ISSN 2786-5940
e-ISSN 2786-5959

Vinnytsia National Technical University

INNOVATION AND SUSTAINABILITY

Scientific Journal

Founded in 2021
Frequency: Quarterly

Volume 5, No. 3

Vinnytsia – 2025

ISSN 2786-5940
e-ISSN 2786-5959

Вінницький національний технічний університет

INNOVATION AND SUSTAINABILITY

Науковий журнал

Рік заснування: 2021
Періодичність випуску: 4 рази на рік

Том 5, № 3

Вінниця – 2025

Founder and publisher:
Vinnytsia National Technical University

Year of foundation: 2021

Recommended for printing and distribution
via the Internet by the Academic Council
Vinnytsia National Technical University
(Minutes No. 3 of September 30, 2025)

State Registration:
Media identifier R30-01505.
Decision of the National Council of Television
and Radio Broadcasting of Ukraine No. 1234,
Minutes No. 25 dated 31.10.2023

The journal is included in category "B"
of the List of scientific professional publications of Ukraine.
Specialties: 0311 Economics; 0413 Management and administration;
0414 Marketing and advertising; 0416 Wholesale and retail sales
(Order of the Ministry of Education and Science of Ukraine No. 530 dated 06.06.2022).

The journal is presented in the following
international scientometric databases, repositories and scientific systems:
Google Scholar; Vernadsky National Library of Ukraine; Crossref; UCSB Library;
Dimensions; Worldcat; Litmaps; University of Oslo Library; Ulrichsweb Global Serials Directory;
University of Hull Library; Open Ukrainian Citation Index (OUCI)

Editorial office address:
Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
E-mail: info@inns.vn.ua
https://inns.com.ua/en

Засновник і видавець:
Вінницький національний технічний університет

Рік заснування: 2021

Рекомендовано до друку та поширення
через мережу Інтернет Вченою радою
Вінницького національного технічного університету
(протокол № 3 від 30 вересня 2025 р.)

Державна реєстрація:
Ідентифікатор медіа R30-01505.
Рішення Національної ради України
з питань телебачення і радіомовлення № 1234,
протокол № 25 від 31 жовтня 2023 року

Журнал входить до категорії «Б» Переліку наукових фахових видань України
Спеціальності: 051 Економіка; 073 Менеджмент; 075 Маркетинг;
076 Підприємництво, торгівля та біржова діяльність
(Наказ Міністерства освіти і науки України № 530 від 06 червня 2022 р.).

Журнал представлено в таких міжнародних
наукометричних базах даних, репозитаріях та пошукових системах:
Google Академія; Національна бібліотека України імені В.І. Вернадського; Crossref;
UCSB Library; Dimensions; Worldcat; Litmaps; University of Oslo Library;
University of Hull Library; Ulrichsweb Global Serials Directory;
Open Ukrainian Citation Index (OUCI)

Адреса редакції:
Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
E-mail: info@inns.vn.ua
https://inns.vn.ua/uk

Editorial Board

Редакційна колегія

Contents / Зміст

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 02.05.2025; Revised: 13.08.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.08

UDC 336.7

Digital banking services: History, benefits and challenges

Ragib Mammadli*
Doctoral Student
Azerbaijan State University of Economics (UNEC)
1001, 6 Istiglaliyyat Str., Baku, Azerbaijan
https://orcid.org/0009-0009-3721-3548

Abstract. Innovation and technological advancements are transforming every sector of the economy, and studying their impact on the banking sector is highly relevant in the context of digitalisation. The rapid evolution of technologies has led to major changes in the way banking services are delivered, reshaping the expectations and behaviour of both customers and financial institutions. One of the most notable innovations emerging from technological advances is digital banking services. The purpose of this article was to examine the concept of digital banking services by analysing their history, types, benefits and challenges, and to contribute to the academic literature by providing a comprehensive overview of how they are transforming the modern banking environment. To achieve the set goals, qualitative analysis, generalisation, and systematisation methods were used. This study revealed that applying the latest innovative technologies to traditional banking services digitises and automates them, improves their accessibility, makes them more convenient for customers, increases transparency and efficiency, and reduces costs for both banks and customers. However, in addition to their countless benefits, digital services also come with many challenges, such as privacy, security, and technical issues. The study highlighted the importance of banks and financial institutions addressing these challenges, as failure to do so could undermine trust in digital systems. Furthermore, regulatory bodies should take measures on digital services to ensure financial stability, avoid illegal activities, protect customers and banks from security issues, and prevent unwanted risks and problems for the whole financial sector. The demographic analysis part of the study explored the number of digital banking users worldwide and the factors influencing their adoption of digital services. The findings of this study can be used as a guide by banks and financial institutions in implementing innovative technologies

Keywords: innovation; accessibility; customer behaviour; financial inclusion; regulation

Introduction

In the 21st century, it is nearly impossible to imagine any field unaffected by technology. Since the 1950s, the invention of the computer and the technological advancement have profoundly revolutionised every sector, including finance and banking. One of the most notable innovations resulting from technological advancements is digital banking. This banking concept covers a wide range of digital services, from online payments and bank account management to virtual customer support and personalised services, allowing customers to access various banking services without having to visit a physical bank branch. Furthermore, innovative technologies offer considerable benefits to banks and financial institutions. Digitalisation allows banks to automate a large part of their internal operations and management, improving efficiency and transparency, reducing human errors and helping to lower costs. Additionally, with data analytics tools, banks can better understand their customers' preferences and offer them more personalised banking services. However, despite its many benefits, digital banking also has certain challenges, particularly regarding security and privacy. As banking services become increasingly dependent on digital infrastructure, they become more vulnerable to cyberattacks, fraud and data breaches. Challenges of digitalisation require special attention from banks and financial institutions, otherwise they may result in financial and reputational losses for banks.

Many studies are devoted to studying digitalisation in the banking sector from different perspectives. According

Suggested Citation:
Mammadli, R. (2025). Digital banking services: History, benefits and challenges. *Innovation and Sustainability*, 5(3), 8-17. doi: 10.31649/vis/3.2025.08.

