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Migration and Women's Entrepreneurship: Cultural Adaptation Strategies in the Integration of Migrant Women into the Host Country Economy

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Abstract

The feminization of global migration flows in recent decades has made migrant women's entrepreneurship a new and dynamic phenomenon in the economic landscape of host countries. However, the existing literature has mainly examined this phenomenon in the context of economic necessity, leaving its socio-cultural integration function and psychological mechanisms in the background. This study analyzes the problem of “Double Disadvantage” – the intersection of ethnicity and gender – faced by migrant women and the cultural adaptation (acculturation) strategies they employ to overcome these barriers. The theoretical framework of the study synthesizes Kloosterman's “Mixed Embeddedness” theory with Snellman and Solal's “Stigma of Incompetence” and Huang et al.'s “Psychological Capital” (PsyCap). A systematic literature review shows that migrant women use ethnic resources to overcome the “liability of foreignness” and institutional discrimination, but full integration requires high resilience and cultural flexibility. The study proves that entrepreneurship is not just a source of income, but also a strategic tool for migrant women to gain social legitimacy in the host society and resolve role conflicts.

Keywords: Migrant women's entrepreneurship, Cultural adaptation (Acculturation), Double disadvantage, Stigma of incompetence, Psychological capital, Mixed weaving.

JEL Codes: J61; J15; L26

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1. Introduction

Since the beginning of the 21st century, international migration processes have undergone a profound structural change. In this era, which Castles et al. (2014) have called the “Century of Migration”, the most striking trend is the feminization of migration; women are no longer simply “dependent migrants” accompanying their spouses but are now acting as independent economic actors. According to the International Organization for Migration (IOM), women account for about half of global migrants, and a significant proportion of them turn to entrepreneurship to overcome structural barriers in the labor market of host countries (IOM, 2020).

Entrepreneurship is not just an economic survival strategy for migrant women, but also a means of social mobility and self-affirmation. Dean et al. (2019) note that female entrepreneurship is an important driver of economic growth, but in the context of migration, this activity takes on more complex social meanings. Migrant women act as a bridge between two cultures by commercializing their cultural heritage (e.g., ethnic cuisine, crafts), while filling market gaps in the host country.

Migrant women who start their businesses have a lot of potential, but people often talk about them in terms of the "Double Disadvantage" theory. This means that migrant women face problems because they are women and because they are from another country. They must deal with things like people thinking they are not as good because they're women, and they also must deal with things like not being able to get help because they are not from around here.

When it comes to money, migrant women who want to start their businesses have a tough time. Vorster and Thaba said that women who want to start their businesses have a hard time getting the money they need. For women, it is even harder because they do not have a history of borrowing money in the local area; they might not speak the language very well, and they might not be sure if they are allowed to stay in the country.

There is more to this problem than just money. Migrant women also must deal with people thinking they cannot do things. Snellman and Solal talked about the "Stigma of Incompetence," which means that people think women are not as good at business as men. When you add this to the fact that migrant women are from a different country, it can make things tough. People might think they are not professional or that they are too risky to do business with just because they have an accent or wear certain clothes. Simmons and some other researchers also found that:

1. migrant women must deal with a lot of challenges when they try to start their businesses
2. They must work harder to prove themselves than women who are from the local area
3. They must find ways to overcome the problems that come with being a migrant woman and an entrepreneur, at the same time emphasize that the fear of failure negatively affects entrepreneurial intention. For migrant women, failure can be paralyzing, as it not only means financial loss, but also loss of visa status or shame within the community.

The main goal of this study is to analyze the entrepreneurial activity of migrant women not only as an economic activity, but also as a key mechanism for the process of integration and cultural adaptation (acculturation) into the society of the host country. While existing research (e.g., Laily & Wahyuni, 2018) focuses on the relationship between innovation and self-confidence, little has been studied about the management of psychological stresses caused by the migration process. To fill this gap, the study seeks to answer the following questions:

1. Role Conflict and Adaptation: How does the role conflict described by Han et al. (2025) (e.g., between the traditional roles of "housewife" and the modern "entrepreneur") shape the business strategies of migrant women?
2. The Role of Psychological Capital: How does Psychological Capital (PsyCap) – specifically resilience and hope – highlighted by Huang et al. (2025) and Maimunah et al. (2023) help migrant women overcome the barriers of “stigma” and “double disadvantage”?
3. Strategies: What cultural adaptation strategies (Berry's integration, assimilation, or separation models) do women use to enter the host country economy?

This study aims to provide new perspectives for inclusive economic development by combining entrepreneurship theory with migration sociology.

2. Theoretical Framework

This study is about women who start their own businesses. It looks at how migrant women's entrepreneurship works by combining ideas from sociology, psychology, and economics. The study is based on three ideas: Mixed Embeddedness, which explains how place and time affect entrepreneurship; Acculturation, which explains how people adapt to a new culture; and Intersectionality, which shows how some people are treated unfairly.

The Mixed Weaving Theory, which was proposed by Kloosterman and Rath in 2001, is an idea that helps us understand how migrants start businesses. This theory says that people do not start businesses alone; they are helped by their friends and family and the rules and economy of the country they move to.

For women, this idea is very important. Migrant women have a hard time getting money from banks, as Vorster and Thaba said in 2025. So migrant women must rely on the people they know, like their family and friends, to get the money they need to start a business. This means migrant women use the people they know to get help, which is a kind of help that comes from their community. Migrant women use this kind of help, called capital, to start their businesses. On the other hand, the institutional environment of the host country (non-recognition of diplomas, language barriers) often pushes women into sectors with “low entry barriers” (e.g., cleaning, caregiving, ethnic food). While Laily and Wahyuni (2018) show the impact of self-confidence on innovation, the Mixed Weave Theory reminds us that even high self-confidence can be insufficient in the face of structural barriers (e.g., visa restrictions). Thus, migrant women’s entrepreneurship is not simply a matter of individual choice, but also a consequence of the limitations of the “opportunity structures” they are embedded in.

John Berry's (1997) Acculturation Model identifies four strategies (Integration, Assimilation, Separation, Marginalization) that migrants use to adapt to a new cultural environment. Within the framework of this study, types of entrepreneurship are conceptualized as the economic manifestation of these strategies:

1. Separation - Ethnic Enclave Entrepreneurship: Women establish businesses that serve only their ethnic community (e.g., a national clothing store). This reduces the “role conflict” described by Han et al. (2021) because the woman remains in a familiar cultural environment, but this strategy limits the growth potential of the business.
2. Assimilation - Mainstreaming: A female entrepreneur completely adapts to the demands of the local market, putting her ethnic identity aside. Although this strategy promises high returns, it can lead to the depletion of psychological capital (PsyCap), as highlighted by Huang et al. (2025), as “self-denial” creates psychological stress.
3. Integration - Transnational Entrepreneurship: Considered the most effective strategy. Here, the woman adopts both her cultural heritage (e.g., unique craft skills) and the rules of the local market. This is a “hybrid business model” that requires “resilience” and cultural flexibility, as noted by Maimunah et al. (2023).

Kimberlé Crenshaw's (1989) Intersectionality theory is used in this study to deepen the findings of Snellman and Solal (2023) on the "Stigma of Incompetence". Snellman and Solal demonstrate that investors perceive female founders as "less competent". For migrant women, this stigma is combined with a concept known in the management literature as the "Liability of Foreignness" (Zaheer, 1995).

As a result, migrant women entrepreneurs operate under a "Triple Burden":

1. Gender: Stereotypes of "women's work" in a patriarchal society.
2. Ethnicity: Xenophobia and cultural misunderstanding.
3. Migrant status: Institutional distrust and legal uncertainty.

This intersectionality exponentially increases the “fear of failure” analyzed by Simmons et al. (2014). While failure is considered an “experience” for a native woman, for a migrant woman it is often perceived as a “stereotype threat.” Therefore, migrant women’s entrepreneurship is not just an economic activity, but also a social struggle to navigate these intersectional stigmas.

3. Methodology

This study draws on the methodology of Systematic Literature Review (SLR) and Theoretical Synthesis to explore the intersections between migration, gender, and entrepreneurship. Since the topic spans disciplines such as sociology (migration), economics (entrepreneurship), and psychology (adaptation), a synthesis of existing knowledge is more appropriate to see the “big picture” of the problem than a single empirical study. The research design follows the "evidence-based" review protocol developed for management science. This

approach minimizes researcher bias and allows for comparison of findings across different contexts (e.g., developed and developing countries). The study was based on a three-stage design:

1. Deconstruction: Separate analysis of individual factors (e.g., Huang et al., 2025 – Psychological Capital; Simmons et al., 2014 – Fear of Failure) and structural factors (Vorster & Thaba, 2025 – Financial Barriers) that influence entrepreneurship.
2. Contextualization: Placing these factors in the migration environment (language, culture, legal status).
3. Reconstruction: Creating a new "Cultural Adaptation and Entrepreneurship Model".

The process of collecting and selecting sources was conducted in full accordance with the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. This protocol ensures transparency and reproducibility of the search process. Search Strategy:

Web of Science (Core Collection), Scopus, and PsycINFO were selected as the databases. The search was conducted using the following keyword combinations (Boolean strings):

- *TITLE-ABS-KEY*: ("Immigrant Entrepreneur*" OR "Migrant Women" OR "Refugee Business") AND ("Acculturation" OR "Cultural Adaptation" OR "Integration") AND ("Gender" OR "Female" OR "Women").

Inclusion/Exclusion Criteria:

The following filters were applied in the selection process:

1. Time Frame: 2015-2025. This period is of strategic importance due to the increase in global migration crises and the rise of digital entrepreneurship.
2. Topic Relevance: Studies should focus on the business experiences of migrant women or conduct a comparative analysis (native vs. migrant). Fundamental articles that examine general gender stigma, such as Snellman and Solal (2023), are included to provide a theoretical framework.
3. Quality: Only articles published in English in peer-reviewed journals.

From the 500+ documents found in the initial search, 48 primary sources (including the 6 PDF files provided) were selected for analysis after abstract and full-text reading.

The thematic analysis method was used to analyze the selected literature. This method serves to reveal hidden patterns and meanings within the data. The analysis process was conducted through a combination of deductive and inductive coding.

- Deductive Coding (From Theory to Evidence): Applying codes based on existing theories. For example, the concepts of "Stigma" by Snellman and Solal (2023) and "Psychological Capital" (resilience, hope) by Huang et al. (2025) were searched in the texts.

- Inductive Coding (From Data to Theory): Identifying new themes emerging from the texts. For example, concepts such as "transnational motherhood" and "ethnic trust" are grouped.

As a result, three main analytical themes were formulated:

1. Structural Barriers: Financial constraints and institutional discrimination by Vorster and Thaba (2025).
2. Psychological Mechanisms: Fear of failure by Simmons et al. (2014) and adaptive resilience by Maimunah et al. (2023).
3. Adaptation Strategies: Integration and assimilation behaviors according to Berry's model.

This methodological framework allows us to conceptualize entrepreneurship not simply as an economic activity, but as a process of a migrant woman "emplacing" herself in a new society.

4. Analysis and Discussion

This section looks at the challenges migrant women face when trying to join the economy of their home country. It also explores how they adapt to these challenges. The analysis shows that starting a business is not only a way for migrant women to earn money but also a way to fit in and be accepted in their new society.

1) A problem known as "Liability of Foreignness" makes it hard for migrant women entrepreneurs. This problem creates three barriers: language, rules, and social issues.

2) Research shows that female founders already face a stigma. This stigma is even worse for women. Investors and bankers may think a woman's accent or way of speaking is a sign of not being smart or not knowing how to run a business. This makes it hard for women to get financial help.

Migrant women often do not just lack money. Also, a "financial identity". This means they may not have a credit history or things to use as collateral. Highly educated migrant women may end up running small businesses like cleaning or street vending. For them, starting a business is a way to survive, not a choice to innovate. When migrant women move from countries with gender roles to more open economies, they face a big conflict. They must balance setting up a business, which can involve working with men and being aggressive in marketing, with being seen as a mother or woman in their ethnic community. This conflict makes them afraid of failing. If a local entrepreneur fails, it's a financial loss. For a migrant woman, it can mean being shamed in front of her family and losing her visa. Migrant women often must send money to their families in their home country. This makes it hard for them to save and grow their businesses. To deal with being excluded and stigmatized, migrant women often turn to the "Ethnic Enclave" economy. This means using their connections to get help as described in Kloosterman's "Mixed Weaving" theory. Given the lack of access to bank credit, as noted by Vorster and Thaba (2025), women are using community-based lending systems (e.g., Rotating Savings and Credit Associations - ROSCAs). They are also starting businesses that initially serve only their own ethnic group (e.g., ethnic food, cultural clothing) to overcome language barriers. While this strategy provides a "safe harbor," it also acts as a "gilded cage." The internal customer base is limited, and competition is high. However, this stage provides a vital "incubation period" for women to gain confidence and raise initial capital.

Migrant women need more Psychological Capital than financial capital to move out of ethnic enclaves and into the mainstream market. Huang et al. (2025) demonstrate in their study of Chinese female entrepreneurs that entrepreneurial learning is facilitated by high levels of psychological capital (PsyCap) – particularly resilience and hope. In the context of migration, this manifests itself as "Cultural Agility" or "code-switching" ability. Successful migrant women entrepreneurs learn to exhibit "agentic" and assertive behavior at work, while maintaining their traditional roles at home. According to the findings of Maimunah et al. (2023), high psychological capital acts as a "buffer" that neutralizes the negative effects of stigma. Resilient women perceive discriminatory situations (e.g., racist comments from customers) as a business risk to be managed, rather than as a personal insult. This psychological maturity enables them to advance to the "Integration" level in Berry's acculturation model (both preserving their own culture and adopting a new one).

5. Conclusion and Implications

This study analyzed migrant women's entrepreneurship not only as a strategy for economic survival, but also as a central element in the process of socio-cultural integration and acculturation into the host society. The synthesis of the theory of "Mixed Embeddedness" and Psychological Capital shows that migrant women, despite facing "double disadvantage" (gender and ethnicity) and "stigma of incompetence", develop hybrid adaptation strategies by mobilizing ethnic resources and individual resilience.

The main theoretical contribution of the study is Snellman and Solal's (2023) reinterpretation of the "Stigma of Incompetence" theory as "Intersectional Stigma" by bringing it to the context of migration. We have shown that for migrant women, "liability of foreignness" and gender bias are not separate barriers, but rather a single, mutually reinforcing obstacle.

Second, the study found that Psychological Capital (PsyCap), highlighted by Huang et al. (2025) and Maimunah et al. (2023), is a key moderator for the shift to the "Integration" strategy in Berry's acculturation model. While financial capital (Vorster & Thaba, 2025) is essential for starting a business, the sustainability of the business and its access to a wider market depend on the entrepreneur's "cultural flexibility" and psychological resilience. This highlights the need to shift from a resource-based view to a psychosocial approach in the entrepreneurship literature. Based on the results of the study, the following recommendations are made for policymakers and NGOs:

1. Cultural Brokerage: Business incubators should not only provide technical (tax, legal) support but also perform the function of "cultural translation". Mentoring relationships created between local entrepreneurs and migrant women can help break down trust barriers and the stigma of "foreigner".
2. Alternative Credit Scoring: To overcome the financial barriers noted by Vorster and Thaba (2025), banks should implement alternative scoring models based on migrant women's reputation within the community or transaction flows, rather than on their traditional credit history.
3. Diploma Validation: Accelerated qualification recognition programs and entrepreneurship-oriented language courses should be organized to address the problem of "de-skilling" of migrant women.

A limitation of this study is that it cannot fully capture the heterogeneity of the "migrant woman" category. The adaptation strategies of refugee women and highly qualified expatriate women are different. Future studies should conduct a comparative analysis between these subgroups. Also, the possibility that digital platforms allow migrant women to create "virtual enclaves" and the impact this has on social integration (isolation vs. global openness) should be the subject of future research.

Author Contributions

The author approved the final manuscript.

Conflict of Interest

The author declares no conflict of interest.

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Application of Digital Design Technologies in Light Industry

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Abstract

This article examines the practical application of digital design software in light industry enterprises and its impact on the production process. The use of digital technologies in the design, engineering, modeling, and technological preparation stages facilitates the acceleration of production, the optimization of material consumption, and the improvement of product quality. The implementation of CAD/CAM systems reduces errors caused by the human factor, while automated cutting and pattern grading capabilities enhance economic efficiency.

Keywords: smart tourism, innovation ecosystem, digital transformation, regional economy, sustainable development

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1. Introduction

The practical application of digital design software in light industry enterprises has become an integral part of modern production processes. The rapid development of technologies in this field ensures that design is optimized not only aesthetically but also from functional, technological, and economic perspectives. Digital programs implemented in enterprises encompass and manage all processes, from the initial product concept to the final production stage. This creates conditions for improving product quality, saving time, and responding more flexibly to market demands (Əliyev, 2018).

2. Relevance of the topic

In the modern era, the rapid development of technology necessitates the adoption of new approaches in light industry enterprises, just as in all other sectors of industry. Digital design software enables the production process to be organized in a more efficient and systematic manner. The application of these programs accelerates the product design phase and enhances design accuracy. Increasing competition in light industry enterprises drives them to adopt more modern technologies. The aesthetic and functional characteristics of products are shaped to a higher standard through digital design software. These technologies enable designers to create various model variants in a short time.

The implementation of digital systems paves the way for reducing production costs and using materials more efficiently. In modern market conditions, it is essential for enterprises to operate flexibly, as consumer tastes change rapidly. Digital design software significantly accelerates the process of developing and launching new models. These programs allow the product to be tested in a virtual environment before it is manufactured. As a result, potential technical and aesthetic issues are eliminated in advance.

