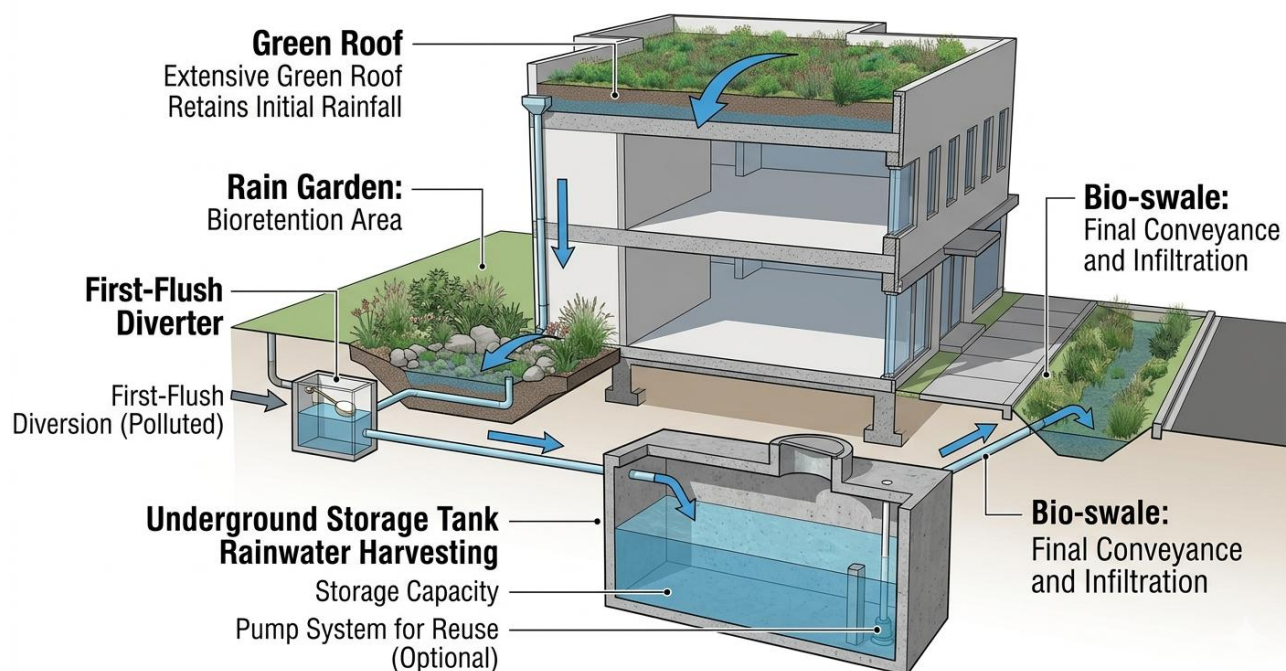


Fig. 1. Cross-section of a Sponge City Building.

Note: This illustration was generated using AI tools (Gemini 3 Flash Image) to visually represent standard hydraulic engineering configurations; the technical layout is based on established Low Impact Development (LID) design principles.

The Digital Nervous System: IoT and Smart Water Management

As Rainwater Harvesting Systems (RWHS) migrate from passive storage vessels to active components of the "Smart City," the integration of Internet of Things (IoT) technologies has evolved from an experimental luxury to a fundamental engineering necessity. In a residential context, the transition to smart management architectures, as detailed in recent studies on residential water management in the Middle East *IoT-Based Smart Water Management Systems for Residential Buildings in Saudi Arabia* (AlGhamdi et al., 2022), involves a shift toward automated resource optimization. The core of this system is an IoT-based architecture stack that functions as a digital nervous system for the building's hydrological cycle.

The architecture typically consists of three distinct layers: the perception layer (hardware), the network layer (transmission), and the application layer (user interface/cloud). At the perception layer, modern systems utilize an array of sensors - ultrasonic level sensors to monitor tank volume, flow meters to track usage at specific points of consumption, and water quality sensors (pH, turbidity, and conductivity probes). These components generate a continuous stream of raw data. However, the engineering challenge lies in the network layer. As highlighted in the study *IoT-Based Smart Water Management Systems for Residential Buildings in Saudi Arabia* (AlGhamdi et al., 2022), the reliability of data transmission - via protocols such as LoRaWAN, MQTT, or Zigbee - is often the point of failure in remote or semi-urban residential environments. Designers must ensure that the gateway infrastructure is robust enough to maintain connectivity, even during the electrical outages that often accompany the extreme weather events for which these systems are built to mitigate.