*Corresponding author

to T. Geçer & V. Akgiray (2025), artificial intelligence and innovative technologies have changed behaviours in the financial sector. Since everyone wants to access all the necessary financial services in one click, the role of technological advancements is crucial to improve existing banking services and meet new and changing customer needs. Refusal to implement innovative technological advances can result in loss of customers and competition. K. Meghani (2020) discussed the main types of innovation applied to banking management and services in the case of India. They highlighted the importance of innovation in banking to modernise banking services and make them more accessible. The application of innovation also increases competitiveness in the banking sector. Banks try to offer more attractive banking and financial services to customers with lower charges to stay ahead of the competitors. The research by E. Indriasari *et al.* (2022) once again emphasised that modern technological advances allow banks to improve overall management efficiency, transparency, and speed of operations. They also classified the main applied technologies in digital banking, outlined their features and role in the banking environment. Artificial intelligence-based technologies help banks predict potential risks, identify fraud and unusual activities in the banking system. S. Singh *et al.* (2024) analysed in detail the main challenges and issues of digital banking systems. The researchers argued that although banks are trying to find better ways to protect their digital systems from cyberattacks, criminals will always find other ways to penetrate banking systems. Because the technologies used by criminals are also improving. The risks of cyberattacks can be minimised, but they can never be zero. M.O. Al-Smadi (2023) analysed the adoption of digital banking in the Middle East and North Africa countries. Their findings showed that digital banking plays a critical role in increasing financial inclusion and providing cheaper financial services to underserved populations. From the customer's perspective, P. Khera *et al.* (2021) examined the relationship between demographic factors and the adoption of digital banking services. The study proved a positive relationship between people's education level and attitudes towards digital services. The results of the study by G. Chinnasamy *et al.* (2024) also showed that people's perceptions regarding the trust, usefulness and convenience of digital banking services have a direct and positive impact on the adoption of these services. However, most of the reviewed literature focuses on a selected aspect of digital banking services and does not fully reflect all the features of these services within a single study. The purpose of this article was to explore the concept of digital banking services, analyse their benefits and challenges, and provide a comprehensive overview of how they are reshaping the modern banking environment.

Materials and Methods

Considering the complex nature of digital banking services, which encompass banking, finance, technology, customer behaviour, and the regulatory framework, the study adopted an integrated research approach to achieve its objective and the following research steps were taken: exploring the history of digital banking services; determining the main types of digital banking services; assessing the benefits and challenges of digital banking services; analysing the demographic adoption of these services globally; identifying the main purposes of digital banking regulation. The data collection for this article relied primarily on secondary sources. To establish the theoretical framework of the article, a comprehensive review of the literature was conducted on digital banking services, banking innovation, financial technologies, customer behaviour and more. The theoretical sections of the article were based on data from selected scientific articles (Wewege *et al.*, 2020; Indriasari *et al.*, 2022; Pfoertsch & Sulaj, 2023; Müller *et al.*, 2024; Liu *et al.*, 2024). In addition to the literature, information was collected from both academic and industry sources, including reports, regulations, government publications, customer surveys, and comments from banking professionals, to analyse the benefits and challenges of digital banking services (UFA2020 overview…, 2018; Prescott, 2024; Burnett, 2025a; 2025b). The selection of sources was based on their reliability, relevance, and novelty in relation to the subject of the article. Based on the collected data, the synthesis method was used to strengthen the theoretical part of the study.

The demographic analysis of digital banking services was conducted using statistical data (Ananda *et al.*, 2020; Khera *et al.*, 2021; Barjaktarović Rakočević *et al.*, 2022; Kaixiang *et al.*, 2024; Burnett, 2025a; 2025b). This data was used to study the adoption of digital banking services according to key demographic variables, such as age, education level, and income level. These demographic factors helped highlight disparities in the adoption of digital banking services across both developed and developing countries. The graphical method was applied to visually represent the percentage of the adult population using mobile banking services in developed and developing countries. The statistical data were obtained from S. Burnett (2025b) and Digital transformation in the payments industry statistics (2025). However, the lack of detailed data on the adoption of digital banking services in developing countries is a major limitation of this study. Additionally, in many cases, statistics from such countries do not fully capture the nuances of customer adoption of digital banking services. Although this article did not rely on primary data collection, it provides a comprehensive and balanced overview of the existing knowledge on digital banking services.

Results and Discussion

In accordance with the objective of this article, the results of the conducted research should provide an overview of the concept of digital banking services. To gain a more comprehensive understanding of this concept, it is essential to begin by examining the historical development of digital banking services. The invention of the Telegraph can be considered the first version of distant communication technology. In 1886, the installation of the Transatlantic

telegraph cable was the first step towards connecting continents and creating a global communications system. The telegraph was used for money transfers between banks and became an important part of the financial sector. Modernisation of banking operations began in the 1960s. With the invention of mainframe computers, banks were able to move from manual bookkeeping to computerised record keeping. Banks such as Bank of America and Citibank began using these computers to store large amounts of data and process banking transactions. As the first Automatic Teller Machine in the world, Barclays Bank installed a cash machine in London, UK, in 1967. This machine operated all day and allowed people to withdraw money without interacting with bank employees. In 1973, the SWIFT system was founded, allowing banks and major financial institutions around the world to electronically transfer funds and communicate with each other. The concept of digital banking services emerged in the 1980s. Several banks began offering limited-featured telephone banking services. Using a home phone line, customers could make simple transfers of funds and check their bank accounts. Improvements in communication systems took another step towards digital banking and allowed banks to create "centralised computer systems" by linking networks of bank branches (Harchekar, 2018).

Although several technologies were widely used in most banks at that time, their primary role was to support and facilitate the internal management of banking operations. Following the invention of the internet, it became publicly available in the 1990s. The rise of the internet began to shape current digital banking services. Financial institutions saw the internet's potential and began developing online services. In 1994, Stanford Federal Credit Union in the United States became the first financial institution to offer online banking services. By the late 1990s, banks in developed countries had created their own websites, allowing customers to make transfers and check their accounts from home via the internet and their personal computers. In the early 2000s, accelerating technological advances gave rise to the concept of mobile banking. Mobile phones were quickly adopted by the public, and banks invented a new digital banking concept: SMS banking. Through text messaging, customers could check their bank accounts and perform simple banking transactions. In 2008, the launch of Google Play (formerly Android Market) and the App Store revolutionised digital banking. Banks developed and launched their banking apps, offering the same services as their other online platforms. In 2010, neobanks entered the financial market. Unlike traditional banks, they did not have physical branches and offered only online banking services through digital platforms. Moven and Simple are among the first neobanks in the world (Harchekar, 2018). In the 2010s, the rise of fintech companies created new competition in the financial market and a threat to banks. Companies like PayPal and Square began offering digital payment services and innovative financial products. In 2011, the launch of Venmo made peer-to-peer money transfers faster and easier. In 2014, digital wallet apps like Apple Pay and Google Pay emerged. These apps allow users to make payments via their smartphones without the need for cash or physical credit cards. Particularly during the COVID-19 pandemic, contactless payments gained popularity worldwide (Nguyen, 2020). Since the 2020s, rapid technological advances such as artificial intelligence, blockchain and the internet of things (IoT) have enabled banks to make significant progress in developing banking management and modern banking services (Tkachov & Pryiatelchuk, 2025).

In the modern banking sector, all banking services are becoming digital over time, and new digital banking services and products are being created. While it is impossible to list all digital banking services, this study examined the most popular types of digital banking services offered around the world. Online banking is an electronic system that allows banks to offer digital banking services through their websites over the Internet. By visiting the websites of banks, customers can check their balances, manage bank accounts, make payments and transfers, track transaction history, and more. In 2025, online banking accounts for 77% of all banking transactions worldwide and there are 3.6 billion active online banking users. 82% of US adults and 85% of UK adults use these services monthly (Burnett, 2025b). Mobile banking has the same features as online banking, but customers use special mobile banking applications through their smartphones or tablets to access banking services. The main advantage of mobile banking is that customers receive instant "push" notifications during bank account activities. Mobile banking handles nearly 88% of all banking transactions worldwide. For example, in China, there are more than 954 million active mobile payment users as of 2024 (Digital transformation in the…, 2025).