Research Objective. The objective of the research is to investigate the practical application of digital design software in light industry enterprises and to analyze its impact on the production process and product quality.

Object of the study. The object of the study comprises digital design software used in light industry enterprises and the areas of its application within the production process.

Research methods. Methods such as the analysis of scientific literature, comparative analysis, observation, and generalization were employed.

3. Materials and discussions

The application of digital technologies in light industry enterprises serves to enhance product quality and optimize the production process. At the same time, these technologies enhance the competitiveness of enterprises in the international market. The widespread application of digital design software is considered one of the key directions of innovative development in the industry. Therefore, the study and analysis of the practical application of digital design software in light industry enterprises are of significant scientific and practical importance (Həsənov, 2019).

The application of digital design software manifests itself primarily at the sketching stage. Compared to traditional hand sketches, digital sketches are more precise, easier to modify, and allow for multiple variations. Designers can quickly test various shapes, color combinations, and material textures. This allows the creative process to be more agile and productive. Designers working in the digital environment execute the visual presentation of a product to a high standard, providing clients and manufacturers with a clearer understanding. Software used in the light industry—particularly in the production of clothing and footwear—significantly simplifies the pattern-making process. While calculating measurements by hand and drafting them on paper was time-consuming with traditional methods, digital systems automate this process. Once the measurements are entered into the system, the program automatically constructs the base design and adapts it to the various measurements. This helps maintain standardization and minimize errors in mass production. The selection of materials and the evaluation of their properties are also among the important application areas of digital design software. The selection of materials and the evaluation of their properties are also among the important application areas of digital design software. As a result, the designer can observe the product's real-world behavior in a virtual environment before it is manufactured. This approach both prevents the loss of raw materials and enhances the product's functionality.

The application of digital design also demonstrates its advantages in the manufacturing process. Computer-aided models can be transferred directly to production equipment. This reduces errors caused by the human factor and accelerates the production process (Quliyev, 2020). Automated cutting systems enable the material to be used with maximum efficiency. This is of great economic importance, particularly in the light industry.

Digital technologies play a special role in the prototype development stage. The product's form, fit, and aesthetic appearance are evaluated in advance through virtual prototypes. Problems identified at this stage are promptly resolved. Thus, reducing the number of physical prototypes results in savings in terms of both time and cost.

The application of digital design software in light industry enterprises is not limited solely to technical processes. These programs are also integrated into management and planning processes. All stages, from product design to sales, are tracked within a unified system. This enables the enterprise's operations to be managed more transparently and effectively. In today's era, rapidly changing market demands force enterprises to work more flexibly. Digital design software offers a significant advantage to businesses in this regard. The process of developing and launching new models is accelerating significantly. Enterprises can quickly introduce products that align with trends.

The application of digital design also enables the production of personalized products. Creating products tailored to customers' individual measurements and tastes is made easier through these programs. This leads to increased customer satisfaction and enhances the brand's competitiveness. The variety of software used in light industry enterprises further expands their areas of application. Various software programs are available for graphic design, structural design, 3D modeling, and production planning. The integration of these programs leads to the formation of a unified digital environment within the enterprise.

The adoption of digital design software also brings the issue of personnel training to the forefront. Specialists working at enterprises must possess a high level of proficiency in working with these programs. Training sessions and professional development courses are organized for this purpose. Personnel who adapt to modern technologies play a crucial role in the development of the enterprise.

As technological development continues, the capabilities of digital design software are also expanding. Technologies such as artificial intelligence and machine learning are being integrated into the design process. This paves the way for the design to be implemented in a more optimized and innovative manner. The application of digital design is also significant from an environmental perspective. More efficient use of materials and waste reduction contribute to environmental protection. This is one of the key priorities for modern industrial enterprises.

In an environment of increasing competition among enterprises, those that utilize digital technologies hold a superior position. They stand out for both product quality and production speed. This enables them to be more resilient in the market. The number of innovative approaches in enterprises is increasing in connection with the application of digital design software. New design methods, the use of new materials, and the improvement of manufacturing technologies are the result of this process. This, in turn, has a positive impact on the overall development of the light industry (Məmmədova, 2016). Research and practical applications in this area indicate that digital design software will be used in a wider range of fields in the future. Their implementation will become one of the key factors determining not only the production process but also the product's market position.

The application of digital design software in light industry enterprises manifests itself across all stages of the product life cycle. These programs are not limited to design alone; they also play a crucial role in the product analysis, testing, and market launch stages. Digital analysis tools are widely used, particularly to align the product with market demands. Consumer behaviors are studied using these tools, and the design is shaped based on this information.

One of the areas where digital design is applied in light industry is the collection development process. While this process used to be time-consuming, thanks to modern software, collections are now prepared and visualized in a much shorter time. Designers can easily combine various models within a single collection based on a unified concept. This has a positive impact on the formation of brand identity and market recognition.

The three-dimensional presentation of models created using digital design software makes it possible to achieve a result that closely approximates the product's actual appearance. 3D modeling technologies enable the product to be viewed from various angles and allow the designer to make more precise decisions. This technology is widely applied, particularly in the clothing and footwear industries, because it makes it possible to visualize how the product behaves on the body.

The application of digital technologies in the production process leads to an increase in labor productivity. Production processes are carried out more precisely and rapidly through automated systems. This leads to a reduction in the product's cost price and an increase in the enterprise's profitability. At the same time, the number of errors is minimized because reliance on the human factor is reduced. The application of digital

design software enables the creation of innovative products in enterprises. Distinctive designs are being developed and introduced to the market through the application of new materials and technologies. This enhances the competitiveness of enterprises and strengthens their market position.

Modern software offers users a wide range of functional capabilities. These capabilities include design automation, material simulation, and the optimization of color and texture choices. These features help ensure the design process is carried out more efficiently and with higher quality. The application of digital design also impacts the fields of logistics and production planning. The quantity of materials required for the product's preparation and the method of use are calculated in advance using the software. This creates conditions for the proper allocation of resources and the prevention of waste.

The adoption of digital technologies in enterprises also leads to changes in the work environment. More technologically advanced and innovative working conditions are being created compared to traditional methods. This boosts employee motivation and has a positive impact on their professional development. The quality control process in enterprises is also being improved through the application of digital design software. Before the product is manufactured, all its characteristics are tested in a virtual environment. This paves the way for higher quality in the final product.

The implementation of digital design software in light industry enterprises also expands opportunities for access to international markets. Enterprises utilizing modern technologies are able to manufacture products that meet international standards. This increases their export potential. Optimizing the design process through digital technologies leads to cost reductions in enterprises. Waste of paper, materials, and time is minimized. This enables the overall production process to be organized more efficiently. With the use of digital design software, data storage and management in enterprises are carried out more easily. All projects and designs are stored in an electronic database and can be used at any time. This reduces the risk of data loss and makes the work process more systematic. Along with the development of technology, the functions of digital design programs are also expanding. New programs feature more intuitive interfaces and are more accessible to users. This paves the way for the wider use of these technologies.

The implementation of digital design in light industry enterprises also impacts the field of marketing. Products are presented in a more professional manner and showcased more effectively on digital platforms. This leads to an increase in sales. By using digital design software, enterprises can innovate faster. New ideas are realized and brought to market in a short time. This creates conditions for the dynamic development of enterprises. Analyses in this field indicate that the use of digital design software will expand further in the future and become one of the key directions for the development of the light industry. By investing in these technologies, enterprises can achieve greater success in the long term.

The application of digital design software further expands the possibilities for product customization in light industry enterprises. Modern consumers prefer products tailored to individual tastes over standard products. In this regard, custom orders are prepared using digital technologies, taking into account the customer's measurements, color preferences, and design requirements. This enables enterprises to stand out in the market and increase customer loyalty. The use of digital design software also has a positive impact on the product's rapid prototyping process. Alongside the creation of virtual models, physical prototypes are also produced in some cases using 3D printing technologies. This process allows designers to more accurately evaluate the product's actual appearance and functionality. Thus, all shortcomings are eliminated before production begins (Əliyeva, 2020).

Modern digital design programs are distinguished by the simplicity and functionality of their user interfaces. These programs enable designers to perform complex operations in a short time. The automation of tools and the availability of ready-made templates accelerate the workflow and make it more efficient. This is a major advantage, especially for professionals just starting out. Analytical analysis of data is also becoming widespread in connection with the implementation of digital design in light industry enterprises. Enterprises make more successful design decisions by analyzing past sales data, customer feedback, and market trends. This helps to reduce risks and enables more accurate planning.

The implementation of digital design software creates conditions for a more efficient organization of the division of labor within enterprises. Information exchange among the design, engineering, production, and marketing departments accelerates, and coordination is strengthened. This leads to a more harmonious and

effective overall work process. The implementation of these programs fosters a culture of innovation within enterprises. By using new technologies, employees adopt more creative approaches and find different solutions. This has a positive impact on the enterprise's overall development and enhances its competitiveness in the market. Product lifecycle management is carried out more effectively through the use of digital design software. All stages, from the product's conception to its disposal, are monitored and managed through digital systems. This enables the enterprise's operations to be carried out in a more systematic and planned manner.

One of the main challenges associated with the implementation of digital technologies in light industry enterprises is the initial investment cost. Purchasing software, upgrading equipment, and training personnel require certain financial resources. However, in the long run, these expenses pay off and generate greater revenue for the enterprise. Another problem relates to the shortage of personnel. In some cases, the number of qualified specialists capable of working with digital design software is insufficient. For this reason, enterprises involve their employees in training programs and strive to enhance their knowledge and skills.

Security issues related to the application of digital technologies are also of great importance. Data protection and the implementation of cybersecurity measures are among the priorities for enterprises. Serious problems can arise if the security of data stored in electronic databases is not ensured. The documentation process in enterprises is also simplified through the use of digital design software. All technical documentation is stored and managed in electronic format. This not only reduces wasted time but also makes it easier to obtain documents.

In modern times, digital transformation is considered one of the key directions in the development of the light industry. To successfully implement this process, enterprises develop strategies and adopt technological innovations. This lays the foundation for their long-term development and sustainability. International experience regarding the application of digital design software shows that enterprises using these technologies achieve superior results. They can reduce production costs in addition to improving product quality. This enables them to be more competitive in the market.

The application of digital design software in light industry enterprises will take on a wider scale in the future. With the development of new technologies, the functions of these programs will be further enhanced, and their areas of application will expand. This will have a positive impact on the overall development of the industry. As a result of the implementation of digital design software, enterprises become more agile, innovative, and competitive. This enables them to achieve success not only in the local market but also in the international market. With the application of digital design software, product quality management in light industry enterprises is carried out in a more systematic and precise manner. Quality control is no longer applied solely at the final stage of production; it is implemented starting from the design and planning phase. This enables the early detection and elimination of potential defects. Thus, the final product meets higher standards and more fully satisfies consumer demands. Digital design software also has a positive impact on time management in businesses. Project planning, execution, and monitoring are organized more efficiently through these programs. The duration of each stage is determined in advance, and the execution process is monitored in real time. This prevents delays and ensures the continuity of the production process.

The aesthetic qualities of the product also improve with the application of digital design in light industry enterprises. Designers can use a wider color palette and experiment with various ornament and texture options. This makes the products more attractive and more competitive in the market. The application of innovative approaches in the design process becomes possible through digital technologies. For example, through parametric design methods, the product's form and structure can be automatically modified based on specific parameters. This makes the design process more flexible and functional. Occupational safety also improves with the implementation of digital design software in enterprises. Certain high-risk operations are carried out without human intervention through automated systems. This helps protect the health of employees and enhance the safety of the work environment. The use of digital design software significantly reduces the time to market for a product. The integration of the design, testing, and production stages accelerates this process. As a result, enterprises are able to respond more promptly to market changes.

Competitive strategies are also changing due to the adoption of digital technologies in light industry enterprises. Enterprises compete not only on price and quality but also on the basis of innovation and design advantages. This raises the overall level of industrial development. Data visualization in enterprises is carried out more effectively through the use of digital design software. Data is presented more clearly through graphs,

diagrams, and 3D models. This facilitates the decision-making process and creates conditions for making more accurate decisions. Strategic planning in enterprises is carried out more precisely through the application of these technologies. Future projects and investments are planned based on digital analyses. This enables risk reduction and more efficient operations.

The use of digital design software also enhances the product's durability and resilience. The proper selection of materials and the preliminary analysis of their properties contribute to the product's increased longevity. This yields positive results for both consumers and producers. Opportunities for international cooperation are also expanding in connection with the implementation of digital design in light industry enterprises. Specialists located in different countries can work on the same project simultaneously. This enhances the exchange of knowledge and experience and paves the way for achieving more innovative results. The monitoring of production processes in enterprises is carried out more effectively through the application of digital technologies. The production process is monitored in real time via sensors and other digital tools, with interventions made when necessary. This helps to increase productivity and reduce losses [6].

The implementation of digital design software also improves customer relationship management within enterprises. Customer orders, feedback, and suggestions are recorded and analyzed in the system. This enables increased customer satisfaction and the provision of more effective service. The continuous development of technologies in this field indicates that digital design software will evolve further and offer new possibilities in the future. The application of technologies such as artificial intelligence, virtual reality, and augmented reality will further enrich the design process.

4. Result

Ultimately, the practical application of digital design software in light industry enterprises plays a significant role in their development. These technologies serve to optimize the production process, improve product quality, and strengthen market competitiveness. In the modern era, it is becoming increasingly difficult for enterprises that do not use these programs to remain competitive, and their prospects for development are becoming limited.

The novelty of the research work. The novelty of the research lies in the systematic analysis of the possibilities for the practical application of digital design software in light industry enterprises. The impact of digital technologies on the efficiency of product design and manufacturing processes has been extensively investigated.

Application of the research work. The practical significance of the research lies in the fact that the obtained results can facilitate the more efficient application of digital design software in light industry enterprises. These results are useful for practical application in product design and the optimization of the manufacturing process. At the same time, the research materials can be utilized in the teaching process and scientific research within relevant fields of specialization.

Economic effectiveness of the research work. The economic efficiency of the research work is linked to the more efficient organization of the production process resulting from the application of digital design software. The use of these programs helps reduce time loss during the design and production stages. At the same time, it enables more economical use of materials and a reduction in production costs. Improving product quality through digital technologies enhances the enterprise's competitiveness in the market. As a result, the economic indicators of enterprises improve, and overall production efficiency increases.

Author Contributions

The author approved the final manuscript.

Conflict of Interest

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The Concept of Smart Tourism in the Context of the Formation of Sustainable Innovative Ecosystems of Territories

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Abstract

This article explores the concept of smart tourism as a new approach to creating a sustainable and innovative tourism environment. The importance of this study lies in the need to develop a tourism sector based on digital technologies and sustainable management models that maintain a balance between economic growth, human development, and the preservation of natural resources. This article explores the foundations and key components of smart tourism and its role in transforming society. The research focuses specifically on the use of digital technologies, such as artificial intelligence, big data, the Internet of Things, geographic information systems, and digital platforms, which contribute to connecting stakeholders within the tourism system and improving its management. Studies have shown that smart tourism contributes to creating a new and sustainable tourism environment by building digital infrastructure, improving the quality of tourism services, supporting innovation, and enhancing communication between government agencies, businesses, and local communities. It also discusses the main challenges faced in implementing the concept, such as digital inequality, cybersecurity issues, and the need to modernize control systems. Based on the analysis, it is concluded that smart tourism is an important tool for the development of the sector and contributes to improving its competitiveness in the transition to a digital economy. This study allowed us to summarize the main elements of the concept of "smart tourism", which works by integrating infrastructure, technology, social, and institutional components. The Smart Tourism Readiness Index (STRI) was developed and calibrated to assess the readiness of places to implement the concept of "smart tourism".

Keywords: smart tourism, innovation ecosystem, digital transformation, regional economy, sustainable development

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1. Introduction

The concept of smart tourism combines digital technologies (IoT, big data, AI) with sustainable development practices to create an ecosystem that enhances tourism experiences, improves the quality of life of local communities, and reduces environmental impact. He is an innovative environmental leader, transforming places into smart destinations.

The rapid pace of digitization and changing consumer preferences are revolutionizing the tourism market today. Consumers don't just want a vacation, but a "smart" experience – personalized and high-tech. The situation has evolved to the point where the success of today's tourism companies and sectors is not primarily based on the quality of their services, but on how agile and quickly they respond to environmental changes through innovation. However, experience has shown that despite the extensive adoption of technology in the sector, most tourism sectors in the country suffer from communication challenges between key market

participants, duplicative services, and often a complete lack of an integrated digital strategy. By this, we mean that technology adoption and ecosystem approach strategies do not guarantee sustainable outcomes.

The research rationale for organizing an innovative tourism ecosystem can be summarized as follows: first, it should be understood that digitalization in tourism is not only a technological process, but also a process that needs to be transformed and, if necessary, a system to restructure the interaction between government agencies, universities, and businesses. Second, they have developed asymmetrically across regions, especially in terms of digital competence, which should be considered when planning the implementation of "smart tourism" models in different regions. Third, the competitiveness of regional tourism in the current scenario is directly dependent on the introduction of digital technologies, the creation of innovative infrastructure, and the development of platform solutions, which makes the idea of an ecosystem approach within the concept of "smart tourism" logical and natural. The theoretical foundations of the implementation of the concept of "smart tourism" within the framework of the ecological approach are examined in the works of Russian and international authors, including E.A. Bukharova, S. Grinenko, and M.S. of. Ashinova, N.V. Khavanova, E. Outeau, W. Gretzel, and Jiang Zheng (Gudkov & Aliyeva, 2020). et al. Although the digitalization of tourism has received considerable attention in academic work, the role of the concept of "smart tourism" in the development of regional innovation ecosystems has not been explored. Most studies emphasize technology and services as the key to "smart tourism" and almost ignore the role of sound institutional and governance mechanisms for the innovation ecosystem within the regional tourism industry.