In the context of landscape architecture, the application layer is where the "Smart City" concept materializes. Predictive control is the most significant advancement here. By integrating weather APIs, the control unit does not just report current water levels; it anticipates future needs. For example, if a heavy storm is forecasted within the next 24 hours, the system can automatically adjust its discharge strategy to create "buffer capacity," thereby reducing the flood risk to the property. This transforms the storage tank into a dynamic infrastructure asset.

Furthermore, research, such as the study *IoT-Based Smart Water Management Systems for Residential Buildings in Saudi Arabia* (AlGhamdi et al., 2022), indicates that the data generated by these systems provides a granular understanding of domestic water footprints. Homeowners and building managers gain real-time visibility into their usage patterns, which has been shown to drive behavioural change toward conservation. However, concerns arise when considering the "invisible" nature of this infrastructure. These sensors and control units must be integrated into the mechanical room or the landscape layout in a way that is accessible for maintenance but protected from the elements. The design must accommodate the cabling and power supply for these devices during the early architectural planning stages, rather than treating them as an "add-on" post-construction. Ultimately, the successful deployment of IoT-enabled RWHS rests on the stability of the hardware-software interface; if the sensors fail or the cloud connection drops, the system reverts to a legacy passive state, losing its flood-mitigation and conservation benefits.

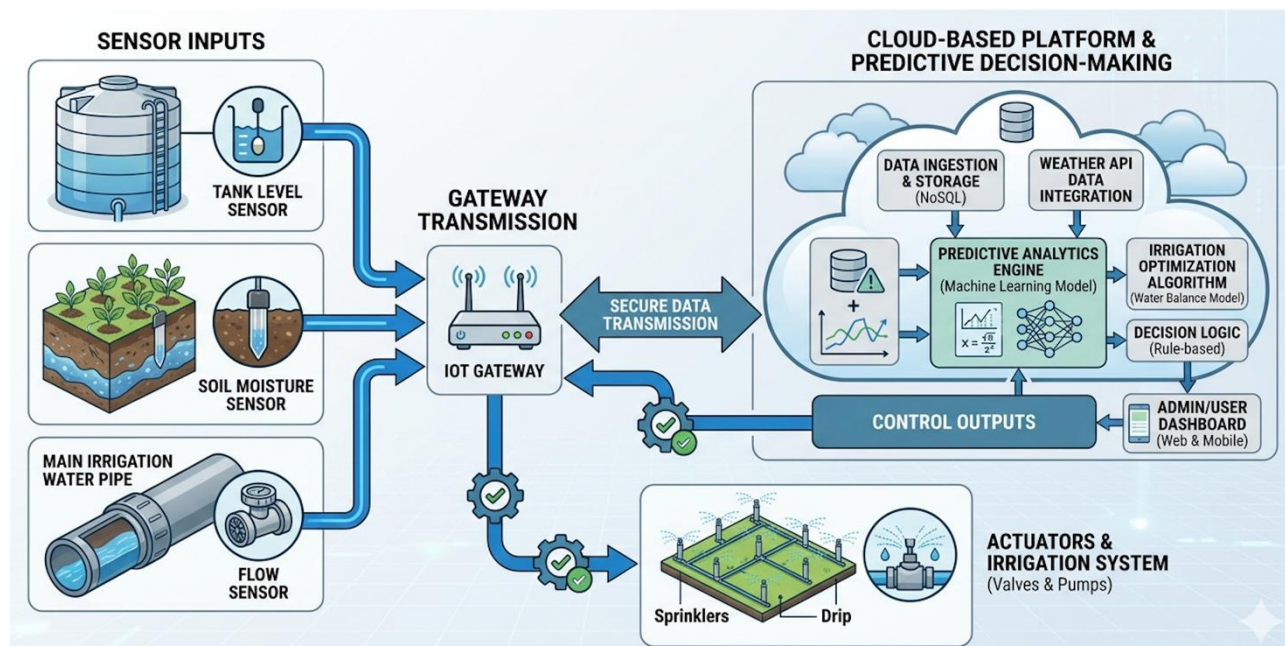


Fig. 2. Diagram of a proposed smart irrigation system architecture.

Note: This illustration was generated using AI tools (Gemini 3 Flash Image) to visualize IoT system architecture based on standard network stack design.