Using different types of digital payment methods (QR codes, contactless payments, etc.), customers can make online purchases from various web sources, pay bills, invoices and other payments. Digital wallet applications allow customers to make payments by tapping their phone on a payment terminal. Using these applications, customers can add all their payment cards to one application and access them at any time without the need for a physical version of the cards. According to UK forecasts, by 2027 half of the country's spending will be done through virtual cards (Prescott, 2024). Previously, when customers had problems related to banks, they used to have to visit the bank branches. But, using chatbots, robot consultants or other virtual assistants, banks offer remote support to solve customer problems and answer their questions. In a survey of online banking customers in Albania and Cyprus, researchers found that chatbot communication positively correlates with customer experience and satisfaction (Pfoertsch & Sulaj, 2023). Neobanks are financial institutions that operate without physical branches and offer only digital banking services. These services differ from traditional banking services by low fees, high interest rates on savings accounts, low interest rates on loans, and more personalised financial instruments. Revolut and Bunq are among the popular neobanks. The annual total volume of transactions and

payments through neobanks is predicted to exceed $700 billion by 2028 (Burnett, 2025a). Digital insurance. Until recently, insurance was only offered by insurance companies or special divisions of banks. But now, customers can purchase and manage insurance for their cars, houses and other valuables through digital devices, without leaving home. Customers can quickly compare insurance offers from different providers to find the best price. Around 60% of insurance policies worldwide are sold or managed through digital channels (Burnett, 2025b). From increased efficiency and accessibility to greater transparency and innovative features, digital banking offers numerous benefits to both customers and banks. Digital banking services are available 24 hours a day, 365 days a year, including weekends and holidays. Customers can conduct banking transactions and check their accounts from anywhere, such as at home or work, without having to go to the bank. This feature is necessary for customers who work and cannot visit the bank during working hours. Digital banking services are also accessible from a variety of devices, including smartphones, computers and tablets. Customers can choose the device that best suits them.

With the help of digital banking platforms, customers can easily transfer money between accounts, make domestic and international remittances and pay bills in less than a minute. Customers can also set up automatic payments for invoices to avoid late payments and penalties. For ensuring secure access of customers to banking accounts, digital banking platforms use multiple security methods, including two-factor authentication, biometric recognition and encryption. Customers receive notifications from their digital banking platform about suspicious activities such as fraudulent transactions or login attempts from unknown devices. Banks also use special encryption methods to protect customers' financial and personal data from theft and fraud (Barjaktarović Rakočević *et al*., 2022). Digital banking platforms provide customers with a detailed view of their financial activities. Customers can review their accounts, track spending history, categorise expenses and much more. These features help customers manage their finances more efficiently, avoid overspending and unpleasant surprises.

Traditionally, receiving a loan could take several days, because banks had to manually verify a customer's identity, analyse their credit history, and evaluate their past ability to repay. This process often resulted in delays and frustration for borrowers (Susmitha *et al*., 2024). However, digitalisation of banking services helps banks to automate and speed up the loan approval process. Now, especially for personal loans, banks can quickly collect and analyse the necessary data about a customer and make a credit decision in a short period of time. Unlike traditional banks, digital banking offers services at lower fees. Some banking operations can even be done online for free, allowing customers to realise significant savings. Digital services also reduce operational costs for banks by eliminating the need for paper, special infrastructure and maintenance. Some banks offer digital banking services without having branches. Better customer support. Digital banks offer 24/7 support through live chat, email, and robo-advisors to resolve issues and answer customer questions. Customers can get help anytime, even outside of business hours. These modern features increase satisfaction and loyalty of customers, strengthen the bank-customer relationship, and help prevent customer churn.

Many digital banking platforms use specific artificial intelligence tools to analyse the financial services most frequently used by each customer. Then platforms offer customers personalised financial and banking products tailored to their habits and preferences (Liu *et al*., 2024). Additionally, digital banking allows customers to link other financial accounts from third-party applications to a single platform. This helps customers to view and manage all financial activities from a single banking app. In many regions of the world, there are no or very few bank branches. People, especially in rural areas, had no access to traditional banking services. But now, anyone with access to the internet can open and manage a bank account, obtain a loan, send and receive money, no matter where they live. Digital banking services help reduce global financial inclusion and improve the quality of life for people in rural and remote areas (Hung *et al*., 2020). One of the main reasons why customers are increasingly turning to digital banking services is the attractive interest rates. Due to lower overhead and operating costs than traditional (physical) banks, digital banks offer lower interest rates on loans and higher interest rates on savings accounts. In addition to financial inclusion, digital banking also helps banks expand their reach. Typically, traditional banks serve people who live near or can visit a bank branch. But digital banking capabilities allow banks to serve people in different regions and even different countries. Banks use modern technologies to analyse the needs and preferences of people in different countries and provide banking services through digital platforms. This helps banks enter new markets, gain new customers, and increase revenue (Gambacorta, 2023). In digital banking, almost all statements, reports, and documents are generated and stored on computer systems and digital platforms. By minimising the need for paper and plastic, digital banking reduces waste production and operates in a more environmentally friendly manner. Unlike traditional banks, digital banks operate primarily online. This also reduces electricity consumption and significantly improves overall energy efficiency. Despite the numerous benefits that digital services bring to the banking industry, they also have certain disadvantages. Digital banking systems collect and store a lot of information about customers, including personal data, location, account details, and income and expenditure history. Although this data is only used to better understand customer behaviour and personalise services, customers still have concerns about the confidentiality of their personal information (Revathi, 2019).

Banks implement advanced security measures to protect themselves and their customers from manipulation and cyberattacks. However, the risk of various hacking attacks remains. Cybercriminals can penetrate bank systems and

gain access to confidential information, including customers' personal data and account details. This can also lead to financial losses for both customers and banks (Vedapradha & Hariharan, 2021). Another potential risk for customers is bank account passwords. Fraudsters can easily guess weak passwords and thus gain unauthorised access to customer accounts. In addition, cybercriminals create fake banking websites and emails similar to the original version and send them to people. Sometimes customers cannot distinguish the original from the fake, open links and access fake websites. As soon as customers enter their banking credentials, their data is immediately stolen (Indriasari *et al.*, 2022). One of the largest data breaches in banking history occurred in 2019 at Capital One, an American financial holding company, affecting more than 100 million customers. A misconfigured firewall on the bank's cloud server allowed unauthorised access to the banking system. The stolen data included customers' names, addresses, phone numbers, email addresses, and dates of birth. Capital One immediately patched the breach and paid nearly $200 million in compensation to customers (Information on the…, n.d.).

Through technological innovations banks offer a wider range of banking services to their customers. However, for customers accustomed to traditional banking services, it can be difficult to adapt to digital banking services. Especially relatively older users may experience navigation issues within the bank programme, which can lead to transaction errors. Banks now offer a wide range of digital banking services. However, some services remain available only at traditional banks, such as complex loans or specific financial advice. Customers who need these services may still need to visit a traditional bank branch (Ananda *et al.*, 2020).