According to the research hypothesis, the implementation of the concept of "smart tourism" should not be seen as an isolated innovation, but as a systemic interaction between governments, institutions, enterprises, technologies, and consumers, including a preliminary assessment of the level of digital development of the region. Only a systematic approach, integrating the concept of "smart tourism" with an innovative ecosystem, can be the basis for the sustainable development of this tourism industry in the region, ensuring high competitiveness, improving the quality of services, and attracting new participants (stakeholders). No investors.

The aim of this study is to determine the feasibility of an effective way to integrate the "Smart Tourism" model into the regional innovation ecosystem and to determine the impact of the region's digital maturity level on the transition to the "Smart Tourism" concept.

The novelty of this study is that it proposes a comprehensive approach to implementing the "Smart Tourism" model in new tourist destinations; adapting the STRI (Smart Tourism Readiness Index) to assess the suitability of digital platforms for travel, which can serve as a benchmark for implementing the "Smart Tourism" concept and monitoring the results of its implementation; and identifying the scope of the "Smart Tourism" ecosystem - institutional, platform-wise, and partnership-wise. This article uses the following methods: critical research methods - review and synthesis of academic literature and current research activities to translate the concept of "smart tourism" into the local tourism ecosystem; formal methods - classification and categorization methods; and qualitative methods - comparing the results of researchers' scientific work.

2. Main part

At the current stage of economic development, the tourism industry is seen as a complex, multi-layered innovation system involving technology, human capital, and institutional relationships. Simple, linear approaches are no longer sufficient to assess and predict the future of the tourism industry and need to adapt to current conditions. To develop the theoretical framework, the study relied on the synthesis of the smart destination concept, which views digitalization as the basis for tourism infrastructure management; the theory of innovation ecosystems, which describes the relationships between technological, institutional, and social elements of regional development; the triple helix model, which articulates the interaction between government, business, and universities to generate innovation; and the concept of sustainable tourism and ESG innovation, which integrates digital and environmental transformation. It is based on the concept of "smart tourism", which is based on the concepts of "smart city", innovation ecosystem, and sustainable tourism. Table 1 shows the evolution of approaches to interpreting the term "smart tourism" during the period 2015–2025.

Table 1. Evolution of approaches to interpreting the term "smart tourism", 2015–2025.

№	Year	Interpretation
1	2015	Smart tourism is the integration of smart city technologies and services to enhance the quality of tourism experiences through personalization, data analytics, and user participation (Mamraeva, 2019). .
2	2016	Smart tourism is a system based on the interconnection of data, people, and technology, creating an intelligent ecosystem for decision-making (Morozov, 2020).
3	2017	Smart tourism refers to the process of digital transformation of the tourism industry, where data becomes a key resource for competitiveness (Bukharova & Minaev, 2024).
4	2020	“Smart tourism” is a component of the digital economy that includes the development of intelligent services and platforms that improve the efficiency of managing tourist flows (Cherevichko & Temyakova, 2019).
5	2021	In the context of innovation ecosystems, smart tourism is seen as an environment for co-creation of value between market participants (Ralyk, 2023).
6	2022	“Smart tourism” is often replaced by the concept of “digital tourism,” which highlights electronic services as the basis for providing information for an effective tourist experience.” (Cherevichko & Temyakova, 2019).
7	2023	“Smart tourism is an innovative space accessible to everyone, ensuring interaction and integration between the environment and the guest” (Morozov, 2020).
8	2024	“Smart tourism should focus more on the integration of various tourism systems to improve tourist satisfaction ” (Mamraeva, 2019).
9	2025	“The concept of ‘smart tourism’ defines a set of digital mechanisms and solutions specifically for the tourism sector ” (Grinenko, 2024).

The material reviewed in the table shows that most authors see the concept of “smart tourism” as part of an ecosystem that aims to integrate technological, institutional, and social elements and generate innovations for the tourism sector, which ultimately allows the creation of new tourism experiences and increases the sustainability of the industry. The analysis of the data in the table allows us to identify two main stages in the approach to understanding the concept of “smart tourism”.

The term “smart tourism” is vaguely defined in both scientific and practical literature due to its interdisciplinary nature and the rapid development of digital technologies. Depending on the research context, several main approaches to its understanding can be identified.

1. Technological approach

This approach sees “smart tourism” as a system based on the use of digital technologies to improve the efficiency of tourism activities. The focus is on tools such as artificial intelligence, big data, the Internet of Things (IoT), cloud computing, and mobile applications. The main focus is on automating processes, digitizing services, and improving the management of tourist flows.

2. Management

From a management perspective, smart tourism is defined as an innovative model for organizing the tourism sector, based on real-time decision-making using data analytics. In this context, the integration of information systems between government entities, businesses, and tourists is crucial, leading to greater coordination and efficiency in managing the tourism sector.

3. Economic Perspective

From an economic perspective, smart tourism is considered a factor in enhancing the region's competitiveness and developing the tourism economy. It will contribute to increasing sector revenue, creating

new job opportunities, and fostering innovative entrepreneurship. The main focus is on the economic efficiency of applying digital technologies and their impact on the development of the tourism market.

4. Environmental (Sustainable) Approach

Within the framework of sustainable development, smart tourism is understood as a means to reduce the negative environmental impact of tourism. The use of digital technologies allows controlling the tourist load, optimizing the use of natural resources, and developing environmentally responsible forms of tourism.

5. Socially oriented approach

This approach emphasizes improving the quality of life of the population and enhancing the tourist experience. Smart tourism is seen as a mechanism for ensuring the availability of tourist services, increasing safety, developing cultural exchange, and involving local communities in tourist activities.

6. Integrated (integrated) approach

The most modern approach is an integrated approach that combines technical, economic, management, environmental, and social aspects. Within this framework, “smart tourism” is seen as a complex ecosystem that ensures the sustainable development of the region through the synergy of digital technologies and innovative management models.

Thus, the analysis of existing approaches shows that “smart tourism” is a multidimensional concept, the meaning of which depends on the chosen research approach. The most comprehensive understanding of this term is achieved when viewed within the framework of an integrated approach that considers the interrelationships between technological and socio-economic factors.

Researchers also identify various key elements in the “smart tourism” model, without contradicting each other. For example, Buhalis D. and Amarangana A., Garifullina A.F. emphasize the personalization of the tourist experience as a key value, while Auteu E. and Grigorenko S.V. consider “smart tourism” as part of the innovation ecosystem of the region, where shared value is created. Ralik D.V. and Havanova S.V. (Grinenko, 2024) define “smart tourism” as a set of digital methods and solutions specifically for the tourism sector. This allows us to discuss established scientific approaches to explaining “smart tourism” (Table 2).

The study of the theoretical framework allowed us to consider the concept of "smart tourism" as a key element of the regional innovation ecosystem, which is responsible not only for the digitalization of services, but also for the formation of a model of interaction between participants in the tourism market. The main difference from digitalization projects is that they are often unplanned and implemented in isolation, and are not tied to any strategy. The regional ecosystem,

with the concept of "smart tourism," plans the sustainable reproduction of innovations within the framework of an integrated strategy, which takes into account the current digital development of the region with the exchange of knowledge, joint investments, and the participation of various sectors of the economy.

Table 2. Approaches to the interpretation of the term "smart tourism".

№	Approach	Description
1	Technological	Focus on information technology and the implementation of digital solutions
2	Value-oriented	The focus is on creating value for the region, the enterprise, and the consumer at the same time.
3	Ecosystem	Focus on the interaction of key actors (business, institutions, consumers, government agencies)

Of particular importance is the development of more precise indicators for measuring the level of digitalization of the tourism system, as well as the development of integrated indicators of “smart tourism” that take into account technological, economic, social and environmental aspects.

The use of modern data analysis techniques, such as machine learning and hybrid econometric models, is a promising approach, as it allows us to assess nonlinear relationships and complex interactions between

variables. This is particularly important given the dynamic nature of the tourism sector and the rapid spread of digital technologies.

Special emphasis should be placed on using dashboard data at the regional and national levels, which enables us to identify the long-term effects of digitalization and compare different regional models of tourism development. In this context, research into the factors of digital inequalities and their impact on the sustainability of tourism ecosystems is a crucial area of focus.

A separate study is needed to assess the impact of external shocks (economic crises, pandemics, geopolitical changes, etc.) on the efficiency and resilience of digital tourism systems. This would improve the quality of forecasting models and the relevance of management decisions. Therefore, further research is needed to improve econometric tools for analyzing smart tourism, expand the scope of data used, and deepen the understanding of the mechanisms by which digitalization affects the sustainable development of the tourism sector.

Therefore, innovation is possible only with institutional support and a well-developed regulatory framework, and consumer participation has a positive impact on economic and environmental outcomes. In addition, it can be said that the innovation ecosystem based on the concept of "smart tourism" develops within the following cycle: data → innovation → value → sustainability → new data. Maintaining a stable cycle of stages helps the ecosystem to continuously renew itself and adapt more flexibly to external changes.

The proposed calculation of the integrated STRI index is a weighted sum of five subindices

$$\text{STRI} = 0.2(\text{DI}) + 0.2(\text{PA}) + 0.2(\text{ESG}) + 0.2(\text{IS}) + 0.2(\text{SE}),$$

where:

- DI (digital index) – technological level;
- PA (people activity) – social-interactive level;
- ESG (ecology, social, governance) – environmental level;
- IS (institutional system) – institutional level;
- EE (economic efficiency) – economic level.

The index is interpreted within the numerical horizons presented in Table 3. The ranges for the STRI indicator are developed in analogy with international digital readiness indices (OECD, UNWTO). The time periods were chosen to be equal (0.25 each), but they reflect the qualitative changes in the maturity of each ecosystem: from active pilot projects to institutional consolidation, then to inter-stakeholder collaboration and full digital integration. Therefore, the categories not only quantitatively monitor the level of digitalization but also reflect the organizational development stage of regional smart tourism systems.

Table 3. STRI Numerical Horizon Range.

STRI range	Characteristics of the level of readiness	Ecosystem type
0,00 – 0,25	Low level. Lack of strategy, weak digital infrastructure.	Initiative (pilot stage)
0,26 – 0,50	Intermediate level. Emerging programs, partial integration of platforms.	Institutional
0,51 – 0,75	Above average. Established connections, sustainable digital services.	Collaborative
0,76 – 1,00	High-level. A fully integrated digital ecosystem.	Smart Tourism Ecosystem

The concept of smart tourism promotes responsible tourism, using technology as a tool to achieve a sustainable balance between the needs of tourists and the interests of the region. Smart tourism is considered one of the most important tools for transforming current tourism systems towards sustainable and innovative development. This approach is essential for integrating digital technologies into tourism management

processes, creating flexible, adaptable, and interconnected ecosystems that rapidly improve the experiences of tourists and visitors.

From an analytical perspective, smart tourism is not limited to the use of digital solutions; it also encompasses an effective interactive model among all stakeholders in the tourism sector—authorities, businesses, local residents, and tourists—based on smart environments and technologies. This process utilizes tools such as artificial intelligence, big data, the Internet of Things (IoT), and geographic information systems (GIS) to collect, process, and analyze massive amounts of information in real time.

The use of these technologies significantly improves the quality of tourist flow management, enhances infrastructure, and reduces the burden on the region's cultural heritage. For example, big data analytics enables more accurate forecasting of tourism development, while IoT solutions can help monitor environmental opportunities and the sustainability of tourism infrastructure. Digital platforms, in turn, enable effective coordination between tourism market players and improve the quality of services.

The econometric analysis of smart tourism aims to measure the impact of digital technologies on the tourism industry and the sustainability of regional ecosystems. This allows for the identification of statistical relationships between the level of digitalization and key indicators of tourism performance, economic growth, and environmental sustainability.

The main objective of the econometric analysis is to assess the impact of the implementation of smart tourism elements (digital platforms, big data, Internet of Things, artificial intelligence) on the development of the tourism sector. To achieve this goal, the following objectives were addressed.

- Identify digitalization factors affecting tourism;
- Develop econometric models for the dependence of tourism indicators on the level of digital development;
- Assess the significance of the impact of digital technologies;
- Forecast the dynamics of the development of the tourism industry.

The following are usually considered as dependent variables.

- Tourist flow (number of tourists);
- Tourist income;
- Level of use of tourism infrastructure.

The following can be used as independent variables.

- Regional digitalization index;
- Smart tourism index;
- Investment in information and communication technologies;
- Internet penetration rates;
- Number of digital tourism platforms;
- Development of Internet of Things infrastructure and artificial intelligence solutions.

The most commonly used linear regression model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon$$

where:

- Y is the tourism development indicator,
- $X_1 \dots X_n$ are digitalization factors,
- β are the influence coefficients,
- ε is the random error.

An economic study of the smart tourism sector found that:

- The degree of digitalization has a positive and statistically significant impact on tourist flow growth;
- Investment in digital infrastructure is directly linked to tourism revenue growth.
- The development of the Internet of Things and data analytics will help to increase the efficiency of the use of tourism resources;
- The digital maturity of the sector is an important factor in its competitiveness.

The econometric analysis confirms that the growth of digitalization and smart tourism is an important factor for the development of the tourism sector and sustainable regional development. Using standard economic models allows for the assessment of the current impact of digital technologies and the prediction of the evolution of tourism systems, which is crucial for strategic planning and ecosystem management. Through the economic analysis of the impact of smart tourism on the development of the tourism sector and a sustainable ecosystem, we can draw some general conclusions.

First, the degree of digitalization is the primary determinant of tourism development dynamics. The spread of artificial intelligence, big data, the Internet of Things, and digital platforms has a statistically significant and positive impact on the growth of tourist flows, sector revenues, and the efficiency of tourism resource utilization.

Second, the analysis confirms that digital transformation in the tourism sector contributes to enhancing the sector's competitiveness. Regions with higher levels of digital maturity demonstrate better development in tourism infrastructure, service quality, and investment attractiveness.

Third, the use of econometric models allows us to identify stable relationships between digital factors and indicators of tourism development, as well as to develop forecasts for future developments in the industry. This lays the foundation for more informed management and strategic decision-making. At the same time, limitations related to the lack of statistical data, the difficulty of assessing the level of smart tourism, and the influence of external macroeconomic factors were identified. These issues require further improvements in the research methodology framework and the development of more accurate indicators of digital transition for the tourism industry.

Therefore, it can be concluded that the economic analysis confirms the important role of smart tourism as a tool for sustainable regional development. Further development will help to increase the efficiency of tourism system management, strengthen innovation, and support the sustainable competitive advantage of digital economy sectors.

Smart tourism, which aims to create a sustainable innovation ecosystem, can become an accelerator of regional development, stimulate innovation, develop small and medium-sized enterprises, and increase the attractiveness of the region for investment. It contributes to the creation of new jobs, the development of creative industries, and the strengthening of regional integration into the global tourism network.

However, the analysis points to several constraints and challenges, including digital disparities between regions, the high costs of technology adoption, insufficient digital skills among tourism sector employees, and risks associated with cybersecurity and the protection of personal data. These factors could significantly delay the establishment of a comprehensive smart tourism ecosystem.

Therefore, smart tourism should be considered a strategic tool for regional development, ensuring a transition to a sustainable innovation management model. Successful implementation requires a holistic approach that includes developing digital infrastructure, training personnel, modernizing regulatory frameworks, and fostering interdisciplinary collaboration.

Considering the concept of smart tourism from the point of view of creating a sustainable and innovative ecosystem in the regions, this approach shows that it is the most promising approach for the digital transformation of the economy and society.

Smart tourism is not only a tool for improving the efficiency of tourism management, but also a mechanism for the regional development system, which ensures the integration of digital technologies into economic,

social, and environmental processes. Its implementation supports sustainable relationships between participants in the tourism ecosystem, improves the quality of services, promotes the rational use of resources, and supports regional innovation.

The study found that the key factors for the successful development of smart tourism include the development of digital infrastructure, the use of artificial intelligence, supporting big data and the Internet of Things, as well as increasing the digital literacy of tourism market participants. The creation of an effective data management system and ensuring its security are of particular importance. It is worth noting that developing a smart tourism system faces several challenges related to the digital divide, the financial cost of implementing technologies, and the need to change current management models. These factors necessitate a comprehensive approach to sector development and the active participation of governments, businesses, and the scientific community. In general, it can be concluded that smart tourism is an important tool for the sustainable development of regions and helps them transition to an innovative economic model. Further development will be determined by the level of integration of digital technologies, the level of institutional support, and the readiness of society for digital transformation.

3. Conclusion

The results of the study confirm that the implementation of the concept of "smart tourism" in the development of regional tourism ecosystems is not only an important factor of sustainable and innovative development, but also the basis for the implementation of digital solutions. It is shown that the success of a modern tourism ecosystem is determined not only by the level of technological development, but also by the maturity of institutions, the availability of effective communication channels and cooperation between market participants, as well as the ability of local communities to adapt to innovation. The novelty of this study lies in the confirmation of the connection between the level of regional innovation systems and the digital process of tourism. Unlike existing studies, the proposed approach considers the concept of "smart tourism" not as a result of digitalization, but as an accelerator of innovation and an element of the strategic development of regional tourism ecosystems. There is no doubt that the development of algorithms for the implementation of the concept of "smart tourism" around the world will contribute to the transition to a new type of regional economy based on knowledge, innovation and sustainable development. The following general trends in the development of tourism ecosystems have been identified.