Water Cybersecurity: The Hidden Threat to Infrastructure Resilience

The rapid digitalization of water management systems, while providing operational efficiency, has inadvertently opened a significant "attack surface." As we integrate IoT sensors and cloud-based controls into our water infrastructure, we are no longer just dealing with plumbing; we are dealing with critical IT infrastructure. The study *A Systemic Review of the Cybersecurity Challenges in Australian Water Infrastructure Management* (Bello et al., 2022) provides a sobering look at how vulnerable these networks can be. The threat is not merely theoretical; it is a physical reality. When a system is connected to the internet, it is exposed to risks that could lead to catastrophic failure.

The primary vulnerability lies in the lack of end-to-end encryption. Many off-the-shelf smart water controllers are deployed with default passwords, open communication ports, and unencrypted data streams. An attacker - whether motivated by malice, financial extortion, or system disruption - could exploit these weaknesses to gain unauthorized access to the system's controller. The potential consequences are severe. A hacker could spoof sensor readings, tricking the controller into believing the tank is empty when it is full, leading to a pump burnout. More alarmingly, an attacker could manipulate water quality data or remotely shut off valves, effectively neutralizing the water supply during a time of need.

The research *Optimal cybersecurity framework for smart water system: Detection, localization and severity assessment* (Raza & Moazeni et al., 2025) suggests that we must move toward an integrated detection and localization framework. This means that our RWHS engineering cannot be reactive. We must implement "Security by Design." This approach mandates that security protocols - such as network segmentation, hardware-based authentication, and regular firmware patching - are baked into the system architecture from

the first day of design. Network segmentation is vital. It involves isolating the water management system from the primary home or building Wi-Fi network, ensuring that a compromised smart lightbulb or laptop in the building cannot be used as a gateway to gain control over the water pumps.

Furthermore, we must address the "whole life" aspect of security. As discussed in the study *Water sector infrastructure systems resilience: A social-ecological-technical system-of-systems and whole-life approach* (Sinha et al., 2023), security is not a one-time setup; it is a maintenance requirement. Property managers and homeowners must be educated on the need to update their firmware and monitor their systems for anomalous behaviour. From an engineering standpoint, this requires us to design systems with a "fail-safe" state. If the digital system is compromised or loses connectivity, the mechanical system must be capable of reverting to a manual, safe, and operational mode. The responsibility here falls squarely on the designer. We cannot simply defer to IT specialists; as landscape architects and engineers, we must advocate for and specify systems that prioritize digital integrity as much as hydraulic performance. A system that saves water but is susceptible to a digital shutdown is, in the long term, a failure of professional engineering.

Results and Discussion: Empirical Evaluation of the Social Domain

The synthesis of technical hydraulic calculations, digital network topologies, and empirical survey data points to a clear conclusion: the long-term viability of decentralized urban water management is contingent upon resolving underlying cybersecurity vulnerabilities and public psychological barriers. These dynamics are best interpreted through the "whole life" asset framework conceptualized by Sinha et al. (2023), which posits that a rainwater harvesting installation functions as an active node within a broader social-ecological-technical system-of-systems.

The empirical results demonstrate a high level of public awareness regarding water management, where most of the sampled cohort ($N = 32$) explicitly recognize water conservation as a major contemporary environmental priority. As summarized in the distribution data (Figure 3), 65.6% of the respondents indicated that water conservation is 'very important.' An additional 18.8% viewed it as 'important, but note that there are bigger problems,' bringing the cumulative positive baseline to 84.4%. In contrast, a minority of respondents expressed lower levels of personal concern, with 9.4% stating that they 'don't really think about it,' and the remaining 6.2% indicating that it is 'not a priority.'

However, these findings reveal a paradox when contrasted with public readiness for digitalized infrastructure. While 84.4% of participants prioritize water conservation, a concurrent, hesitant behavior emerges regarding the adoption of digitalized water control networks. This "trust gap" stems from widespread public apprehension regarding personal data privacy and the security integrity of connected IoT platforms. Participants identified data privacy and cybersecurity as the primary barriers to the adoption of smart systems. This indicates that while the public supports the goal of sustainability, they are hesitant to trust the infrastructure means (IoT and digital monitoring) if the security of their personal data is not guaranteed.

These findings align with the cybersecurity challenges identified globally by Bello et al. (2022), who documented severe systematic vulnerabilities across critical water networks. When contrasted with the operational real-world data from Saudi Arabian smart water initiatives (AlGhamdi & Sharma, 2022), it becomes evident that while predictive algorithmic IoT controls successfully minimize resource wastage, their real-world scalability is limited unless public anxieties regarding data exploitation are proactively addressed. Within this research context ($N = 32$), the high environmental imperative (84.4%) indicates that citizens want to save water, but the technical deployment will stall unless system safety is structurally guaranteed.