Digital banking facilitates money spending by offering instant payment methods via digital wallets or banking apps. However, handling cash gives users a tangible sense of money and the ability to track and control spending. When making digital payments, the absence of physical cash can cause people to overspend. Especially if users do not frequently check their bank account balances, they may not notice how much money they are spending. Digital banking allows customers to access banking services anytime, anywhere. However, like other digital systems, digital banking systems may also experience technical failures, interruptions, or malfunctions. During these times, customers may not be able to access their bank accounts or conduct transactions, which can cause inconvenience. Furthermore, a stable internet connection is essential for digital banking. Users with weak internet connections may experience difficulties accessing banking services.

While many banks operate both traditionally and digitally, some only offer digital services and do not have branches. The lack of physical presence may be inconvenient for customers (especially for older people) who prefer face-to-face banking or need help with specific problems. Modern banks typically provide customer support through digital channels such as chatbots, emails, and calls. While this method can solve many problems and answer customer questions, it may be insufficient for more complex issues. Resolving such issues can be time-consuming or impossible without face-to-face interaction and customers may become frustrated if they cannot contact bank staff. Digital banking services help increase financial inclusion, but they also lead to digital exclusion. People in rural areas may not have access to the internet or those with low incomes cannot afford digital devices. Unfortunately, such people are excluded from the benefits of digital banking services (Hung *et al.*, 2020). Digital banking services have grown rapidly since 2015, affecting customer behaviour worldwide. Analysing the demographics of digital services helps banks and other financial institutions understand their customers, improve customer satisfaction and meet their diverse needs. As shown in Figure 1, the number of users of modern digital banking services continues to grow worldwide every year. Especially during the Covid-19 pandemic, lockdowns have boosted the use of these services. By 2024, more than 3 billion people use at least one digital banking service during the year.

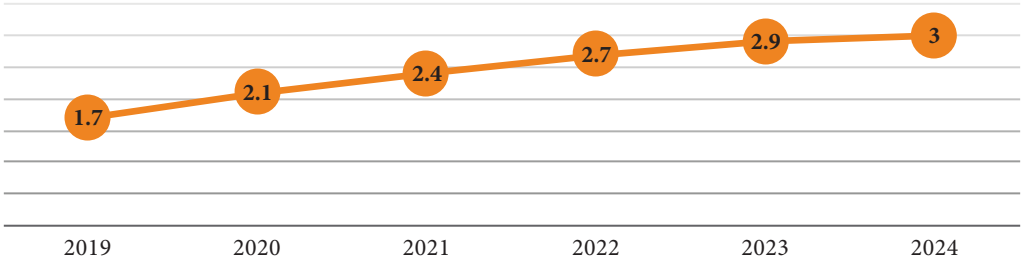

Figure 1. Number of digital banking users 2019-2024 (in billions)
Source: prepared by the author based on UFA2020 overview: Universal financial access by 2020 (2018), S. Burnett (2025a)

The adoption of digital banking services varies across regions. In developed countries, adoption rates are significantly higher than in developing or poor countries (Fig. 2). Strong infrastructure, a higher Human Development Index, higher levels of education and income are among the factors that differentiate these countries from developing ones (Wewege *et al.*, 2020).

As the Figure 3 below shows, the lowest adoption rates are in developing countries. Factors such as poverty level, weak technological infrastructure, lack of financial

literacy and poor internet quality impact the adoption of digital banking services. However, banks and governments are working together to make digital services accessible to the population and adoption rates are increasing over the years.

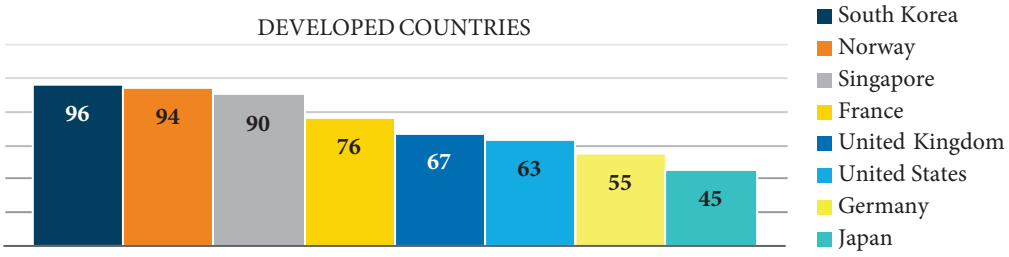

Figure 2. Percentage of adults using digital banking services in developed countries (2024)
Source: prepared by the author based on S. Burnett (2025b), Digital transformation in the payments industry statistics (2025)

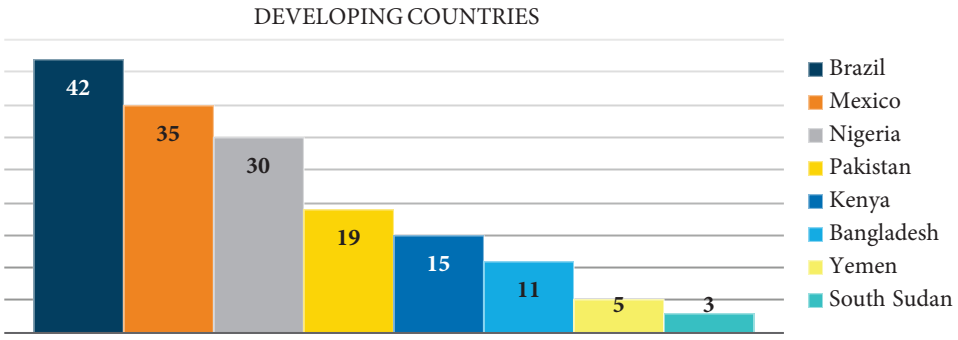

Figure 3. Percentage of adults using digital banking services in developing countries (2024)
Source: prepared by the author based on S. Burnett (2025b), Digital transformation in the payments industry statistics (2025)

However, regardless of geography, various demographic factors influence customer behaviour towards digital banking services. One of the key demographic differences in digital banking is the age divide. Younger generations are the main users of digital banking services. According to a 2024 survey, 94% of Millennials and 82% of Gen Z use digital banking for at least one financial transaction. With the rise of instant payments and mobile banking apps, 75% of Millennials regularly use digital banking services. In general, younger users are more adaptable to technology and new digital financial products. 54% of the world's population aged 45 to 65 use digital banking services. The most popular service among these customers is mobile payments. However, they prefer both digital and traditional banking services. The adoption rate of digital banking services is lower among older generations. Only about 40% of customers aged 65 and over regularly use digital banking services, mainly to check their balances or make payments. Traditional face-to-face services and bank branches are preferred by older customers. However, a survey reveals that 65% of baby boomers use digital banking services at least once a month (Burnett, 2025b). Historically, institutional and social factors have limited women's access to financial resources and opportunities, resulting in a gender gap. In developed countries, the adoption rate of digital banking is almost identical. For example, in 2023, in the United States, 62% of men and 65% of women used digital banking services. These figures were 71% and 73%, respectively, in the EU.