- First, many regions have begun to implement the concept of "smart tourism" by creating or modifying digital platforms. These platforms are often the center of innovation ecosystems responsible for the transparency of information exchange and interaction between industry participants;

- Second, regions that timely recognized the need for partnerships between governments, companies and research institutions have achieved the most positive results from the implementation of the concept of "smart tourism";

- Third, the popularity of the concept of "smart tourism" shows that many regions are moving from implementing independent digital solutions to developing an "ecosystem mentality", which considers the tourism sector as part of an innovative economy through development projects (which include cross-sectoral projects, creative tourism, etc.).

Based on the "smart tourism" model, three main directions of ecosystem development have emerged worldwide: platform-based - creation of digital platforms with the participation of government representatives and large IT companies; collaborative - development of innovation ecosystems at the regional level with the participation of states, entrepreneurs and universities; Limited - Focused on implementing specific digital technologies.

Author Contributions

The author approved the final manuscript.

Conflict of Interest

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Secure Smart Mountain Tourism in Complex Terrain: Integrating Satellite Monitoring, GPS, Communication Technologies and Cybersecurity for Sustainable Tourism and Regional Economic Development

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Abstract

Mountain areas attract about 9 to 16 percent of all international tourists worldwide. However, the very features that make these places beautiful and interesting can also bring challenges. For example, steep slopes may become unstable, weather can change quickly, roads and paths can be fragmented or hard to navigate, and in some cases, there are areas where it's difficult to communicate with the outside world. This is a major problem. This paper presents a single framework that combines satellite monitoring, GIS spatial analysis, GPS/GNSS positioning, hybrid communication systems, and cybersecurity measures into one secure smart mountain tourism system. The goal is to support sustainable tourism and local economic growth. The Shahdag–Qusar–Khinalig area in northeastern Azerbaijan is used as an example. The study uses open satellite data, elevation data, tourism data, and printed coverage details to construct this framework. The results show that areas with limited accessibility and poor communication are in close proximity to the most valuable tourism sites, primarily due to a noticeable lack of safety. Digitalisation without security is not helpful because location data, bespeaking platforms, and IoT wearables bring opportunities for attacks that can be constrained just like the services they support. A six-layer framework is implied, including data collection, communication, data processing, cybersecurity, smart tourism services, and sustainable outcomes, along with three structured risk and technology matrices.

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Keywords: Smart Tourism; Mountain Tourism; Satellite Monitoring; GPS; GIS; Communication Technologies; Cybersecurity; Sustainable Tourism; Regional Economic Development

JEL Codes: L83, Z32, O18, O33

1. Introduction

1.1. Mountain Tourism and Sustainable Development

Mountain tourism forms up about 9 to 16% of all international tourists, which imports around 195 to 375 million people stay mountains each year (UNWTO and FAO, 2021). After the pandemic, more people are pilgrimaging to mountain areas in countries that are still unfolding or undergoing changes (FAO, 2023). In Azerbaijan, the tourism sector is described as a key driver for regional growth and impactful away from reliance on oil and gas. In 2024, the sector contributed about ₼7.8 billion to the economy and 423,700 jobs.

Spending by tourists rose by 29% to €3.4 billion, and the number of foreign visitors exceeded 2.63 million, which is 25.9% more than in 2023. Mountain ecosystems take a long time to recover from things like people padding on them, chucking away trash, and soil being washed away (Sgroi, 2020; Almasov & Orujov, 2025). So sustainability is about finding a balance instead of being burdened to pick up as much as possible from them.

1.2. Challenges of Complex Mountain Terrain

Steep slopes and high elevation changes make it hard to construct roads, leading to longer travel times and bringing areas that get filled by snow or landslides (Vanpouille et al., 2021). Also, the weather in mountain areas can be dangerous even for experienced people (Mao et al., 2025). Most rescue cases occur when people who don't understand the area are pilgrimaging alone or in small groups without proper communication tools (Vanpouille et al., 2021; Tang et al., 2026). Terrain shielding catches radio signals from handing over areas in valleys or behind hills, which means mountain areas have poor coverage because of the way the land is structured, not because of lack of effort (Imran et al., 2024) — this is a safety issue since the most beautiful spots are usually the ones with the least signal (Liutikas et al., 2024).

1.3. Digital Transformation of Mountain Tourism

Smart tourism exercises technology like IoT sensors, big data, mobile apps, and recommendation systems to better how tourists know how a place and how destinations are hacked (Samara et al., 2020; Alsharif et al., 2024). In mountains, the setup is wider: satellite remote sensing provides environmental basics, GIS handles spatial analysis, GPS/GNSS furnishes positioning, and the communication system handles regular and emergency messages (Tung et al., 2024) with digital twins (Cheng, 2025; Keertana & Kumar, 2025) and provides geographic information (Ricker, 2020, appending simulated data and details from people.

1.4. Cybersecurity Challenges in Smart Mountain Tourism

Smart tourism systems contain personal, financial, and continuous location data, such as identity, payment information, and movement history (Florido-Benítez, 2025). Threats like platform hacking, phishing, ransomware, and data leaks are common issues addressed in security studies. At the same time, the industry focuses more on developing new services rather than investing in security measures (Florido-Benítez, 2025; Kovačić et al., 2022). There are three important things about mountains: GPS signals can be jammed or spoofed, which might lead to wrong directions or delayed help (Noah & Elmusrati, 2025; Ghanbarzade & Soleimani, 2025); the devices hikers use are limited in battery life and security (Banerjee & Bhat, 2025; Dziurakh et al., 2024); and using satellites to pack data makes the system easier to implement.

1.5. Research Gap and Research Objectives

The research on smart tourism focuses on how tourists know places and how destinations compete (Alsharif et al., 2024; Palomo Santiago & Parra López, 2024). Studies exercising remote sensing and GIS look at the land and how suitable it is for certain uses (Ramaano, 2024; Withanage et al., 2024). Work with GNSS and communication systems deals with how accurately positions are determined and how networks are built up (Bianco et al., 2021; Ali et al., 2025). Cybersecurity research aims at defending data in general situations (Florido-Benítez, 2025; Kovačić et al., 2022). How these layers should be combined so that a tourist who is out of signal can still be authenticated, and their location information remains safe, is not well established; this paper presents a system for the Shahdag–Qusar–Khinalig area.

2. Literature Review

2.1. Smart Tourism Technologies

Smart tourism bears to exercising information and communication technology in the travel experience and how destinations are hacked, which assists jackleg the visit better for tourists and betters how well the destination functions (Samara et al., 2020; Alsharif et al., 2024). Reviews from 2013 to 2023 exhibit a trend toward exercising integrated frameworks at the destination level Alsharif et al., 2024). A study exercising bibliometric analysis found that AI, big data, and augmented reality are the most impactful areas, emphasizing that the concept is not just about technology but also about how organizations work (Palomo Santiago & Parra López, 2024). Digital twins and donated geographic information both require a dependable sensing and communication system.

2.2. Satellite Remote Sensing and GIS in Mountain Tourism

Sentinel-2, which has a resolution of 10–20 meters and revisits an area every five days, assists with categorizing land cover, vegetation cover, and changes at scales that are useful for budgeting (Belcore et al., 2020; Pflumm et al., 2025). Mapping in alpine areas is challenging because of shadows, snow, and mixed pixels, but exercising Google Earth Engine along with machine-learning tools that contain terrain factors forms these challenges easier to hack (Belcore et al., 2020; Pflumm et al., 2025). Using time series data also assists in detecting trail changes caused by disturbances (Parisi et al., 2023). Studies exercising AHP-predicated multi-criteria analysis in GIS consistently detect that accessibility, slope, and being close to defended areas are the main factors that credit suitability surfaces (Ramaano, 2024; Withanage et al., 2024; Akbarian Ronizi et al., 2023; Mansour et al., 2020).

2.3. GPS/GNSS and Communication Technologies

GNSS furnishes accurate positioning, but in canyons, the accuracy can be less reliable. Signals can be blocked by steep walls, interference bellowed multipath, and deep valleys might head too many satellites to offer a dependable location. Also, ground networks usually follow valleys rather than paths, which makes it tough to build up cell service in mountainous regions. To hack these issues, other options contain LoRaWAN for long-distance communication in rescue missions, do-nothings with 5G for aerial support, and satellites in low Earth orbit that bring well even in rough terrain. All these systems have strong security, because GNSS signals can be frozen or duped by interference or fake signals.

2.4. Cybersecurity in Smart Tourism

Cybersecurity studies in the tourism industry have grown quickly since 2020, and the most common problems described are platform attacks, attempts, ransomware, and data leaks. However, the money expended on security has not kept up with the new services being adopted (Florido-Benítez, 2025; Kovačić et al., 2022). Hospitality operators often do not have a central system for managing connected devices, and this issue is especially common in remote mountain lodgings. To defend against attacks, various methods are used. These include intrusion-detection systems (Dziurakh et al., 2024), blockchain systems that observe transactions safely and sometimes keep user information private, employing methods like zero-knowledge proofs (Khanna et al., 2020), and GPS covering systems that filter out fake signals by bracketing different ways of determining position (Noah & Elmusrati, 2025; Ghanbarzade & Soleimani, 2025; Tryb & Hospodka, 2025).

2.5. Sustainable Tourism and Regional Economic Development

Mountain tourism can be a way to generate income and bring jobs, especially when there are few other options. However, the benefits only really materialize when local people have the resources, hold the necessary skills, and are part of the supply chain (UNWTO and FAO, 2021; Sgroi, 2020; Almasov & Orujov, 2025). Studies in Azerbaijan exhibit that regional tourism can aggrandize incomes when there chances good infrastructure and strong local institutions (Almasov & Orujov, 2025; Baydur, 2024; Mehdiyev, 2025). The Tourism Strategy 2023–2026 also emphasizes mountain areas as important locations to capitalize on [8]. Studies on conveying capacity exhibit that an increase in visitors doesn't immediately bring environmental damage. Instead, the negative effects occur later; it is hard to reverse the harm once it happens (Haribudiman et al., 2023; Xu & Li, 2025; Shahdag Mountain Resort, 2025).

3. Materials and Methods

3.1. Study Area

The Shahdag–Qusar–Khinalig corridor extends from the Quba and Qusar lowlands across the northern slope of the Greater Caucasus towards the Khinalig massif, with relief spanning from 1,435 m at the Shahdag resort base station to 2,552 m within the resort boundary and above 4,200 m on the broader massif (Shahdag Mountain Resort, 2025). It combines a capital-intensive resort node with small dispersed settlements, including Khinalig at approximately 2,350 m, inscribed in 2023 on the UNESCO World Heritage List as part of the Cultural Landscape of the Khinalig People and the Köç Yolu transhumance route (UNESCO, 2023), and contains protected areas of national importance. Approximate coordinates are 41.18° N, 48.13° E (Khinalig), 41.28° N, 48.25° E (Shahdag), 41.43° N, 48.43° E (Qusar), and 41.36° N, 48.51° E (Quba).

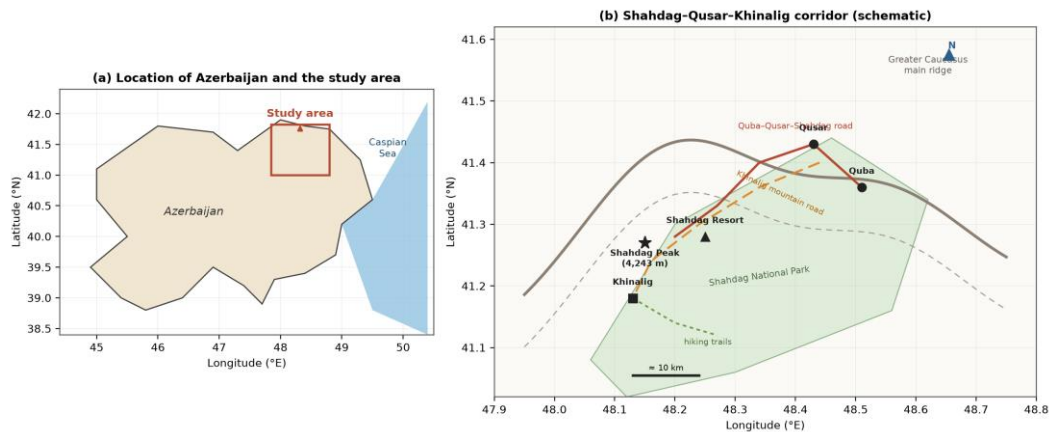


Figure 1. Location of the selected mountain study area: (a) position of Azerbaijan and the study area; (b) schematic configuration of the Shahdag–Qusar–Khinalig corridor. Coordinates are approximate, and the map is a schematic representation.

3.2. Data Sources

The framework uses openly available data so that other destination authorities can reproduce it without commercial licences: Sentinel-2 and Landsat imagery for land cover; SRTM and Copernicus DEM (30 m) for elevation, slope and aspect; OpenStreetMap and national maps for roads and trails; and State Statistical Committee and Azerbaijan Tourism Board data for arrivals and capacity (ATB & STA, 2023; SSCRA, 2025), with demand signals from platform data and volunteered geographic information (Ricker, 2020). We used published operator maps and path-loss data to check the coverage (Imran et al., 2024; Bianco et al., 2020; Yaacoub & Alouini, 2020). We also looked at cybersecurity risks using recent threat taxonomies (Florido-Benítez, 2025; Kovačić et al., 2022; Dziurakh et al., 2024). (Table 1).

Table 1. Data Sources and Variables Used in the Study.

Data category	Source	Key variables
Satellite imagery	Sentinel-2 MSI (10–20 m); Landsat 8/9 OLI	Surface reflectance, NDVI, land cover, change detection
Terrain data	SRTM and Copernicus DEM (30 m)	Elevation, slope, aspect, relative relief
Geographic data	OpenStreetMap; national topographic maps	Roads, trails, settlements, protected areas
Tourism data	State Statistical Committee; Azerbaijan Tourism Board	Arrivals, accommodation capacity, occupancy
GPS / tracking data	Public hiking tracks; volunteered geographic information	Route geometry, waypoints, elevation profiles
Communication data	Operator coverage maps; regulatory reports	2G/4G/5G availability, coverage gaps, dead zones
Environmental data	Sentinel-2; Landsat; ERA5-Land reanalysis	Temperature, precipitation, vegetation condition, snow
Digital platform data	Google Maps; booking platforms; Google Trends	Search demand, reviews, booking availability
Cybersecurity data	Published threat reports; incident taxonomies	Threat categories, exposure, control maturity

3.3. Analytical Approach.

The study exercises a conceptual framework with examples of spatial analysis, directing to deduce how different technologies and controls should be brought together, rather than focusing on how one single factor behaves. Four steps were concluded — first, coming across at the land and how it's stepped in exercising data from elevation and images; second, answering how easy it is to pick up to tourist spots and trails by coming across roads and the land's features; third, answering where areas are not stepped in by existent footprints on a 3D map to detect places that are hard to hand over; and fourth, coming across at how secure each part of the system is by analogizing it with different types of threats. All the mapped and numerical results are just examples, showing how the method brings rather than matriarchal an official or complete survey.

4. GIS and Satellite-Based Analysis

4.1. Terrain Analysis

Elevation ranges from about 350 m in the Qusar lowlands to over 4,200 m on the main ridge, giving relative relief above 3,500 m over roughly 35 km. Slope is concentrated in the 15–45° range, with steeper faces on northern flanks and along the incised valleys that carry the road network (Figure 2); it controls where trails can be built, where vehicles can operate, and where line-of-sight communication is possible.

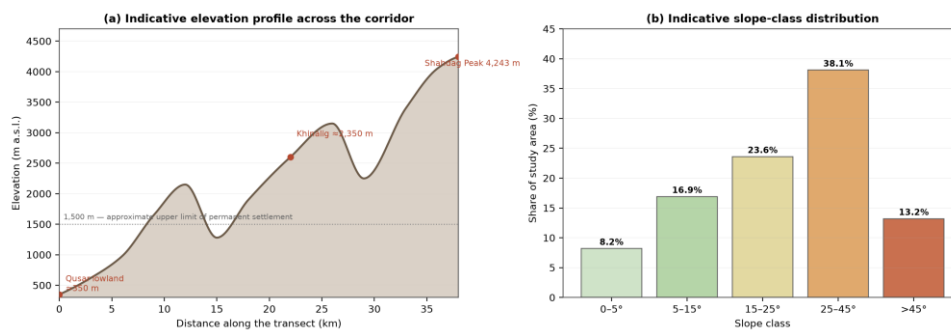


Figure 2. Digital elevation and terrain analysis of the study corridor: (a) indicative elevation profile; (b) indicative slope-class distribution derived from open 30 m elevation data.

4.2. Environmental Monitoring

The condition of vegetation was assessed using NDVI data from Sentinel-2 images (Belcore et al., 2020; Parisi et al., 2023). Greenery inconstancies with higher altitudes, and above 2,000 meters, the time when plants culture is very short, stuff the best time to stay just a few weeks in the summer. The places that pick up the most visits, like around Khinalig and the upper parts of Shahdag, are also areas where plants are doing well but take longer to recover after being disturbed. This connection between where people stay and how sensitive the plants there are is the main discovery about the environment.

4.3. Tourism Accessibility Analysis

Putting together roads, trails, and the land features brings a clear level system for picking up around. There is one main paved road that connects the lowland areas to the Qusar and Shahdag areas, and this road handles most of the vehicle traffic. Beyond that main road, access to other places depends on a few smaller roads. The Khinalig road is the only one that permits vehicles to reach that village. Getting to the trail is hard because there aren't many places to start. Also, parts of the trail cross slopes that are steeper than 30 degrees, which makes erosion more likely and adds to the chance of accidents (Akbarian Ronizi et al., 2023; Mansour et al., 2020).