Consequently, public perception regarding network security can no longer be treated as an external variable; it represents an internal engineering design constraint. To accelerate the implementation of decentralized water assets, smart IoT control architectures must be engineered using a strict "Security by Design" framework. Future engineering strategies for smart Rainwater Harvesting Systems must treat digital asset protection with the same structural weight as hydraulic performance, ensuring that user-facing interfaces provide transparency and data control to bridge this gap between environmental awareness and technological acceptance for the end-users.

Do you think that saving water is a major environmental priority today?

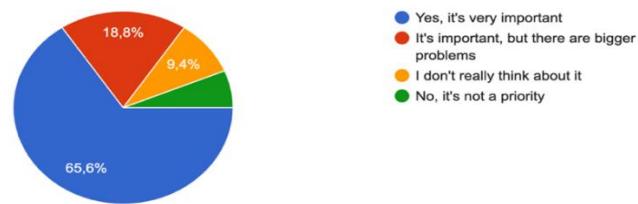


Fig. 3. Respondent opinions on water saving as an environmental priority.

**Source: survey data (2026)*

Discussion and Future Implications

The synthesis of technical hydraulic analysis, digital architecture, and empirical social research points toward a singular conclusion: the future of water management is resilient, decentralized, and highly integrated, yet it is currently hampered by significant cybersecurity and psychological barriers. This research utilizes a "whole life" approach as conceptualized by Sinha et al. (2023). Within this framework, an RWHS is evaluated not merely as an isolated tank and pump, but as an active component of a wider social-ecological-technical system-of-systems. The systemic success of urban water management relies on the careful equilibrium of three distinct domains:

- Ensuring mechanical precision, verified first-flush volumetric diversion rates, and accurate storage tank sizing.
- Contributing actively to macro "Sponge City" initiatives, localized urban runoff reduction, and heat island mitigation.
- Overcoming the end-user "trust gap," protecting data privacy, and fostering long-term technological adoption.

As evidenced by the quantitative survey data, the social domain remains a highly critical engineering constraint. While **84.4%** of the respondents strongly identify water conservation as a major contemporary priority, the survey data simultaneously maps an underlying hesitation to embrace digitalized water systems. This "trust gap" stems directly from valid public anxieties regarding data privacy and the cybersecurity vulnerabilities inherent to modern IoT platforms.

Consequently, the transition from passive environmental support to active technological integration is entirely contingent upon mitigating these perceived digital risks. To drive widespread public adoption of decentralized smart water networks, engineering specifications must treat digital protection with the same weight as hydraulic performance, ensuring that user interfaces provide total data transparency.

Conclusions

The research undertaken in this study confirms that the efficacy of modern Rainwater Harvesting Systems (RWHS) relies on the intricate synergy between mechanical filtration, hydraulic precision, and digital resilience. This investigation has elucidated that decentralized water management has transcended its origins as a mere ecological alternative, evolving into a fundamental pillar of sustainable urban infrastructure and the "Sponge City" paradigm.

The analysis of the mechanical components reveals that proper sizing and the integration of first-flush diversion are the foundational requirements for water quality and system longevity. However, the study has concurrently demonstrated that the contemporary RWHS operates within a socio-ecological-technical system where mechanical reliability is no longer sufficient on its own. The integration of the Internet of Things (IoT) has transformed static storage infrastructure into dynamic, predictive assets capable of proactive flood mitigation. Yet, this digital transformation introduces a critical vulnerability: the cybersecurity threat. The findings underscore that digitalized water infrastructure faces sophisticated risks, ranging from data manipulation to the potential for physical system disruption. Consequently, the adoption of a "Security by Design" framework is not a technical suggestion but an imperative for the future viability of these assets.

Furthermore, the empirical data highlights a paradoxical "trust gap." While public appetite for sustainable technology is exceptionally high, apprehension regarding data privacy and system security remains a

significant barrier to implementation. Future urban development must address this gap through transparent design, user-centric interfaces, and robust cybersecurity protocols that prioritize end-user privacy.

Ultimately, this research argues for a holistic "whole life" approach. The success of future decentralized water infrastructure depends on the seamless integration of engineering precision with digital robustness and social acceptance. As architects, engineers, and landscape designers, our mandate is to move beyond siloed design – viewing the rainwater harvesting unit not as an isolated plumbing feature, but as a critical, interconnected component of the resilient, secure, and sustainable city of the future.

Critical Disclosure: Author Contribution Statement

Evelina Verbickaitė (The Author) conceptualized the study, designed the empirical research framework, and independently executed the quantitative survey targeting higher education students in Lithuania (N = 32). The author collected, cleaned, and analysed the primary data regarding public acceptance, data privacy apprehensions, and the "trust gap." The author also formulated the core parameters of the "Security by Design" engineering framework based on these empirical findings.