Education is another major factor affecting the adoption of digital banking services. A higher level of education is associated with increased use of digital banking services. Generally, educated consumers are more comfortable using technology and understanding financial products. A high level of financial literacy helps customers better analyse their banking needs and make financial decisions (UFA2020 overview…, 2018). Customers' income significantly influences their adoption of digital banking. Generally, customers with higher incomes require a wider range of banking services, including investing, financial management and cryptocurrency. They often have advanced technology and high-speed internet connection, which facilitates the adoption of digital banking services. In contrast, low-income customers use fewer types of digital banking services (Kaixiang *et al.*, 2024). Although the adoption of digital banking services among low-income people has gradually increased over the years, limited access to technology or poor internet quality creates barriers to accessing digital services. Based on the findings of this article, national banks of countries, international financial institutions and special regulatory bodies should monitor and regulate digital banking services for the following purposes (Table 1).

Table 1. Main purposes of digital banking regulation

Purpose	Description
Consumer protection	Ensure transparency and fairness of digital services and protect customers from misuse of personal information
Security	Protect digital banking platforms against hacking, cyber threats, data theft and financial losses
Financial stability	Create a fair competitive environment throughout the financial sector, prevent monopolistic activities and support the operation of new or small participants in the market
Preventing illegalities	Protect digital banking platforms from being used as a tool for illegal activities such as money laundering and terrorist financing by monitoring suspicious transactions
Proper use of technology	Ensure that innovations and technologies applied by banks are used only for their intended purposes
Innovation facilitation	Encourage banks to implement the latest technological advances within a secure and well-defined regulatory framework to improve the banking sector
Cross-border compliance	Ensure digital banking activities comply with international laws and standards to support banks operating globally

Source: prepared by the author based on O.T. Nguyen (2020), L. Gambacorta (2023), N.X. Truong (2024)

Banks are transforming from traditional brick-and-mortar buildings to innovative, universal financial institutions. Applying the latest technologies to banking services improves their accessibility, makes them more convenient for customers, increases transparency and efficiency, and reduces costs for both banks and customers. However, they also come with many challenges, such as privacy, security, and technical issues. These challenges require careful attention from banks and financial institutions. Furthermore, regulators must take action regarding digital services to prevent unwanted risks and problems for customers and the financial sector. To minimise the potential problems and risks associated with technological advances, banks should follow these recommendations: create more user-friendly digital platforms to be more convenient for customers and eliminate misunderstandings; apply advanced security mechanisms to protect customer data and prevent potential financial losses; conduct regular checks of digital banking systems to identify errors, vulnerabilities and potential risks; implement 24/7 monitoring systems to detect cyber threats and unusual transactions; train bank employees on how to properly use technological devices and programmes applied in the banking sector in order to increase efficiency; collaborate with other local and international banks to share experiences in applied technologies and jointly find solutions to emerging threats and risks.

Many researchers devoted their studies to banking innovation and digital banking services from different perspectives. T.L. Liu *et al.* (2024) highlighted that banks that have adopted digital technologies show significant improvements in performance metrics. The study also examined that digital adoption helps small banks catch up with their larger counterparts in terms of service offering and performance. Similar to the findings of this study, L. Wu *et al.* (2023) suggested that mobile banking platforms provide 24/7 access to banking services, contributing to customer convenience and satisfaction. However, this study expanded the research of L. Wu *et al.* (2023) by focusing on the entire digital banking experience, covering all its benefits and challenges. A. Müller *et al.* (2024) focused their research on customer evaluation of the quality of digital banking services. Their results indicated that customers prioritise ease of use, security and personalisation when assessing digital banking services. S. Barjaktarović Rakočević *et al.* (2022) also examined digital banking from the customer perspective and reaffirmed that customers value the convenience, accessibility, and availability of digital banking services. The study recommended that banks should invest in user training and improve the security of digital banking services to promote their wider adoption.

C. Basdekis *et al.* (2022) analysed the relationship between FinTech companies and banks. Their research found that traditional banks are increasingly collaborating with FinTech companies to leverage their technological innovations, rather than competing directly with them. The article also addressed the regulatory challenges associated with digitalisation and FinTech. C. Martínez de Ibarreta *et al.* (2025) investigated digital banking in Spain, the impact of digitalisation on bank branch closures and barriers to financial inclusion. Their study showed that the low density of bank branches in the country significantly increases the use of digital banking services among customers. The results of the study revealed that although the COVID-19 pandemic and lockdowns significantly accelerate the adoption of digital banking services, customers' age, digital skills, education level and location pose significant barriers to financial inclusion. The researchers once again highlighted the importance of financial education programmes and a well-developed digital infrastructure to increase the adoption of digital banking services and improve financial inclusion across the country. M. Rahman *et al.* (2024) also examined the impact of the COVID-19 pandemic on the adoption of digital banking services. Using data collected in 2020-2021 (the peak period of the COVID-19 pandemic), the study analysed the intention of millennial customers to switch from traditional banking services to digital banking services and the adoption of mobile banking apps in Malaysia. The findings revealed that performance expectations, trust and personal interests have an impact on customers' adoption of mobile banking applications.

Scientists Z. Yu & J. Liu (2025) examined digital banking from a risk management perspective. Using financial data from Chinese commercial banks, their study found that the digital transformation of banks significantly

reduces risks related to credit decisions, fraud, and compliance, and improves the efficiency of operations and asset management. The study suggested that, despite the drawbacks of technological advances, banks should consider them as part of their long-term business strategy and use them to improve the efficiency of their overall operations. From a macroeconomic perspective, government agencies should support the digital transformation of banks in both urban and rural areas and allocate digital resources proportionally to all banks in the country. N.X. Truong (2024) study identified the main factors driving the adoption of digital banking services, such as cost-effectiveness, convenience, and improved accessibility. Furthermore, the findings showed that despite the widespread adoption of digital banking services globally, complex interface design and financial illiteracy remain significant barriers for some customer segments. V. Shpachuk & V. Trinh (2024) devoted their research to the modern banking sector and digital transformation. However, unlike this study, they mainly focused on the role of key technologies such as artificial intelligence, blockchain, and cloud computing in the modern banking environment. The research of O. Oyadeyi (2023) highlighted the role of banking innovation in improving financial inclusion in Nigeria. They suggested that regulators should promote digital adoption to help banking services reach rural areas of the country. Technology continues to shape the future and banks must remain as technologically advanced as possible and strengthen their brand image to remain competitive in the banking industry, create new financial products and meet the growing needs of customers.

Conclusions

The 21st century is widely considered the age of information technology, as rapid and pervasive advancements in the field of technology are fundamentally changing every area of the world. This study examined the impact of modern innovative technologies on banking services and highlighted the importance of digitalisation in the banking sector. The study revealed that the application of emerging technologies to banking services improves their accessibility, makes them more convenient for customers, increases transparency and efficiency, and reduces costs for both banks and customers. Digital banking services help banks and financial institutions serve to underserved populations and improve financial inclusion around the world. From a customer perspective, the study found that several socio-economic factors such as quality of life, country infrastructure, education level and income level of customers influence their acceptance of digital banking services. However, due to over-dependence on technological infrastructure, digital banking services also come with many challenges such as privacy, security and technical issues that negatively impact their adoption. These challenges require close attention from banks and financial institutions, as failure to respond to them in a timely manner may result in customer data leakage, financial and reputational losses for banks. The study also provided recommendations to minimise the risks and challenges of digital banking services, emphasising the importance of their regulation. Future research should explore emerging technologies in banking such as artificial intelligence, internet of things, open banking and determine their role in improving the banking sector.