4.4. Communication Coverage Analysis

When printed coverage areas are congruent with the terrain model, they bring a global pattern of mountains. The coverage supervenes valleys and where people reside, but trails that cross over hills or through tight valleys are not contained in this pattern (Imran et al., 2024; Yaacoub & Alouini, 2020). Three types of gaps show — short breaks by local terrain filling signals, long areas with no coverage on high mountain paths, and deep valleys where both line-of-sight and satellite signals are blocked — each claiming a different solution, like appending more network towers, exercising satellites to pack data, or exercising a message system that hoards and packs messages later.

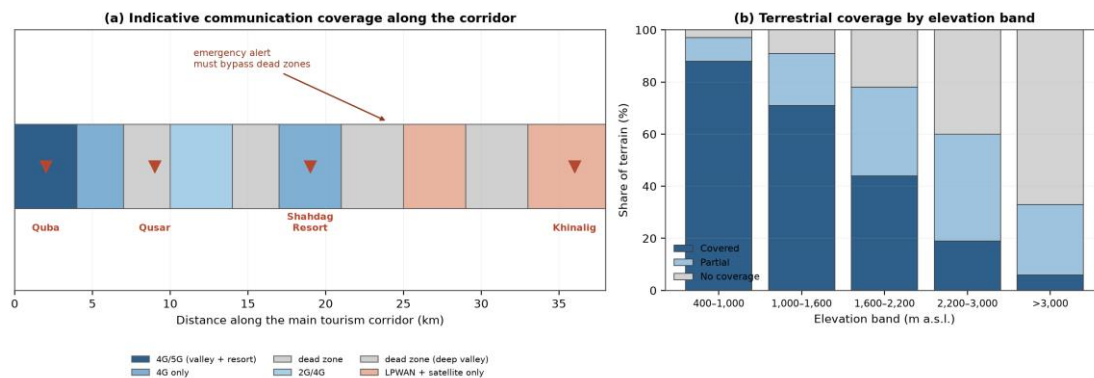


Figure 3. Tourism infrastructure, GPS routes and communication coverage: (a) indicative coverage profile along the main tourism corridor; (b) indicative terrestrial coverage share by elevation band.

5. GPS and Communication Technologies for Mountain Tourism Safety

5.1. GPS-Based Tourist Tracking

GPS tracking rolls a group of people who aren't bustling into a set of paths that can be observed. There live three ways this brings: one is always dogging exercising a mobile app, another is packing location updates at incubate times with a special device, and the third is marking movement through a wearable that only packs data when it's near a receiver. Continuous tracking proffers the best safety benefits but claims the most data protection, while periodic reporting brings well for occasional coverage and passive recording observes a record that can be recaptured later. All three methods are better with multi-constellation receivers that use GPS, GLONASS, and Galileo signals (Celiński, I., & Staniek, M. (2025)).

5.2. Communication Technologies

Because no single technology can address all the challenges of a complex mountain area, the system inevitably needs to exercise several layers of technology. Terrestrial cellular networks provide fast data speeds in the valleys and at ski resort locations (Imran et al., 2024); LoRaWAN is commonly used along the trails to stand in areas with less data need, and it can last a long time on a single battery, which has been used in mountain rescue situations (Bianco et al., 2020; Celiński & Staniek, 2025). Satellite connections guarantee reliable communication for base stations, rescue vehicles, and handheld devices, no matter the terrain (Wall et al., 2026). Finally, aerial platforms like drones are habituated to stand in any hanging around areas during busy times or emergencies (Ali et al., 2025). Emergency traffic should have at least two layers because the ways they can fail are mostly different from each other.

5.3. Emergency Response System

The emergency chain is a straight line with a loop: tourist → GNSS location → emergency warning → communication system → rescue control → action taken. Each link holds a way it can dissatisfy: disposing stops functional if there's heavy terrain filling the signal or if someone is burdensome to intermeddle on purpose (Noah & Elmusrati, 2025); forewarning doesn't bring when there's no coverage; the network disintegrates down during busy times or when there's a connection problem; and coordination disintegrates when the position information isn't reliable or can't be participated quickly with the people reacting. The response holds a lot of habitual steps — exercising multiple satellite systems for location, packing alerts with a delay, keeping two separate ways to pack the message, and answering if the location data is correct before it picks up to the rescue team.

6. Cybersecurity Framework for Smart Mountain Tourism

6.1. Cybersecurity Risks

Risks were identified in eight areas: GNSS receivers, tourist mobile apps, digital tourism platforms, IoT devices, communication networks, online booking systems, digital payment systems, and tourist databases. Location data are important in the mountain context because they exhibit where someone has been and how they move, which can assist in identifying a person's location and activities at a specific time (Florido-Benítez,

2025). When many of these data sets are combined, it is easier to identify individuals, even if each one on its own does not reveal personal information.

6.2. Potential Cyber Threats

GNSS Manipulation, like jamming and even more dangerous spoofing, is the biggest threat in this area because a fake location can lead people the wrong way or send rescuers to the wrong place (Noah & Elmusrati, 2025; Ghanbarzade & Soleimani, 2025; Tryb & Hospodka, 2025). Platform-level threats include data breaches, identity theft, unauthorized access, and denial of service (Florido-Benítez, 2025; Kovačić et al., 2022); device-level threats include unauthorized access to wearables and poorly defended IoT devices that are habituated as entry points into operator networks (Banerjee & Bhat, 2025; Dziurakh et al., 2024). Communication-level threats include picking off and attacking network infrastructure, as well as rogue base stations.

6.3. Security Measures

The implied controls are clear: they are strong enough to work well, but not too heavy for devices with limited power and connections that aren't always reliable. Six key measures are at the center: enciphering location and identity information all the way through, exercising easy-to-exercise encryption methods when hardware resources are defined; claiming devices and users to be certified, with multiple layers of security for administrative access; matriarchal users only the minimum access they hypodermic needle; stuff data anonymous and categorized together for analysis at the destination level; guaranteeing safe data transfer across different types of networks; and fettle track of activities with ongoing monitoring and recording (Florido-Benítez, 2025; Dziurakh et al., 2024; Khanna et al., 2020), (Table 2).

Table 2. Cybersecurity Risks and Protection Measures in Smart Mountain Tourism.

System/asset	Principal risk	Recommended protection measure
GNSS receivers	Spoofing, jamming, position manipulation	Multi-constellation / multi-frequency GNSS, signal authentication, anomaly detection
Tourist mobile applications	Reverse engineering, credential theft, excessive permissions	Code obfuscation, least-privilege permissions, secure storage, MFA
Digital tourism platforms	Data breach, account takeover, web attacks	Web application firewall, IDS/IPS, penetration testing, role-based access
IoT wearables and beacons	Device hijacking, unauthorised data exfiltration	Hardware root of trust, secure boot, lightweight cryptography
Communication networks	Interception, denial of service, rogue base stations	End-to-end encryption, VPN tunnelling, continuous network monitoring
Online booking systems	Payment fraud, fake listings	PCI-DSS compliance, tokenisation, strong customer authentication
Digital payment systems	Card-not-present fraud	Tokenisation, behavioural analytics, fraud scoring
Tourist databases	Re-identification, unlawful profiling	Data minimisation, anonymisation, retention limits, GDPR-aligned governance

7. Results and Discussion.

7.1. Environmental Monitoring Results.

The analysis of plant life communicates a pattern that rides on height: thick forests at lower areas below about 1,800 meters, a mix of grasslands and wildflowers between 1,800 and 2,600 meters, and thin vegetation at higher elevations above that. The most popular places are mostly in the transition zone, which holds the highest level of visitor pressure, balanced against its ability to recover. This area should be the main focus for managing visitor flow through tools like seasonal limits, designated walking routes, and temporary closures. The same skills essential to cover these measures are also habitual in providing services for tourists.

7.2. Tourism Accessibility Results.

Accessibility results show that most accessible areas are concentrated in one main area, and there are not many tourist spots that can be reached within an hour from the Qusar or Quba accommodation areas. Trail access permits people to reach more areas, but it is limited by steep slopes and the number of trails that are observed in good condition. Because of this, the trail network fronts heavy pressure in some places, and people spread out to exercise on other paths or in new villages as alternatives. This assists degrade the pressure, but only in areas where safety and communication are already hacked properly.

7.3. Communication and Safety Results.

The analysis communicates that the most important parts of the trail, which offer the best views and experiences, are also the ones that are hardest to reach. Coverage is good in valley floors and at resort areas, but it drops quickly above about 2,000 meters and in deep valleys. Traveling off the main trails is mostly not stepped in. This mismatch is a natural part of mountain tourism (Imran et al., 2024; Yaacoub & Alouini, 2020). It assists in determining the order for improvements: first, appending backup power systems to the main trails, then connecting the remote areas with satellite links, and finally furnishing air-based communication for the highest peaks (Bianco et al., 2020; Ali et al., 2025; Wall et al., 2026).

7.4. Digital Platforms and Tourism Development.

Public platform data indicate that the corridor's digital presence has grown a lot, with more people searching for it and leaving reviews during the winter and summer months. Online booking options are more available in the resort area and less so in the villages, so the advantage of digital demand mostly goes to the bigger, more expensive hotels. Booking websites, content in many languages, and digital payment methods are the real ways to assist smaller village businesses in picking up this benefit (Samara et al., 2020; Palomo Santiago et al., 2024).

7.5. Regional Economic Development.

In 2024, travel and tourism generated about ₼7.8 billion for Azerbaijan's economy and supported around 423,700 jobs (World Travel & Tourism Council, 2025). The country also attracted approximately 2.63 million foreign tourists, which is 25.9% more than the number in 2023 (SSCRA, 2025). Studies in different regions show that tourism can increase local incomes and lower unemployment, but this happens only when there is good infrastructure and strong local institutions. The benefits ride on how much local people are involved in the tourism industry and how connected they are to the supply chain (Almasov & Orujov, 2025; Baydur, 2024; Mehdiyev, 2025). These positive effects last only if the number of tourists is kept under control to protect the environment (Haribudiman et al., 2023; Xu & Li, 2025; World Bank, 2026).

7.6. Environmental and Economic Balance.

The results exhibit that the development issue holds two sides: aggrandizing visitors brings about economic benefits like more income, jobs, and government revenue, but it also brings environmental problems such as trail damage, waste, and harm to plants in the transition area (UNESCO, 2023). Going beyond the environmental limit is the main reason people stay, which is the natural attraction, so any growth past that point will naturally decline; therefore, the ability to cover must increase at least as quickly as the number of visitors (Table 3).

Table 3. Digital Technologies and Their Contributions to Sustainable Tourism and Regional Economic Development.

Technology	Primary function	Contribution to sustainability	Contribution to regional economy
Satellite remote sensing	Environmental monitoring	Detects vegetation change and erosion early	Protects the asset base of tourism
GIS and spatial analysis	Planning and suitability mapping	Directs development away from sensitive zones	Optimises investment in access infrastructure
GPS / GNSS	Positioning and navigation	Reduces search-and-rescue exposure	Extends the accessible route network
4G/5G and satellite backhaul	Connectivity	Enables digital services with a low physical footprint	Removes the connectivity barrier to rural enterprise
IoT devices and wearables	Real-time safety monitoring	Supports low-impact, dispersed visitation	Creates service and maintenance employment
AI and big data	Forecasting and personalisation	Balances demand against carrying capacity	Improves yield for small operators
Digital platforms	Marketing and booking	Extends the season, reduces price dumping	Connects village producers to visitors
Cybersecurity controls	Trust and continuity	Protects environmental and cultural data	Protects revenue and business continuity

8. Proposed Secure Smart Mountain Tourism Framework.

8.1. Structure of the Framework.

The framework consists of six layers, each with a specific purpose, a way data is passed to the next layer, and a security need (Figure 4). Layer 1 touches conference data through satellite images, GPS locations, IoT devices, tourism numbers, and environmental checks (see Table 1), predicated on the idea of exercising many different sources. Layer 2 — Communication: contains mobile networks like 4G and 5G, satellite backhaul, and low-power IoT networks, with multiple backup paths to guarantee emergency traffic always has two separate routes. Layer 3 — Data processing: GIS, artificial intelligence, and spatial analysis are habituated to roll observations into terrain models, accessibility assessments, opportunity forecasts, and alerts about unusual activity. Layer 4 fastens on cybersecurity, which contains encryption, authentication, privacy protection, and access control for all the layers before it. Layer 5 — Smart tourism services: secure data is shared with users via a digital platform, mobile apps, GPS navigation, and emergency services, with access levels and checks for different permissions. Layer 6 fastens on sustainable outcomes, which include tourist safety, environmental protection, and regional economic development. Each of these areas holds a specific indicator, a data source, and an iterative review cycle.

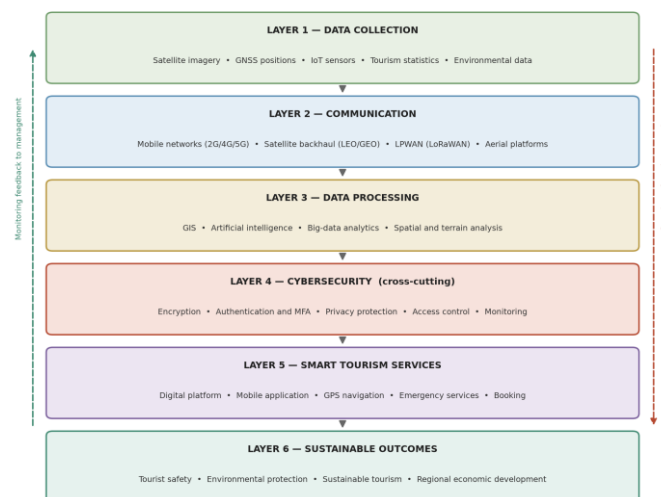


Figure 4. Proposed Secure Smart Mountain Tourism Framework: six integrated layers from data collection to sustainable outcomes.

8.2. Design Properties and Investment Sequence.

Four key features make this framework unique: it is mounded, drift if one layer conks, the whole system doesn't layover functional; it brings both ways, so data from monitoring assists fettle management choices; it contains security as part of its structure, not just as an extra service; and each part is compounded to clear results, like bettering safety, defending the environment, or hoisting local income. It also implies a certain order for investing: first in connectivity and then in services, and first in security and then in expanding (Florido-Benítez, 2025; Ghanbarzade & Soleimani, 2025; Tryb & Hospodka, 2025).

9. Conclusion

Five principal conclusions supervene. First, satellite monitoring provides the basic information about the environment and land features that all future planning is predicated on, and exercising free data from Sentinel-2, Landsat, and digital elevation sources is enough to pick up that information without claiming to require commercial licenses (Belcore et al., 2020; Pflumm et al., 2025; Parisi et al., 2023). Second, GIS rolls that into actions, especially by clearly exposing the balance between accessibility, development, and conservation in maps that exhibit how suitable an area is and how vulnerable it might be (Ramaano, 2024; Withanage et al., 2024; Akbarian et al., 2023; Mansour et al., 2020). Third, GPS or GNSS is essential for tourist safety, but its performance in difficult areas can be defined by signal availability and possible disruptions, so it's important to exercise backup communication and systems that rely on accuracy (Noah & Elmusrati, 2025; Ghanbarzade & Soleimani, 2025; Celiński & Staniek, 2025). Fourth, communication technologies should be habituated in

layers: terrestrial networks where the land permits, low-power networks along paths, satellite links for connections that don't depend on the main grid, and gadarene platforms for times of high need and emergencies (Bianco et al., 2020; Ali et al., 2025; Yaacoub & Alouini, 2020; Wall et al., 2026). Fifth, cybersecurity is something that must come first, not just as an extra, because smart mountain tourism contains personal, financial, and ongoing location information, so security measures need to be budgeted and built in from the very beginning (Florido-Benítez, 2025; Kovačić et al., 2022; Banerjee & Bhat, 2025; Dziurakh et al., 2024; Trýb & Hospodka, 2025; Khanna et al., 2020). Future studies hypodermic needle to experimentation the ideas by burdensome them out in a small area along the study route, bracket them with similar projects in different mountain regions, and come across into how privacy and safety balance against each other (Florido-Benítez, 2025; Kovačić et al., 2022).

Author Contributions

The author approved the final manuscript.

Conflict of Interest

The author declares no conflict of interest.

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Development Prospects for Enotherapy-Based Health Tourism in Azerbaijan

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Abstract

This study assesses the development prospects of health tourism based on enotherapy in Azerbaijan. The relevant research was conducted based on Azerbaijan's viticulture and winemaking traditions, climate diversity, and spa and sanatorium infrastructure. The study used official tourism literature, international experiences on the subject, academic sources, and existing market indicators. According to the research, enotherapy in Azerbaijan can be combined with the existing enotherapy infrastructure, health tourism, and spa activities and developed as a new niche tourism product as a special interest tourism and presented to the market. We can include Ganja-Gazakh, Shamakhi-Absheron, Gabala, Naftalan, Lankaran, Nakhchivan, and Sharqi-Zangezur in the list of Azerbaijani regions that are promising for this area. Despite the existing potential, it is important to consider certain limitations and gaps for the formation of such a tourism product in Azerbaijan. The existing limitations include the weakness of health tourism as a brand, lack of specialized personnel, a legal framework in the relevant field, lack of standards, and incomplete preparation of sanitary and health mechanisms. According to the results of the conducted research, through proper planning and marketing policy, investment, and personnel training, enotherapy can lead to a competitive advantage in the health tourism market of Azerbaijan. The development of such a type of tourism can create a source of income in the regions and give impetus to the development of the non-oil sector. Such an approach can contribute to the transformation of Azerbaijani health tourism into a brand on a global scale.