Artificial Intelligence (Large Language Models) was strictly utilized as a cognitive and linguistic assistant to synthesize the technical literature reviews, organize the structural transitions requested by the peer reviewers, ensure adherence to an objective academic tone (impersonal constructions), and reconcile bibliographic inconsistencies across the global case study contexts. The underlying scientific conclusions, survey interpretations, and original conceptual frameworks represent the direct intellectual property of the author.

References

1. Abubakar Bello, Sayka Jahan, Farnaz Farid and Farhad Ahamed. (2022). A systemic review of the cybersecurity challenges in Australian water infrastructure management. *Water*, 15(1), 168. <https://doi.org/10.3390/w15010168>
2. Alhassane Bah, Zhang Hongbo, Alseny Bah, He Jufang, Luo Zhumei. (2023). Study of the applicability of Sponge City concepts for flood mitigation based on LID measures: A case study in Conakry City, Republic of Guinea. *Water Science and Technology*, 88(4), 901-918. <https://doi.org/10.2166/wst.2023.251>
3. Ana Carolina Rodrigues de Sá Silva, Alex Mendonça Bimbato, José Antônio Perrella Balestieri, Mateus Ricardo Nogueira Vilanova. (2021). Exploring environmental, economic and social aspects of rainwater harvesting systems: A review. *Resources, Journal of Sustainable Cities and Society*, 76, 102475. <https://doi.org/10.1016/j.scs.2021.103475>
4. Karla Elizabeth Portillo Noriega, Yolanda Guadalupe Aranda Jimenez, Laura del Carmen Moreno Chimely. (2026). Rainwater and atmospheric water harvesting systems as sustainable strategies for housing and architecture: A systematic review. *Journal of Discover Sustainability*, 14(2), 112-130. <https://link.springer.com/article/10.1007/s43621-026-03164-2>
5. Katarzyna Kłopotek, Aneta Ociczek. (2025). Public perception of innovative technical solutions for the development of the 'Sponge City' concept in Poland: A case study of the Tri-City area. *Sustainability*, 17(6), 2380. <https://doi.org/10.3390/su17062380>
6. Marla Maniquiz-Redillas, Miguel Enrico Robles, Gil Cruz, Nash Jett Reyes, Lee-Hyung Kim. (2022). First flush stormwater runoff in urban catchments: A bibliometric and comprehensive review. *Hydrology*, 9(4), 63; <https://doi.org/10.3390/hydrology9040063>
7. Nazia Raza, Faegheh Moazeni. (2025). Optimal cybersecurity framework for smart water system: Detection, localization and severity assessment. *Journal of Water Research*, 268, 122540. <https://doi.org/10.1016/j.watres.2025.123517>
8. Rayed AlGhamdi, Sunil Kumar Sharma. (2022). IoT-Based Smart Water Management Systems for Residential Buildings in Saudi Arabia. *Processes*, 10(11), 2462. <https://doi.org/10.3390/pr10112462>
9. Rodrick Lepcha, Sanmay Kumar Patra, Ratneswar Ray, Sukram Thapa, Deewaker Baral, Sutanwa Saha (2024). Rooftop rainwater harvesting: A solution to water scarcity: A review. *Journal of Groundwater for Sustainable Development*, 360, 132170. <https://doi.org/10.1016/j.gsd.2024.101305>
10. Sunil K. Sinha, Craig Davis, Paolo Gardoni, Meghna Babbar-Sebens, Michael Stuhr, Dryver Huston, Stephen Cauffman, William D. Williams, Leon G. Alanis, Hardeep Anand, Anmol Vishwakarma. (2023). Water sector infrastructure systems resilience: A social-ecological-technical system-of-systems and whole-life approach. *Cambridge Prisms: Water*, 3, e12. <https://www.cambridge.org/core/journals/cambridge-prisms-water/article/water-sector-infrastructure-systems-resilience-a-social-ecological-technical-system-of-systems-and-whole-life-approach/016FD3C12713C918AF336D077984CA94>
11. Zang Gao, Qionghua Zhang, Yufei Wang, Xinyue Jv, Mawuli Dzakpasu, Xiaochang C. Wang. (2023). Evolution of water quality in rainwater harvesting systems during long-term storage in non-rainy seasons. *Science of The Total Environment*, 895, 165134. <https://doi.org/10.1016/j.scitotenv.2023.168784>