Acknowledgements

None.

Funding

None.

Conflict of Interest

None.

References

[1] Al-Smadi, M.O. (2023). Examining the relationship between digital finance and financial inclusion: Evidence from MENA countries. *Borsa Istanbul Review*, 23(2), 464-472. doi: 10.1016/j.bir.2022.11.016.

[2] Ananda, S., Devesh, S., & Al Lawati, A. (2020). What factors drive the adoption of digital banking? An empirical study from the perspective of Omani retail banking. *Journal of Financial Services Marketing*, 25, 14-24. doi: 10.1057/s41264-020-00072-y.

[3] Barjaktarović Rakočevć, S., Milošević, S., & Rakić, N. (2022). Digital banking services from customer perspective. In M. Mihić, S. Jednak & G. Savić (Eds.), *Sustainable business management and digital transformation: Challenges and opportunities in the post-COVID era* (pp. 210-227). Cham: Springer. doi: 10.1007/978-3-031-18645-5_13.

[4] Basdekis, C., Christopoulos, A., & Katsampoxakis, I. (2022). FinTech's rapid growth and its effect on the banking sector. *Journal of Banking and Financial Technology*, 6, 159-176. doi: 10.1007/s42786-022-00045-w.

[5] Burnett, S. (2025a). *Insurtech statistics 2025: Funding, AI adoption, and regional expansion*. Retrieved from https://coinlaw.io/insurtech-statistics.

[6] Burnett, S. (2025b). *Online banking usage statistics 2025: Adoption, user insights, and security innovations*. Retrieved from https://coinlaw.io/online-banking-usage-statistics.

[7] Chinnasamy, G., Vinoth, S., & Jain, A. (2024). Revolutionizing finance: A comprehensive analysis of digital banking adoption and impact. *International Journal of System Assurance Engineering and Management*. doi: 10.1007/s13198-024-02531-4.

[8] Digital transformation in the payments industry statistics. (2025). Retrieved from https://surl.li/ftawgi.

[9] Gambacorta, L. (2023). *Digital banking: Opportunities and drawbacks*. Retrieved from https://surl.li/dwgtsd.

[10] Geçer, T., & Akgiray, V. (2025). Digital banking. In *The financial technology revolution* (pp. 91-112). Cham: Palgrave Macmillan. doi: 10.1007/978-3-031-92048-6_5.
[11] Harchekar, J. (2018). Digitalization in banking sector. *International Journal of Trend in Scientific Research and Development*, 9(4), 103-109. doi: 10.31142/ijtsrd18681.
[12] Hung, J.-L., He, W., & Shen, J. (2020). Big data analytics for supply chain relationship in banking. *Industrial Marketing Management*, 86, 144-153. doi: 10.1016/j.indmarman.2019.11.001.
[13] Indriasari, E., Prabowo, H., Gaol, F.L., & Purwandari, B. (2022). The intelligent digital banking technology and architecture: A systematic literature review. *International Journal of Interactive Mobile Technologies*, 16(19), 98-117. doi: 10.3991/ijim.v16i19.30993.
[14] Information on the Capital One cyber incident. (n.d.). Retrieved from https://www.capitalone.com/digital/facts2019/.
[15] Kaixiang, V.W., Rangaswamy, E., & Joy, G.V. (2024). Banking customers perception of digital banking efficiency and digital transformation programme adopted by banks. In R.K. Hamdan & A. Buallay (Eds.), *Artificial intelligence (AI) and customer social responsibility (CSR)* (pp. 623-635). Cham: Springer. doi: 10.1007/978-3-031-50939-1_48.
[16] Liu, T.L., Naveed, M.M., Mustafa, S., & Naveed, M.T. (2024). Analysing the impact of digital technology diffusion on the efficiency and convergence process of the commercial banking industry of Pakistan. *Humanities and Social Sciences Communications*, 11, article number 792. doi: 10.1057/s41599-024-03184-1.
[17] Martínez de Ibarreta, C., Ruíz-Rúa, A., Gijón, C., & Fernández-Bonilla, F. (2025). Banking digitalization in Spain: How branch closures and digital barriers reshape financial inclusion. *Digital Business*, 5(1), article number 100119. doi: 10.1016/j.digbus.2025.100119.
[18] Meghani, K. (2020). Use of artificial intelligence and blockchain in banking sector: A study of scheduled commercial banks in India. *Indian Journal of Applied Research*, 10(8). doi: 10.13140/RG.2.2.28112.12801.
[19] Müller, A., Demaeght, A., Greschuchna, L., & Reiter, J. (2024). Digital transformation in banking – how do customers assess the quality of digital banking services? In F.F.H. Nah & K.L. Siau (Eds.), *HCI in business, government and organizations* (pp. 209-220). Cham: Springer. doi: 10.1007/978-3-031-61318-0_15.
[20] Nguyen, O.T. (2020). Factors affecting the intention to use digital banking in Vietnam. *The Journal of Asian Finance, Economics and Business*, 4(3), 303-310. doi: 10.13106/jafeb.2020.vol7.no3.303.
[21] Oyadeyi, O. (2023). Banking innovation, financial inclusion and economic growth in Nigeria. *Journal of the Knowledge Economy*, 15, 7014-7043. doi: 10.1007/s13132-023-01396-5.
[22] Khera, P., Ng, S.Y., Ogawa, S., & Sahay, R. (2021). Digital financial inclusion in emerging and developing economies: A new index. *IMF Working Paper*, 2021(090). doi: 10.5089/9781513574196.001.
[23] Pfoertsch, W., & Sulaj, K. (2023). Integrating artificial intelligence with customer experience in banking: An empirical study on how chatbots and virtual assistants enhance empathy. In *2023 international conference on computing, networking, telecommunications & engineering sciences applications (CoNTESA)* (pp. 69-74). Zagreb: IEEE. doi: 10.1109/CoNTESA61248.2023.10384979.
[24] Prescott, K. (2024). *Your digital wallet can do much more than pay for your shopping*. Retrieved from https://www.thetimes.com/business-money/technology/article/16prescott-dwxf6pxt6.
[25] Rahman, M., Yee, H.P., Masud, M.A.K., & Uzir, M.U.H. (2024). Examining the dynamics of mobile banking app. Adoption during the COVID-19 pandemic: A digital shift in the crisis. *Digital Business*, 4(2), article number 100088. doi: 10.1016/j.digbus.2024.100088.
[26] Revathi, P. (2019). Digital banking challenges and opportunities in India. *EPRA International Journal of Economic and Business Review*, 7(12), 20-23. doi: 10.36713/epra2985.
[27] Shpachuk, V., & Trinh, V.Q. (2024). Introduction: Modern banking and digital transformation. In *Modern banking and digitalization*. *Contributions to finance and accounting* (pp. 1-14). Cham: Springer. doi: 10.1007/978-3-031-71422-1_1.
[28] Singh, S.K., Pattnaik, P.K., & Samanta, S. (2024). Issues and challenges of digital banking system. In J.M.R.S. Tavares, S. Pal, V.C. Gerogiannis & B.T. Hung (Eds.), *Proceedings of second international conference on intelligent system* (pp. 67-81). Singapore: Springer. doi: 10.1007/978-981-99-8976-8_7.
[29] Susmitha, K., Leelavati, T.S., & Sripathi, M. (2024). Transformative trends in digital banking: Exploring e-banking, mobile banking, digital payments, and innovative solutions. In N. Mansour, S. Baral & V. Garg (Eds.), *E-financial strategies for advancing sustainable development* (pp. 169-182). Cham: Springer. doi: 10.1007/978-3-031-67523-2_10.
[30] Tkachov, Z., & Pryiatelchuk, O. (2025). Investment banking innovations as a response to current threats to sustainable development. *Economics of Development*, 24(2), 122-133. doi: 10.63341/econ/2.2025.122.
[31] Truong, N.X. (2024). The adoption of digital banking: Embracing the future of financial services. In M.A. Al-Sharafi, M. Al-Emran, G.W.H. Tan & K.B. Ooi (Eds.), *Current and future trends on intelligent technology adoption* (pp. 217-230). Cham: Springer. doi: 10.1007/978-3-031-61463-7_11.
[32] UFA2020 overview: Universal financial access by 2020. (2018). Retrieved from https://www.worldbank.org/en/topic/financialinclusion/brief/achieving-universal-financial-access-by-2020.