Keywords: enotherapy, wellness tourism, wine tourism, Azerbaijan.

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1. Introduction

Enotherapy, or wine therapy, has a history spanning millennia. Even Plato compared wine to milk for elderly people, while the French claim that wine cures everything except alcoholism. The Babylonians, in the 6th century BCE, recognized the medicinal properties of wine, and ancient physicians used it as a primary means of restoring vitality. Wine contains components that help the body combat harmful environmental influences such as polluted air, stress, and cigarette smoke (Beldycka-Borawska & Zuchowski 2025). From ancient Greece and Rome through the Middle Ages, people used wine for everything. It killed bacteria in drinking water, acted as a digestive aid, cleaned wounds, relieved pain, and cured lethargy (Guilford & Pezzuto 2011).

Wine tourism, as a dynamically growing segment of tourism, combines the theme of wine with recreation, offering tourists unique experiences. Among the various forms of activity in this field emerges the concept of

“enorecreation” (wine-based recreation), which, despite growing interest, remains under-researched”. Enorecreation” integrates recreational activities related to wine in both tourism and everyday leisure, forming a key element of wine tourism offerings (Sidorkiewicz 2024).

Health tourism, which has been developing rapidly in the world market in recent years, is not only about relaxation, but also about physical and psychological recovery, stress reduction through natural healing resources and experiences. In addition to their economic importance, the therapeutic benefits of wine and winemaking products are also known. Since the acidity of grape juice is close to the acidity of gastric juice, grape wines are promising in wine therapy – enotherapy (President of the Republic of Azerbaijan, 2018). Today, the development of wine tourism in the world is a priority and a profitable direction of the tourism market (Santos et al. 2022).

These are the main reasons why this type of tourism is relevant. Services such as enotherapy and spa are presented to the market as a niche category that creates higher added value, differentiating it from traditional tourism services. Enotherapy includes grapes, grape skin, oil, and wine-based spa and health activities. Relevant health activities include wine baths, massages with grape seed oil, grape skin scrubs, facial care, and other health-oriented adjacent service packages (Smith & Puczkó 2014).

On a global scale, in countries engaged in these activities - France, Italy, Georgia, and Turkey - enotourism, spa, and health centers are being developed together. The factors that create the existing potential for the formation of enotherapy-based health tourism in Azerbaijan include natural and cultural resources, ancient viticulture and winemaking traditions, mineral springs, climate diversity, and the existing spa-sanatorium infrastructure. However, despite the existing resources that create this potential, enotherapy in Azerbaijan has not yet been fully formed as a health tourism product. It has serious development opportunities for Azerbaijan in terms of preparing enotherapy packages, combining viticulture and spa activities. Although the regions of Azerbaijan - Naftalan, Sheki, Gabala, Nakhchivan, etc. - are potential destinations in terms of health tourism, enotherapy has not yet been fully developed in the country systematically. The lack of standards and legal norms in the relevant field remains the main obstacle to the development of this field. Along with these obstacles, the lack of integration of enotherapy into spa services, weak marketing at the local and global levels, and the lack of necessary personnel for this activity seriously slow down the development and full formation of enotherapy. The purpose of this study is to analyze the development prospects of health tourism based on enotherapy in Azerbaijan, to evaluate the resources of Azerbaijan, and to clarify the opportunities and limitations in the relevant field. The main research question is: How can Azerbaijan's winemaking traditions, therapeutic resources, and tourism infrastructure be transformed into the formation of enotherapy-based health tourism in the country and its introduction to the market as a tourism product? The results of the study are based on the development of enotherapy as a niche tourism direction in the country through the coalition of winemaking, spa, health, and regional tourism in Azerbaijan.

2. Methodology

In contemporary times, health is becoming a relevant issue, from the perspective of understanding it through the lens of quality of life and not merely the absence of disease (Manosso et al. 2016). The aim of this qualitative study is to analyze the existing potential of enotherapy-based health tourism in Azerbaijan and to examine the development opportunities of a tourism product that can be marketed in the future by clarifying the limitations that hinder the realization of this potential. The sources used in conducting the study include international spa experiences, academic resources, public internet resources, tourism literature, and current market indicators. The main points evaluated in the study are climate diversity, spa-sanatorium infrastructure, viticulture and winemaking traditions. The study was conducted in 2 stages. In the first stage, the concepts of enotherapy and vinotherapy were explained, and the role of grape polyphenols, grape skin extract, grape seed oil, grape-based massage, and spa activities in health tourism were clarified. The antioxidant effect of polyphenols from wines and grape seed extracts recommends the vine as one of the most important plants used in prevention and medical treatment (Nicolescu 2012). In the second stage, regions and destinations of Azerbaijan with natural resources suitable for enotherapy-based health tourism were identified. Regions such as Shamakhi-Absheron, Ganja-Gazakh, Gabala, Naftalan, Lankaran, Nakhchivan and Karabakh-Eastern Zangezur were reflected in the study for this reason. In parallel, the possibility of developing a relevant tourism product was evaluated at the legal and normative level. The goal at this stage was to discuss under what legal conditions the development of enotherapy within health tourism is possible. In this context, the current

legislation on healthcare, tourism, use of alcoholic beverages, licenses, and certifications in the country was considered. When assessing demand and market opportunities, the study considered domestic tourists, CIS countries, neighboring countries, tourists traveling from the Middle East, and European countries who may be suitable for the potential market segment of enotherapy-based health tourism. In parallel, European experiences in the relevant field were also considered in terms of comparative evaluation of health tourism and enotourism in Azerbaijan. In terms of developing enotherapy-based health tourism as a competitive tourism product in Azerbaijan, it is useful to study development scenarios, the competitive environment, and business models. This study also evaluated wellness resorts, spas, wine tours, medical recovery packages, and tourism products suitable for the relevant field. In parallel, structural financing, investment, marketing channels, and possible promising cooperation opportunities for the formation of development were evaluated. The “SWOT” and “PESTEL” models were used as analysis models in the study. The “SWOT” model considered the strengths and weaknesses, opportunities, and potential threats of enotherapy-based health tourism. The analysis conducted in the “PESTEL” model assessed the potential impacts of political, economic, sociological, technological, environmental, and legal issues on this area.

3. The concept of enotherapy

Enotherapy is a health activity that stems from the use of grape-derived products in health, recovery, and spa procedures. This concept is not limited to the consumption of wine as a drink, but also the use of various components of grapes - grape skin extract, grape seed oil, grape polyphenols, grape juice - for health and recovery purposes. Enotherapy services include wine baths, skin care, facial treatments, and massages with grape seed oil. Vine spas very often have a restaurant and wine bar with a sommelier, and they serve wines with extreme attention to consuming responsibly and in moderation, in a convivial environment and in the context of a Mediterranean diet as an element of a healthy lifestyle, also with kids (Berry 2019; Giacosa et al. 2016; Hrelia et al. 2022; Ogórka 2024; Santos-Buelga et al. 2021). The “French paradox” proves that the French suffer from 40% fewer heart attacks than the Americans, consuming 30% more fat, which is due to diet, including regular modest amounts of wine (Rutkowska-Podolowska et al. 2015).

The aim of the enotherapy health package, which reflects such services, is to reduce stress, take care of the skin, and restore the body. Enotherapy is a type of tourism that combines various alternative types of tourism - wine tourism, health tourism, spa tourism and gastronomic tourism - and brings a new and equally diverse tourism product to the tourism market. Because a tourist who receives enotherapy services can simultaneously visit vineyards, get acquainted with the winemaking processes, see local culture, and taste viticulture and winemaking products. The most typical clients of vine spas are women around 30- 50 years old. Most often is a three-step sequence of mostly hour-and-a-half treatments designed to cleanse the skin with exfoliation, improve microcirculation, relax muscles, and apply polyphenols (Ogórka 2024). In this way, Enotherapy, which reflects various services, can provide tourists visiting the destination with a special tourism experience. The basis of the enotherapy tourism model that can be developed against the background of Azerbaijan is the country's historical ancient viticulture and winemaking traditions, mineral springs, various climate types, and spa-sanatorium infrastructure. Based on these reasons, enotherapy can be studied in Azerbaijan as a niche tourism type with development potential, combining enotherapy, gastronomic and health tourism. Enotherapy should not be seen as a field of medicine but rather should be presented to the tourism market as a type of tourism that reflects wellness and recovery services. To develop this field in Azerbaijan, specialized personnel training in relevant activities, sanitary standards, legal regulations, and strong marketing activities are needed. However, the lack of standards specifically related to enotherapy activities in Azerbaijan causes serious gaps in the regulation of this field. Thus, enotherapy is a health service that can increase the competitiveness of health tourism by using grape and wine components within spa and health tourism. Considering the natural resources and ancient viticulture and winemaking traditions of Azerbaijan, this area can have a positive impact on the attractiveness and competitiveness of health tourism in the country.

4. Results

According to the results of the study, there are significant opportunities for enotherapy and the services included in this field to be accessible to tourists as a tourism product in Azerbaijan. Enotherapy, or wine therapy, is promising and little studied. Enotherapy involves studying the healing properties of wines. As part of modern cosmetics, grapeseed oil, grape extracts, as well as natural red wine are actively used (Lebedynets

et al. 2019). From the vine comes a whole range of cosmetics such as scrubs, creams, and masks, like a prolongation of skin treatments. Also, its concentrated polyphenols (proanthocyanidins, resveratrol, viniferin) is used in treatments, although not every spa can boast its own production of them (Manosso et al. 2016).

Azerbaijan's rich natural resources, ancient viticulture and winemaking traditions, tourism infrastructure, climate diversity, and spa and sanatorium infrastructure create conditions for the formation of enotherapy as a tourism product within health tourism. Despite the listed opportunities, since this field is a new and different niche tourism direction in Azerbaijan, the transformation of existing resources into enotherapy-based health tourism has not yet been fully developed. According to the research conducted, enotherapy is not limited to spa-sanatorium services, but also acts as a bridge between wine tourism, health tourism, gastronomic tourism, and regional tourism. The main elements of enotherapy include wine baths, the use of grape seed oil in massage procedures, the preparation of scrubs based on grape skin, and facial and skin care procedures. Natural red wine is the richest source of antioxidants, resveratrol, flavonoids, tannins, polyphenols, organic acids, vitamins, among which are ascorbic acid, vitamin P, and vitamins of group B. Red wine also contains iron and other essential microelements (Lebedynets et al. 2019). Enotherapy can become a part of health tourism in Azerbaijan, increasing the attractiveness of health tourism and the competitiveness of the tourism product it offers to the tourism market.

The majority of the vine spas in the world draw raw materials from the vineyard, both for cosmetic treatments and for dishes in their restaurants (Ogórka 2014). There are regions in Azerbaijan rich in natural resources and tourism infrastructure for the formation and development of enotherapy into a competitive tourism product. These promising directions mainly include Shamakhi-Absheron, Ganja-Gazakh, Gabala, Naftalan, Lankaran, Nakhchivan and Karabakh-Eastern Zangezur. The level of compatibility of these regions is due to the viticulture and winemaking traditions of these regions, tourism infrastructure, and spa-sanatoriums located and operating in the relevant directions. Of the listed regions, especially Gabala and Naftalan can be recorded as promising directions in terms of the formation and development of enotherapy-based health tourism at the initial testing stage. Based on the analysis of market demand, the study concluded that enotherapy products may be of interest to both local and global tourists. Local tourists are mainly interested in more affordable recreation and spa packages; tourists from the CIS countries are interested in treatment, recovery, and recreation services; and tourists from European countries may also be interested in high-level health and enotherapy services. As for the seasonal nature of enotherapy, this tourism product can act against the backdrop of a year-round tourism product, encompassing grape harvesting and processing in the fall, resort services in mountainous regions in the winter, and spa-sanatorium services in the summer. Competitive analysis conducted based on the activities of competitors operating with enotherapy-based health tourism in international tourism markets shows that Georgia and Turkey, neighboring countries of Azerbaijan, as well as European countries, have experience in this field. Turkey also includes thermal and spa tourism within health tourism; the use of wines in spa services in Georgia, and various enotherapy brands in the form of enotherapy are already branded in European countries and are operating in the tourism markets. Such a situation creates conditions for Azerbaijan to gain pressure from strong and entrenched competitors in the health tourism market, as well as to obtain consistent knowledge and experiences that can be learned from them. The advantage that Azerbaijan has in such a situation is associated with its natural resources - mineral springs, climate diversity, mud volcanoes, and Naftalan. Azerbaijan can enter the health tourism market by combining its viticulture and winemaking traditions and enotherapy with the relevant listed resources, creating a consistent and competitive tourism product. The conducted research also revealed the existence of restrictions that are obstacles to the formation and development of enotherapy in Azerbaijan. These restrictions include the lack of legal standards for enotherapy in Azerbaijan, the lack of specialized spa and wellness personnel, weak interest in investing in this area, and the weakness of the health tourism brand in the country. In general, the analysis of the research results leads to the conclusion that enotherapy-based health tourism in Azerbaijan should be formed not as a spa activity, but as a tourism product combining viticulture and winemaking, therapeutic resources, regional tourism, and branding. For the relevant direction to be successful, several activities should be carried out, including public and private sector cooperation, training of qualified personnel, initial pilot projects, establishment of legal standards, marketing and promotion at the international level.

5. Conclusion and Implications

According to the research, enotherapy in Azerbaijan is a promising area in terms of diversifying health tourism, increasing service diversity and competitiveness. Although enotherapy itself directly includes spa and recovery procedures, this activity can be included as an additional health and recovery service in Azerbaijan's health tourism. Azerbaijan's natural resources, sanatoriums, hotels with spa and health services, and wine tourism destinations play a suitable base role in terms of the formation and development of this area.

According to the research, in the formation of an enotherapy-based health tourism product in Azerbaijan, climate diversity, spas and sanatoriums, viticulture and winemaking traditions, wine tourism, health tourism resources and infrastructure play a base role and prepare the ground for enotherapy to create added value within health tourism.

Despite the appropriate opportunities, certain restrictions still exist that prevent enotherapy from taking shape and developing in Azerbaijan. The restrictions that should be especially emphasized are the lack of legal standards in the field of enotherapy, the lack of personnel training in this field, the incomplete formation of sanitary and certification mechanisms, the lack of branding of the indicated local health service, and the limited promotion.

As a result, enotherapy does not appear in Azerbaijan as a special treatment area, but rather as a promising health service that can be added to existing health and rehabilitation activities. If proper planning, legal regulations, personnel training, global promotion, and sufficient investment are made for enotherapy, it will appear as a special and competitive tourism product within the health tourism of Azerbaijan.

Author Contributions

The author approved the final manuscript.

Conflict of Interest

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Job Satisfaction of Employees in Accommodation Establishments and its Evaluation

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Abstract

This study examines the job satisfaction of employees in accommodation establishments, where service quality depends directly on employees' performance and their interaction with guests. The objective is to address job satisfaction within a theoretical and conceptual framework, to identify the individual and organizational factors that affect it, and to reveal its consequences for employees and businesses. The study is designed as a conceptual review based on a descriptive and comparative analysis of national and international literature on job satisfaction, organizational behaviour and human resource management, including empirical studies conducted in the hospitality sector. The results show that job satisfaction is shaped by individual factors such as age, personality, marital status, education and seniority, and by organizational factors such as pay, working conditions, the nature of the work, management style, communication and promotion opportunities. Job satisfaction is closely linked to work attitudes, productivity, performance, morale and organizational climate. Dissatisfaction, in contrast, gives rise to exit, voice, loyalty and neglect responses and is associated with stress, aggression, psychosomatic disorders, alienation, absenteeism and turnover. The study concludes that fair pay and reward systems, healthy communication, employee participation, balanced workloads and career development opportunities are key to increasing job satisfaction and, consequently, the performance and sustainable success of accommodation establishments.

Keywords: job satisfaction, accommodation establishments, hotel employees, organizational behaviour, job dissatisfaction, employee performance

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1. Introduction

In today's globalizing world economy and intensely competitive environment, the sustainable success of businesses depends not only on how effectively they use their material and technological resources, but also on how efficiently they manage their human resources. Particularly in tourism and accommodation establishments, which form the heart of the service sector, the quality of the service provided depends directly on the individual performance of employees and on the one-to-one communication they establish with guests. Accordingly, accommodation establishments can gain a competitive advantage and sustain service quality only with a qualified workforce that is satisfied with its work (Akıncı, 2002, pp. 1–25; Karaçar, 2019, pp. 55–78).

Working life is a domain in which individuals spend a significant part of their lives and in which, beyond economic gain, they seek social identity and psychological satisfaction. During the long time people spend at work, the satisfaction they derive from the nature of their work and from the working environment directly affects their overall life satisfaction. The concept of job satisfaction, whose foundations were laid in the 1920s and which, particularly from the 1930s onwards, moved to a central position in the field of organizational psychology, is defined as the totality of the attitudes that individuals develop towards their jobs (Miner, 1992). Job satisfaction refers to the positive emotional state that emerges when the material and non-material gains an employee obtains from the job match his or her personal expectations and value judgements (Özpehlivan, 2019, pp. 43–70).