[33] Vedapradha, R., & Hariharan, R. (2021). Innovation in banking: Fusion of artificial intelligence and blockchain. *Asia Pacific Journal of Innovation and Entrepreneurship*, 15(1), 51-61. doi: 10.1108/APJIE-09-2020-0142.
[34] Wewege, L., Lee, J., & Thomsett, M.C. (2020). Disruptions and digital banking trends. *Journal of Applied Finance & Banking*, 10(6), 15-56.
[35] Wu, L., Yu, D., & Lv, Y. (2023). Digital banking and deposit: Substitution effect of mobile applications on web services. *Finance Research Letters*, 56, article number 104138. doi: 10.1016/j.frl.2023.104138.
[36] Yu, Z., & Liu, J. (2025). The digital revolution in banking: Unpacking risk management in the age of transformation. *International Review of Economics & Finance*, 103, article number 104444. doi: 10.1016/j.iref.2025.104444.

Цифрові банківські послуги: історія, переваги та проблеми

Рагіб Маммедлі
Докторант
Азербайджанський державний економічний університет (UNEC)
1001, вул. Істиглаліят, 6, м. Баку, Азербайджан
https://orcid.org/0009-0009-3721-3548

Анотація. Інновації та технологічні досягнення трансформують усі сектори економіки, і вивчення їхнього впливу на банківський сектор є вкрай актуальним у контексті цифровізації. Швидкий розвиток технологій призвів до суттєвих змін у способах надання банківських послуг, що переосмислює очікування та поведінку як клієнтів, так і фінансових установ. Однією з найвизначніших інновацій, що виникла завдяки технологічному прогресу, є цифрові банківські послуги. Метою цієї статті було дослідити поняття цифрових банківських послуг шляхом аналізу їхньої історії, типів, переваг і викликів, а також зробити внесок у наукову літературу, надавши всебічний огляд того, як ці послуги трансформують сучасне банківське середовище. Для досягнення поставлених цілей було використано методи якісного аналізу, узагальнення та систематизації. Це дослідження показало, що впровадження новітніх інноваційних технологій у традиційні банківські послуги оцифровує та автоматизує їх, підвищує їхню доступність, робить їх зручнішими для клієнтів, збільшує прозорість і ефективність, а також знижує витрати як для банків, так і для клієнтів. Водночас, попри численні переваги, цифрові послуги супроводжуються низкою викликів, зокрема пов'язаних із конфіденційністю, безпекою та технічними питаннями. У дослідженні підкреслено важливість того, щоб банки та фінансові установи реагували на ці виклики, оскільки ігнорування цих аспектів може підірвати довіру до цифрових систем. Крім того, регуляторні органи повинні вживати заходів щодо цифрових послуг, щоб забезпечити фінансову стабільність, запобігти незаконній діяльності, захистити клієнтів і банки від загроз безпеці, а також уникнути небажаних ризиків і проблем для всього фінансового сектору. У демографічній частині дослідження було проаналізовано кількість користувачів цифрового банкінгу в усьому світі та фактори, що впливають на впровадження цифрових послуг. Результати цього дослідження можуть бути використані як орієнтир для банків і фінансових установ при впровадженні інноваційних технологій

Ключові слова: інновації; доступність; поведінка клієнтів; фінансова інклюзія; регулювання

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 29.04.2025; Revised: 01.08.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.18

UDC 338.48(477)

Implementation of tourism potential in the context of sustainable development of the regions and the national economy of Ukraine

Natalia Trusova*
Doctor of Economic Sciences, Professor
Dmytro Motornyi Tavria State Agrotechnological University
69063, 66 Universytetska Str., Zaporizhzhia, Ukraine
https://orcid.org/0000-0001-9773-4534

Anastasiia Trusova
Assistant
Dmytro Motornyi Tavria State Agrotechnological University
69063, 66 Universytetska Str., Zaporizhzhia, Ukraine
https://orcid.org/0009-0008-8154-2456

Abstract. The aim of this study was to substantiate the ways of effective use of Ukraine's tourism potential as an instrument of economic resilience and regional growth. The methodology was based on an empirical analysis of tourism resources, infrastructure, financial indicators, and the dynamics of tourist flows in 2019-2024, taking into account innovative approaches to the development of the industry. The results demonstrated significant regional differences in the use of tourism potential and the level of implementation of innovative solutions. An in-depth analysis was carried out for Kyiv, Cherkasy, and Vinnytsia regions, which made it possible to assess the innovativeness and competitiveness of the tourism strategies. In Kyiv region, 147 natural tourism objects were recorded, including a biosphere reserve, three national parks, and objects of the United Nations Educational, Scientific and Cultural Organisation. Cherkasy region had 572 objects of the natural reserve fund, while Lviv region had more than 1,600 cultural heritage sites and four national parks. Zhytomyr region counted two reserves and more than 1,500 historical and cultural monuments. The analysis of hotel infrastructure showed sharp differences between the pre-war and wartime periods: occupancy in Kyiv dropped from 30-40% to 10-20%, while in the Carpathian region in 2024, it exceeded 60-70%. Financial indicators confirmed the uneven recovery: in 2024 Kyiv region provided UAH 284.1 million of tourism revenues and UAH 50.83 million of tourist tax, Cherkasy region – UAH 34.2 million and UAH 23.53 million respectively, and Vinnytsia region – UAH 41.3 million and UAH 3.12 million. The average length of stay of tourists varied from 2 days in Kyiv to 7 days in Lviv, and the total flow in 2024 amounted to 2.7 million people, which equalled approximately 70% of the pre-war volumes. The practical significance of the study lay in the fact that its results can be used for the development of regional tourism strategies aimed at increasing economic resilience, competitiveness, and ensuring sustainable development of the regions of Ukraine