In accommodation establishments, job satisfaction is of critical importance from the perspectives of the individual, the organization, and management alike. At the individual level, job satisfaction directly affects the employee's mental and physical health, whereas at the organizational level it produces positive outcomes such as high performance, productivity, increased organizational commitment, and a low intention to leave (Bayrak, 2006, pp. 291–317). In contrast, job dissatisfaction can cause serious damage at both the individual and the organizational level, including stress, alienation, psychosomatic disorders, burnout, and rising absenteeism among employees. Therefore, examining the individual and organizational factors that affect the job satisfaction of employees in accommodation establishments, analysing the reactions to dissatisfaction that arise, and ensuring harmony within the establishment are of vital importance.

2. Research Objectives and Tasks

The main aim of this study is to address the concept of job satisfaction among employees of accommodation establishments within a theoretical and conceptual framework, to examine in detail the individual and organizational factors that affect job satisfaction, and to reveal the implications of this phenomenon for outcomes such as employee performance, organizational climate, stress, alienation and absenteeism. Within the scope of the research, the relationships between job satisfaction and motivation, morale, leadership styles and reward mechanisms are examined, and, in line with the findings, recommendations are offered for increasing the level of job satisfaction in accommodation establishments.

In line with this aim, the study sets itself the following tasks: (1) to clarify the definition of job satisfaction and its importance for the employee, the organization and the manager; (2) to identify the individual and organizational factors that determine job satisfaction; (3) to examine the relationship of job satisfaction with work attitudes, productivity, performance, morale and organizational climate; (4) to systematize the individual and organizational consequences of job dissatisfaction; and (5) to develop practical recommendations for the managers of accommodation establishments.

3. Materials and Methods

The study is designed as a conceptual review article and does not involve the collection of primary data. Its material consists of national and international books, peer-reviewed journal articles and empirical studies on job satisfaction, organizational behaviour and human resource management, with particular attention to research conducted in accommodation establishments (Akinci, .2002; Karaçar, 2019; Toker, 2007). The sources were examined using descriptive and comparative analysis: the definitions, determinants and consequences of job satisfaction presented in different studies were compared, grouped thematically and synthesized into an integrated conceptual framework. The findings obtained in this way are presented in the Results section under thematic headings, discussed in the light of the literature in the Discussion section and translated into practical recommendations in the Conclusion.

4. Results

4.1. The Concept and Importance of Job Satisfaction

People in working life spend most of their time at their workplaces. For this reason, the job an employee performs needs to have satisfying characteristics. The happiness an employee gains from a satisfying job, and the positive effect of this happiness on his or her life, positively affect both the mental and the physical health of the employee. At the same time, this positive effect is reflected in success at work. Although the concept of job satisfaction first emerged in the 1920s, it gained its real importance in the 1930s and 1940s. Job satisfaction

is an extremely important concept for ensuring employee success and continuity in the organization. For this reason, job satisfaction is one of the favoured topics emphasized by both researchers and business owners. As a result of the research carried out, many definitions of job satisfaction have been proposed. Job satisfaction is defined as the feeling that arises when the gains an employee obtains in his or her job and the satisfaction of his or her needs match his or her personal value judgements. According to a different definition, job satisfaction is the state of pleasure and happiness a person derives from the job in addition to the salary earned. When evaluated in general terms, job satisfaction can also be defined as the pleasure employees feel with regard to their jobs and workplaces (Özpehlivan, 2019).

Job satisfaction, which encompasses and describes positive feelings related to work, is the concept describing the feeling of contentment that emerges from the balance between the employee's conception of working life and the existing conditions of his or her job. Job satisfaction, which consists of the attitudes employees hold towards the work they perform, develops as a result of the individual's own value judgements. Consequently, positive attitudes towards work raise the individual's level of job satisfaction, whereas negative attitudes lower it. Based on these definitions, job satisfaction can briefly be expressed as happiness at work, commitment to work, performing the job with greater contentment and enjoying it.

In order for businesses operating in highly competitive markets to achieve success and remain in the competitive race, they need to pursue effective and efficient policies. As in all businesses, job satisfaction is a highly important concept for both the business and the employee in accommodation establishments. The importance of job satisfaction can be examined under three main headings:

- its importance for the individual employee;
- its importance for the organization;
- its importance for the manager.

Employees are the most fundamental element of businesses. Job satisfaction, which is the employee's personal attitude towards the work performed, covers all the feelings experienced when employees achieve their goals in their job and workplace. When workplaces meet employees' expectations and needs and thereby enable them to work more productively, employees' job satisfaction increases. Employees who are satisfied with their jobs contribute to the achievement of the organization's goals. Job satisfaction has psychological, physiological and sociological effects on the individual. In individuals with low job satisfaction, feelings such as complaining about work, failing to embrace the job, indifference to the tasks to be performed, and hopelessness stemming from unhappiness lead to psychological problems. From a psychological point of view, employees with high job satisfaction are observed to have high self-confidence, to be free of anxiety and worries about the future and, accordingly, to experience fewer emotional traumas.

For the employee, being satisfied with the job and enjoying it is extremely important. Insufficient job satisfaction causes various physiological effects in individuals. According to research, employees' feelings of dissatisfaction lead to an increase in bodily complaints and physical pain. It has been observed that employees with low job satisfaction fall ill more frequently. In addition, it has been observed that, in physical terms, people with high job satisfaction have better health and fall ill less often than those with low job satisfaction (Özpehlivan, 2019). Besides causing psychological and physical problems, low job satisfaction also leads, in sociological terms, to dissatisfaction with one's status and to deterioration in social relationships. People who are happy and productive in the working environment attain a sense of satisfaction not only in their working life but also in their social life. Such individuals show greater commitment to their work and are happier. In contrast, an employee who is unhappy at work reflects this unhappiness on colleagues and on his or her entire social environment. This negativity causes various problems in the person's social life.

Organizational success, which businesses pursue in many different ways, is directly proportional to job satisfaction. In organizations that adopt modern human resource management, serious responsibilities fall on the human resources function. Here, the most fundamental task of human resources is to keep employees' motivation and job satisfaction high (Barutçugil, 2004). In creating job satisfaction, important factors for organizations include having clear job and task descriptions, bringing out employees' interests and skills, ensuring healthy communication among employees, maintaining good-quality communication between employees and managers, valuing employees' feelings and thoughts, and ensuring high motivation. Success in these factors enables staff to embrace organizational goals and to contribute to organizational success by

increasing their commitment to achieving these goals. Consequently, organizations that satisfy the wishes and needs of their employees receive productivity and success from their employees in return. In this case, it can be said that the organization provides job satisfaction to its employees. However, failure to ensure job satisfaction causes serious losses in the organization, such as staff turnover and a decline in organizational success. Employee turnover also reveals that it is an important phenomenon closely related to job satisfaction, which is an indicator of employees' commitment to the organization. Therefore, job satisfaction is extremely important for the organization.

In order to motivate employees, the manager's own job satisfaction must first be high. Managers with job satisfaction feel successful in their field of work. A manager who gains this sense of success experiences an increased level of satisfaction with his or her job. This situation produces positive outcomes in the manager, such as struggling against difficulties, offering modern solution alternatives, and reflecting the satisfaction experienced outwardly, and thus also positively affects employees' job satisfaction.

Employees' job satisfaction can be regarded as a significant criterion that determines their work attitudes. According to studies, there are two main groups of factors shaping these attitudes: individual factors and organizational factors (Özpehlivan, 2019)

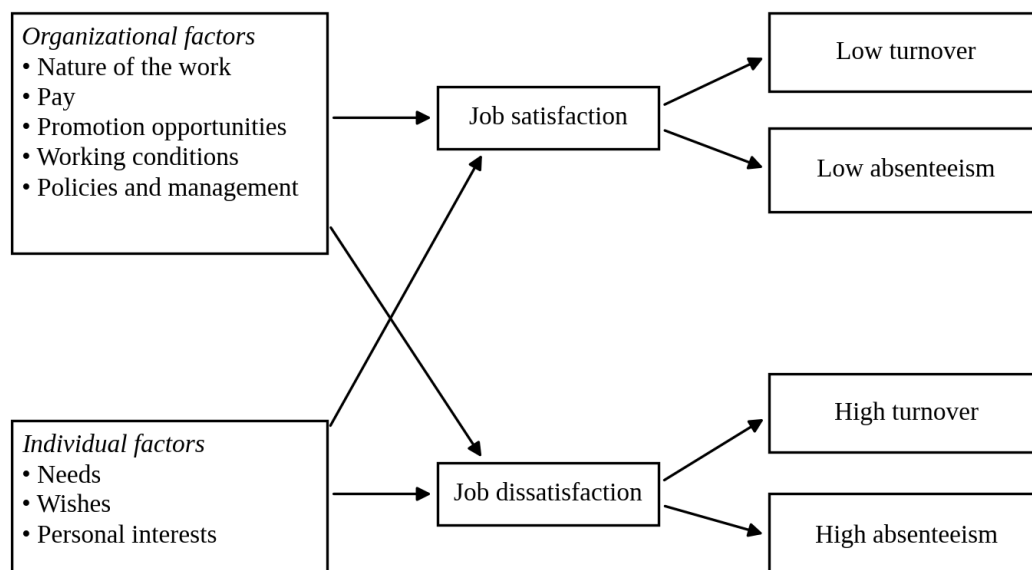


Figure 1. Main factors affecting job satisfaction and their consequences
Source: Adapted from (Özkalp & Kirel, 2001).

As shown in Figure 1, job satisfaction is affected by organizational and individual factors (Özkalp & Kirel, 2001).

These factors, in turn, lead to various outcomes. These factors and their outcomes are examined in detail below.

5. Individual Factors Affecting Job Satisfaction

Studies conducted in accommodation establishments show that the demographic characteristics of employees are related to their job satisfaction (Karaçar, 2019; Toker, 2007). Age, one of the demographic characteristics, is among the most important factors in job satisfaction. Younger employees have higher job satisfaction because they are dynamic and have strong expectations of promotion. Among employees who have worked for a long time, job satisfaction is observed to be lower owing to the disappointment caused by unmet expectations of the job.

Personality plays an important role in job satisfaction. Employees who are weak in human relations and who expect more than their abilities allow have low levels of job satisfaction. Individuals with high self-confidence, on the other hand, have high job satisfaction, motivate themselves to achieve success, worry less about adversities at work, and are less vulnerable to criticism.

Married individuals carry a greater sense of responsibility than single individuals. The discipline and order that marriage requires bring the same expectation into working life. Employees who work in a disciplined and orderly manner are absent less often and, for the sake of stability, do not wish to change workplaces. This both ensures job satisfaction and is reflected in the organization as higher performance.

According to research, there are two different views on the relationship between job satisfaction and level of education. The first holds that job satisfaction increases as the level of education rises. People with higher levels of education are able to find jobs with better conditions. At the same time, their level of satisfaction with the work they do is also high. The second view, however, holds that as the level of education rises, employees' expectations increase, which in turn leads to job dissatisfaction.

Studies suggest that employees in senior positions and those with more experience and seniority have higher job satisfaction than employees in lower-level positions. Accordingly, the high personal fulfilment and good salaries of those working in senior positions provide job satisfaction.

6. Organizational Factors Affecting Job Satisfaction

Organizational factors mainly comprise the opportunities and contributions that the workplace provides to the employee. Therefore, a wide variety of workplace variables play an important role in the employee's job satisfaction (Akinci, 2002).

The most important factor motivating individuals to work is pay. Job satisfaction can be spoken of when the reward for employees' labour is determined in line with market and economic conditions. When the salary an employee wants does not match the salary paid, dissatisfaction arises. This, in turn, has a negative effect on the person's job performance and motivation. A study of hotel employees likewise found that employees' income was positively related to their job satisfaction (Karaçar, 2019).

A comfortable and suitable working environment enables employees to work productively. Improving the working environment raises employees' motivation and, as a result, leads to job satisfaction. Employees' dissatisfaction with existing working conditions causes them to perform their work carelessly and makes it harder for them to develop positive attitudes towards the job and to experience job satisfaction. Employees' satisfaction in an organization is related to the nature of the work and the way employees perceive it. The main reasons for an employee's job satisfaction are that the work suits his or her abilities, is not repetitive, allows the employee to make his or her own decisions, and results in positive feedback from the employer.

Management's attitude towards employees should be supportive and develop in line with employees' expectations. At the same time, ensuring employees' participation in decision-making is also very important for job satisfaction. Delegating authority by evaluating employees' interests, skills, strengths and weaknesses, and expectations of the job, and ensuring the right management style, positively affects job satisfaction (Eren, 2008). Establishing a strong and healthy communication system in businesses is very important. Accurate and healthy communication among employees both contributes to the business and increases job satisfaction by raising employee motivation. Failure to give employees sufficient information about their work and to take their opinions into account creates a feeling of worthlessness in the individual. This feeling of worthlessness can go as far as leading the employee to consider leaving the job.

Over time, staff who have reached a certain level of satisfaction in their current workplace come to feel that their work has become monotonous. As a natural consequence, the individual, who wishes both to raise his or her social status and to earn a higher salary, takes on more responsibility and begins to expect promotion. When the expectation of promotion is met, employees' level of job satisfaction rises and their commitment to the job increases. Figure 2 summarizes how job satisfaction emerges from the comparison between employees' expectations and the actual characteristics of the job (Sell & Shipley, 1979, p. 61)

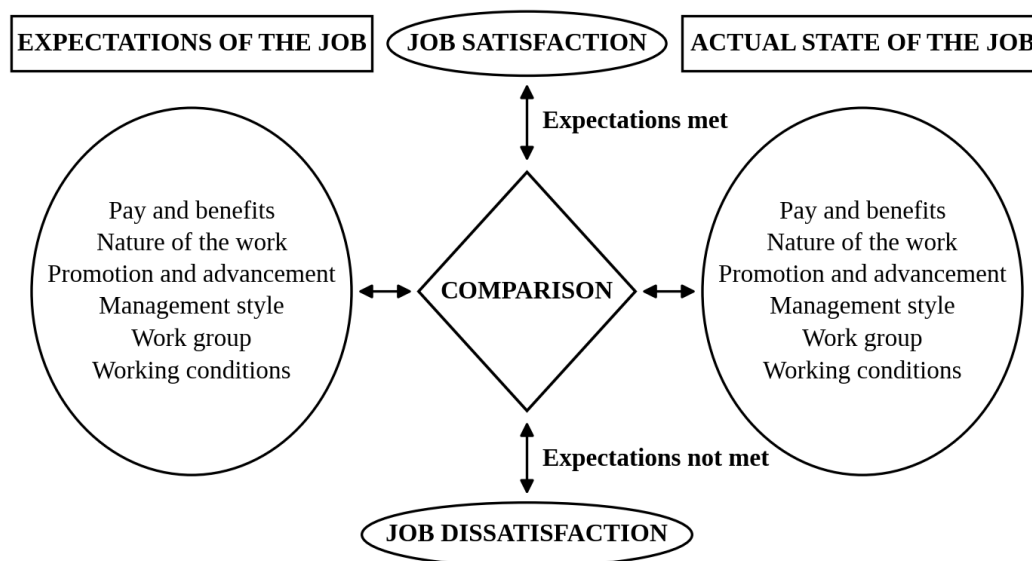


Figure 2. The role of expectations in job satisfaction
Source: Adapted from (Sell & Shipley, 1979).

7. Job Satisfaction and Related Concepts

In general, an attitude is expressed as the behaviour an individual displays towards a person, or the feeling that arises in response to a situation, as a result of his or her experiences. There are many different definitions of attitude. Attitudes are positive or negative evaluations of people, objects and events (Robbins, 1996). In other words, attitudes are the behaviours and manners people display in a particular situation in line with their experiences.

An attitude essentially consists of three interacting components: an affective component, a cognitive component and a behavioural component (Robbins, 1996). These three components influence one another and display internal consistency in a person's attitude. Attitudes are an important phenomenon not only in daily and social life but also in working life. Measuring employee attitudes, which are important for businesses, is quite difficult. This is because people display attitudes according to their momentary life circumstances and moods. Therefore, factors such as people's changing psychological states and social differences make measurement difficult. Attitudes can be measured through both the individual's introspection and the evaluation of his or her behaviour (Başaran, 1991).

It can be said that different attitudes affect individuals' working lives. Employees hold various attitudes towards their workplace that are formed by economic and environmental factors. Whether these attitudes are positive or negative strongly affects their working lives. Since employees' work attitudes affect their work behaviour, the variables of the employee's workplace and job are important. For this reason, the business should ensure job satisfaction among its employees by knowing the types of outcomes that will result from these attitudes. Based on these explanations, it can be said that work attitudes and job satisfaction influence each other. The attitude an employee displays in the work environment affects job satisfaction positively or negatively. At the same time, it can be said that a satisfied employee's work attitude will also be positive. The main reason for this is that the motivation of highly satisfied people increases and their work attitudes take shape in a positive direction.

Resources are generally scarcer than existing needs. For this reason, using resources efficiently and effectively is extremely important. As in all areas, businesses also need to use existing resources efficiently. Businesses generally aim to achieve high profits in a short time with few workers and little material. At this point, however, the fact that employees' job satisfaction and motivation decline is overlooked. Increasing the productivity of employees, the most fundamental element of businesses, is directly proportional to their job satisfaction. Employees with high job satisfaction perform better and work more productively. Various studies on the relationship between productivity and job satisfaction have been conducted in recent times. The

common conclusion of these studies is that there is a consistent but relatively weak relationship between productivity and job satisfaction (Miner, 1992). However, when the influence of external factors was reduced, the relationship between productivity and job satisfaction was found to become stronger. As a result, employees who were dissatisfied because of external factors were found to have low productivity, whereas high productivity was identified among satisfied employees.

Performance is defined as the quantity of goods or services produced in a given period in a field of work. From the individual's point of view, performance is the individual effort made to reach a goal. According to another definition, performance is the degree to which a goal is achieved. Human resources, one of the basic units of an organization, examines individual and organizational performance in detail through various evaluations. Performance appraisal and performance improvement are also known to be important functions for managers. Managers who aim to create high satisfaction among their staff frequently obtain better performance from them in return. However, when performance appraisals are carried out by people without adequate experience and competence, they lead to low satisfaction, contrary to what is expected. Therefore, appraisals should be conducted in accordance with performance, employees' job descriptions and job standards, and positive feedback should be provided. Reward is also one of the important tools for achieving high employee performance. A fair distribution of rewards positively affects employee performance. In the relationship between job satisfaction and performance, in addition to the employee's personality traits, an expectation of reward and a sense of equity in the workplace must also be present.

There are three inferences regarding the relationship between employee performance and job satisfaction:

1. High job satisfaction increases performance.
2. Performance is itself a source of job satisfaction.
3. Reward is a factor that determines the relationship between satisfaction and performance.

Employees who perform well at work experience high job satisfaction when they are rewarded fairly and appropriately. This high satisfaction increases work productivity and thus also brings success to the organization.

Morale is defined as the social and psychological endurance people show in the face of difficulties. The concept of morale can be addressed both individually and collectively. Morale, whether individual or group-based, is a variable concept because it rises in some situations and falls in others. There are various factors that affect morale. In the workplace, the main factors affecting morale are the work itself, management, the characteristics of the organization and the employee's job satisfaction. Morale and job satisfaction move in direct proportion. Therefore, employees with high job satisfaction have higher morale. This high morale, in turn, increases job performance and brings positive returns to the business. Whether morale in organizations is high or low can also be associated with cooperation among employees towards a particular goal. In businesses, individuals have to work together towards a common goal on the basis of goodwill. For this reason, a team spirit must be developed and cooperation ensured in organizations. The development of human relations in individual or group work is regarded as the most important factor in the emergence of low or high morale (Şimşek et al., 2011).

Organizational climate is an intangible concept. Nevertheless, it is a psychological concept that defines the organization, affects employees' behaviour while also being affected by it, has a lasting character, and is perceived by the members of the organization (Tutar & Altınöz, 2010).

Employees can experience job satisfaction when the conditions they consider right and appropriate match the rules of the organization. In addition, ensuring a harmonious and fair teamwork environment is one of the factors that increase job satisfaction (Çekmecelioğlu, 2005). Together with this satisfaction, teamwork develops rather than individual work. Through the harmony of staff, teamwork comes to the fore rather than individual success. Employees develop success together and make it easier for the organization to reach its goals.

8. Consequences of Job Satisfaction and Dissatisfaction

Staff job satisfaction is reflected in the work environment positively or negatively and produces various outcomes. These outcomes can be examined in two main categories: individual outcomes and organizational outcomes.

Job satisfaction, which consists of employees' attitudes and behaviour towards their work, significantly affects their performance. Dissatisfaction at work gives rise to various psychological problems in individuals, such as a lack of self-confidence, a lack of commitment, indecision, and disappointment. As a natural consequence of these problems, various difficulties that adversely affect the organization, such as absenteeism, decreased productivity, failure, and turnover, are also observed. Fair and just treatment by the organization is among the most important expectations of employees. When these expectations are not met, employees experience disappointment. At times, these disappointments can even become traumatic.

Studies have shown that employees respond to job dissatisfaction in four different ways (Farrell, 1983; Robbins, 1996). These responses, which differ along active–passive and constructive–destructive dimensions, are shown in Figure 3 and explained below.

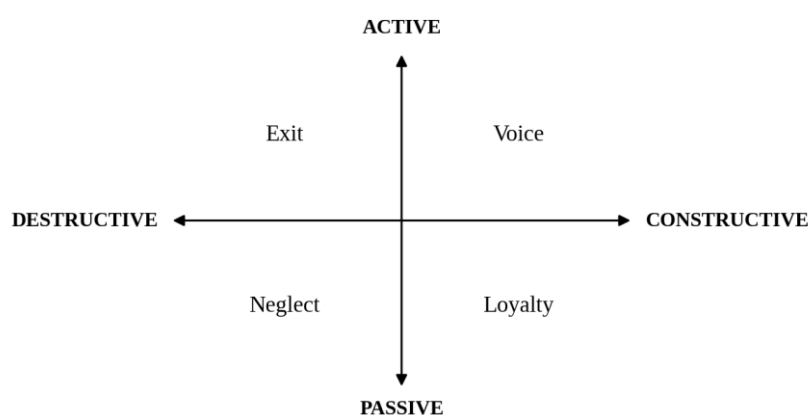


Figure 3. Basic responses to job dissatisfaction
Source: Adapted from (Farrell, 1983; Robbins, 1996).

Exit: When individuals experience job dissatisfaction, their commitment to the job decreases. This leads to resignation or a change of job.

Voice: Employees may propose solutions to managers or discuss problems constructively in order to improve conditions, make constructive initiatives, and achieve a higher level of satisfaction.

Loyalty: One of the most important elements for an employee is a sense of trust. The employee maintains an optimistic attitude, believing that managers will shape working conditions properly and fairly.

Neglect: When the employee remains passive and begins to display negative behaviours such as chronic absenteeism and lateness, productivity falls, and errors multiply. This situation, which is harmful to the organization, is regarded as neglect.

In contrast, employees with high job satisfaction experience positive effects both physically and psychologically. Because healthy employees have high learning potential, they grasp their tasks in a shorter time. At the same time, staff with high job satisfaction are known to adapt better in group work, to help those around them, and to have healthy approaches.

Deterioration in the mental and physical health of individuals experiencing job dissatisfaction is inevitable. This situation also affects the organization negatively. Compulsory absence by an employee whose health has deteriorated lowers job performance. Individuals with high satisfaction, on the other hand, are healthier and more creative. This reduces the organization's health expenditures while increasing productivity.

According to research, some of the negative consequences of job dissatisfaction for the organization are as follows (Özpehlivan, 2019).

- decreased commitment to the job and the organization;
- persistent non-attendance and an intention to resign;
- an increase in the ratio of departing staff to current staff;
- a decline in employee and organizational performance;
- chronic absenteeism and lateness;
- reduced loyalty to the organization;
- a restless working environment;
- deterioration in employees' health;
- an increase in medical expenses and sick leave;
- damage to the materials and equipment used;
- the planning of strikes against the organization;
- theft within the organization;
- problems in teamwork.

The psychological state of the working members of the family, the smallest unit of society, is very important. The job satisfaction of a working family member affects both the working environment and the family order. The family relationships of an individual experiencing dissatisfaction deteriorate, causing unrest in the family environment. This is because the feeling of dissatisfaction experienced at work leads the individual to carry this situation home. As a result, situations such as the breakdown of family unity occur. Individuals with a high sense of satisfaction, on the other hand, carry these positive feelings into the family environment and can build healthy family relationships (Bayrak, 2006).

Humans, as social beings, build a social environment in their lives and engage in various forms of communication with it. The psychology of an individual who spends most of the day at work is also shaped by this environment. Because an individual with a high sense of satisfaction is happy and at peace, he or she also communicates with the social environment in this peaceful manner. Establishing proper communication in this way also produces positive outcomes from a societal perspective.

Low job satisfaction produces various negative consequences at both the organizational and the individual level. At the individual level, mainly psychological effects are observed, whereas at the organizational level it creates many negative conditions that reduce productivity.

8. Individual-Level Consequences of Job Dissatisfaction

The most important characteristics determining job satisfaction in the working environment are psychological and physical health. An increase in performance is observed among healthy people with high levels of satisfaction. A feeling of dissatisfaction, however, negatively affects employees' psychological health and leads to a decline in work productivity. Various forms of psychological frustration are observed in individuals experiencing job dissatisfaction. These include aggressive behaviour, resignation, regressive behaviour, and fixated behaviour that is repeated again and again.

Aggressive behaviour: The individual adopts an aggressive attitude and tries to overcome the obstacles he or she faces in this way. In such situations, the individual frequently displays aggression even towards people who have no connection with the issue.

Resignation: An individual who has lost self-confidence adopts an attitude of letting things take their course without making any effort. Psychological frustration is observed in these people.

Regressive behaviour: Psychological dissatisfaction gives rise to various negative emotions in individuals. The individual's feeling of inadequacy and hopelessness in this respect cause mental distress. As a result, the individual loses his or her capacity to work. In individuals who fall into depression, a tendency to retreat rather than to struggle is observed.

Fixated behaviour: When individuals cannot solve a problem they face, they continually repeat an inappropriate behaviour in an attempt to solve it. Actions performed in awareness of this futility reveal a disturbance in the person's mental health.

In the workplace, managers need to take into account employees' stress and their physical and emotional states, as well as their bodily and mental tensions (Eroğlu, 2007). These changes disrupt the existing balance and negatively affect job satisfaction. People in a stressful working environment experience various psychological difficulties and are exposed to job dissatisfaction. In this case, physical and mental behavioural disorders are observed in the person. Stress has negative effects at both the individual and the organizational level. Prolonged stress also negatively affects the organization's goals. Over time, an employee who cannot control the level and duration of stress reduces organizational performance through behaviours such as arriving late and being absent. Stress can even lead employees to quit their jobs over time.

Stress in employees does not cause only personal effects. In workplaces where teamwork is important, a decline in the performance of one individual due to stress also affects the others. As a result, stress leads to a decline in work productivity.

Aggression is the totality of psychological and physical behaviours that an individual engages in, driven by anger and with the intention of causing harm. Aggressive behaviour stems from states such as anger, ambition, competition, a sense of frustration, and fear. The aggressive individual aims to harm himself or herself or others. In line with this aim, he or she displays negative physical or verbal behaviour.

Individuals display aggressive behaviour when they encounter obstacles in situations that satisfy needs they consider legitimate. An individual who harbours negative thoughts about satisfying these needs may display negative behaviours such as harming other employees in the workplace and the materials used. This situation has negative effects on the organization's security and peaceful working environment, causing work productivity to decline. People who feel competent in the work assigned to them and who have a high sense of satisfaction, on the other hand, do not harbour aggression and contribute to a peaceful work environment. Employees experiencing job dissatisfaction develop a sense of disappointment. The disappointed individual is gripped by negative feelings such as the sense that his or her wishes are not being met and a feeling of inadequacy at work. Through this feeling of inadequacy, the individual develops a defensive stance against the organization. Over time, this defensiveness causes mental problems such as aggression, indifference, resistance, and unhappiness, leading to reduced job performance (Tutar, 2010).

The obstacles and incompatibilities employees encounter in the workplace lead to various personality disorders. One of these, neurosis, is a personality disorder characterized by excessive feelings such as fear, anxiety, and agitation, and by overreactions that reveal the person's emotional state. Individuals with this disorder experience high levels of anxiety in the working environment. Individuals who are highly anxious about both their work and their colleagues may display disruptive behaviour within the organization when their work is inadequate, and the working environment is incompatible. At a later stage, a breakdown in relations with the environment and a failure to adapt to the working environment may be seen as causes of psychotic behaviour.

Psychological disorders in individuals also bring about various physiological disorders. These are called psychosomatic disorders. In other words, they are physical changes that occur in response to harmful factors as a result of mental and social disturbances. People may show psychosomatic reactions when faced with stress. These reactions frequently manifest themselves as physical complaints such as dizziness, palpitations, fatigue, nausea, sleep disturbances and digestive problems.

Unrest in the workplace leads to dissatisfaction among employees over time. This feeling of dissatisfaction causes mental disorders in individuals and, over time, physical ailments. Psychosomatic signs arising in the working environment lead to the deterioration of all or part of physical health.

Job stress is a factor that prevents a sense of satisfaction at work. As stress increases in the workplace, the sense of satisfaction decreases. This leads to job dissatisfaction. Since the combination of dissatisfaction and stress produces job dissatisfaction, it has been understood that this prepares the ground for various psychosomatic disorders.

9. Organizational-Level Consequences of Job Dissatisfaction

Alienation is a socio-psychological state of disturbance arising from individuals severing their ties with their social environment and not being part of it. The feeling of alienation distances a person from himself or herself and from the social environment as a form of self-protection.

As in private life, the feeling of alienation in working life also disrupts the individual's social working environment. Individuals who become estranged from working life and from their colleagues experience mental difficulties. The resulting stress, as a natural consequence, creates job dissatisfaction in the individual. This dissatisfaction leads to decreased productivity, reduced loyalty, withdrawal from work, weakened job commitment, low motivation and performance, and an unhealthy working environment.

An individual who feels alienated in the working environment withdraws, which causes his or her social ties to break. Over time, this situation, which disrupts order and discipline in the workplace, causes attendance problems and leads to the breakdown of the individual's social relations.

For the work planned by the organization, the employee must be present at the workplace on time and ready to work. Absenteeism stems from various causes. Some of these causes are individual, and some are organizational. Age, family situation, gender, and education are individual causes. Organizational causes include management, working conditions, relations with colleagues, and an atmosphere of insecurity in the workplace. In addition, the nature of the work is also a determining factor in absenteeism. When the planned work is difficult and continuous, it creates feelings of inadequacy and aversion in individuals and lowers their level of satisfaction. A low level of satisfaction, in turn, leads to absenteeism and reduces productivity.

10. Discussion

The findings of this review are consistent with empirical studies conducted in the hospitality sector, which report that the individual and organizational characteristics of employees, including their income, are associated with job satisfaction (Akinci, 2002; Karaçar, 2019; Toker, 2007). As the study shows, job satisfaction is influenced by both individual and organizational factors. Factors such as age, personality, marital status, level of education, experience, pay, working conditions, promotion opportunities, managers' approach to employees, employee participation in decision-making, and communication within the organization play an important role in the formation of job satisfaction. Meeting employees' expectations and needs, making them feel valued, and creating suitable working conditions increase job satisfaction, whereas unmet expectations and poor working conditions lead to dissatisfaction.

High job satisfaction not only produces positive outcomes for the employee but also supports the productivity and success of the business. Employees who are satisfied with their jobs are observed to have higher motivation and performance, to adapt better to teamwork, and to contribute more positively to the working environment. In contrast, job dissatisfaction can lead to individual and organizational problems such as low motivation and performance, absenteeism, reduced commitment to the job and the organization, increased turnover intention, unrest in the working environment, and health problems.

The study also shows that there is a reciprocal relationship between job satisfaction and performance. Employees with high job satisfaction are able to perform better, while high performance and the fair rewards given in return can increase the employee's level of satisfaction. For this reason, it is important that managers evaluate employees' performance fairly and accurately, give them positive feedback, and reward their efforts appropriately.

Job satisfaction also has significant effects on employees' psychological, physical and social lives. Dissatisfaction is associated with stress, unhappiness, anxiety, indifference towards work, aggression, deterioration in social relationships and various physical ailments. In particular, prolonged stress and dissatisfaction can adversely affect both employees' individual health and work productivity in the business. Therefore, managers need to take into account employees' stress and their physical and emotional states and create a healthy working environment. Since the study is based on secondary sources, its conclusions are conceptual and need to be tested through field research conducted among employees of accommodation establishments.

11. Conclusion

The job satisfaction of employees in accommodation establishments is an important element both for employees' individual lives and for the success of the businesses. Job satisfaction expresses the contentment an employee feels with the work performed, the earnings obtained, the working conditions, relationships with managers and colleagues, and the fit between the job and his or her own expectations and values. Employees' satisfaction with their job and working environment helps them develop positive attitudes towards work, increases their motivation and commitment to the organization, raises their performance and enables them to contribute more to organizational goals.

In conclusion, sustainable success in accommodation establishments does not depend solely on the management of material resources and service quality. The fact that employees, one of the most important elements of the business, are satisfied with their jobs, feel valued, can communicate in a healthy way with managers and colleagues, and have suitable working conditions directly affects the overall success of the business. Therefore, in accommodation establishments, employees' job satisfaction should be evaluated regularly, their needs and expectations should be taken into account, a fair management approach should be adopted, a healthy communication environment should be created, and employee motivation should be supported. Such a working environment will both contribute positively to employees' individual and social lives and help raise the business's level of productivity, performance and organizational success.

On the basis of the findings, the following recommendations are offered for accommodation establishments. In order to increase the job satisfaction of employees in accommodation establishments, it is recommended that employees' opinions and expectations be evaluated regularly and that the necessary improvements be made on the basis of the results. In order to increase employees' motivation, pay and reward systems should be designed to be fair, transparent, and consistent with the performance employees demonstrate. It is recommended that the working environment be improved to meet employees' physical and psychological needs and that excessive workload and intensive working conditions be reduced as far as possible. Strengthening communication between managers and employees and creating a working environment in which employees can freely express their problems and suggestions are important for increasing job satisfaction. In order to support employees' professional development, it is recommended that in-service training, professional development programmes and career advancement opportunities be expanded. Recognizing employees' efforts not only materially but also through non-material means such as appreciation and thanks can contribute to the development of positive attitudes towards the job and the business. In order to reduce job stress in accommodation establishments, it is recommended that working and rest periods be arranged in a balanced way and that practices be developed to protect employees from the psychological pressures arising from intensive working conditions. Strengthening communication and teamwork among employees is important for reducing the conflicts and negative relationships that may arise in the workplace. It is recommended that absenteeism and employee turnover rates be monitored regularly and that the necessary measures be taken after investigating their underlying causes. Finally, in order to create a sustainable working environment in accommodation establishments, it is recommended that due importance be given not only to customer satisfaction but also to employees' job satisfaction, working conditions, motivation and psychological and social needs within the business.

Author Contributions

The author carried out all stages of the study, including conceptualization, literature review, writing and editing.

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