Keywords: infrastructure; resource; resilience; competitiveness; digitalisation; innovation; hotels

Introduction

The development of the tourism sector in Ukraine acquired particular importance in the context of the search for new drivers of economic growth and the improvement of the population's well-being. The use of tourism resources contributed to the diversification of the economy, the creation of jobs, the activation of entrepreneurial initiatives, and the formation of a positive international image of the state. Tourism acted as an important factor of socio-economic stability since it ensured the integration of cultural, natural, and infrastructural opportunities of the regions. The functioning of tourism in Ukraine was accompanied by significant challenges, including military aggression, the

Suggested Citation:
Trusova, N., & Trusova, A. (2025). Implementation of tourism potential in the context of sustainable development of the regions and the national economy of Ukraine. *Innovation and Sustainability*, 5(3), 18-29. doi: 10.31649/vis/3.2025.18.

*Corresponding author

preservation of cultural heritage, environmental threats, and infrastructural instability.

In the work, V. Liubchenko (2023) generalised scientific achievements and studied the role of tourism in the context of sustainable development, emphasising its impact on economic, sociocultural, and environmental spheres. The author stressed that despite the existence of positive global experience, the Ukrainian context was characterised by increasing difficulties due to martial law and the need to adapt European practices. In the study by O. Roik (2023), emphasis was placed on the necessity of rethinking the directions of sustainable tourism development in the period of post-war reconstruction, particularly through the restoration of infrastructure, digitalisation of services, the creation of competitive advantages in the international market, and the formation of a national brand. The author stressed the importance of tourism as a factor of economic growth, social stability, and the preservation of cultural heritage.

Ukraine's tourism sector suffered serious losses due to the full-scale war, which manifested itself in the reduction of domestic demand, the decline of infrastructure, the reduction of investment support, and the increase in security risks. In the study by N. Karpenko *et al.* (2025), it was established that despite the challenges, tourism in Poltava region demonstrated high adaptability, becoming a humanitarian hub and a centre of domestic tourism, where cultural and volunteer initiatives actively developed. The authors emphasised the importance of the cluster approach, the preservation of ethnographic traditions, and the potential of the Myrhorod resort, which allowed competitiveness to be maintained even under crisis conditions. In the study by H. Haponenko *et al.* (2023), the greening of tourism activity was considered as a key factor in the restoration of tourist and recreational potential and the construction of a model of sustainable regional tourism development in the post-war period. The authors proved that sustainable tourism had to be based on the integration of environmental, economic, social, and cultural aspects, the use of the cluster approach and public-private partnership, as well as the implementation of European environmental safety standards. V. Matsuka & M. Horbashevska (2024) determined that tourism in the country was characterised by cyclicality, where periods of revival were replaced by declines, while Ukraine's image in the world market remained uncertain. They stressed that the most developed tourist centres remained Kyiv, Lviv, Dnipro, and Odesa regions, while weaker positions were observed in Luhansk, Kirovohrad, Zhytomyr, Ternopil, Rivne, and Sumy regions. It was established that the key elements of the organisational and economic mechanism of development were effective marketing strategies, compliance with the legislative framework, attraction of investments, and digital transformation, which could ensure the sustainable functioning of tourist regions.

Sustainable tourism in Ukraine found itself under threat due to military actions that led to the destruction of infrastructure, the loss of part of recreational resources, and the decline of economic activity. In the study by L. Korolchuk (2023), the feasibility of the development of cross-border sustainable tourism was proved as the most realistic direction in wartime. The author noted that such a format allowed the effective implementation of the tasks of sustainable tourism through the use of resources of border regions, integration into European practices, and the acceleration of the process of Euro-Atlantic integration. The study showed that cross-border tourism could provide economic benefits for border areas, contribute to the preservation of cultural identity, and create prerequisites for long-term development even under wartime conditions. Ukraine's tourism sector also suffered significant losses due to the COVID-19 pandemic, which complicated business development, led to a reduction in tourist flows, and a decline in the contribution of tourism to gross domestic product (GDP).

In the study by O. Yakushev *et al.* (2024), the situation in Ukrainian and world tourism under pandemic conditions was analysed, the consequences of quarantine restrictions and the decrease in investment attractiveness were outlined. The authors stressed that the recovery of the tourism business was possible only on the basis of sustainable development, which envisaged state support, the involvement of business and the community, the development of green infrastructure, and digital technologies. It was noted that Ukraine significantly lagged behind neighbouring countries in the implementation of anti-crisis measures, which created a threat of reduced competitiveness. Tourism worldwide faced challenges associated with rapid changes in operating conditions, which required the creation of effective mechanisms of development and regulation. In the study by S. Tsviliy (2024), the methodology of tourism industry development was substantiated based on the study of business potential and forms of state regulation in different countries. The author emphasised the importance of public-private partnership, digital transformation, attraction of investments, and support for sustainable development as key factors of increased competitiveness. It was proved that the formation of a comprehensive approach to tourism business management contributed to the creation of a quality national tourism product and the integration of Ukraine into world markets.

Insufficiently studied remained the issues of improving legislation, institutional support, the integration of European standards, the development of public-private partnership, the formation of recovery strategies and risk management, as well as mechanisms of sustainability and cross-border cooperation, which required further scientific research. The aim of this study was to determine the directions of rational implementation of Ukraine's tourism potential as a factor in the formation of financial stability and the strengthening of regional competitiveness.

Materials and Methods

The research had an empirical character and covered the timeframe of 2019-2024. To ensure representativeness, Kyiv, Cherkasy, Vinnytsia, Zhytomyr, Lviv, Ternopil, Ivano-Frankivsk and Zakarpattia regions were selected, as

these regions demonstrated different levels of provision with natural resources, infrastructure development and socio-economic conditions, which allowed for a comprehensive assessment of the specifics of Ukraine's tourism potential. Such a sample covered both developed tourist centres and territories with unrealised potential, which made it possible to carry out a comprehensive analysis of regional differences. Within the research, the structural-statistical method determined indicators characterising the volume of tourist resources and infrastructure. These included the number of natural sites (national parks, reserves, recreational zones), historical and cultural monuments, as well as the presence of objects included in the list of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and national tourist routes (Ivano-Frankivsk, n.d.; About the nature reserve…, n.d.; Nature Reserve Fund of Ukraine, n.d.). Hotel infrastructure (the number of accommodation establishments and the dynamics of the occupancy in 2019-2021 and 2022-2024) was analysed separately in order to assess the provision of tourist demand and the resilience of the industry in crisis conditions. The analysis was carried out using the comparative-dynamic method based on the sources Y. Tarasovsky & A. Kruchinina (2024) and 2024 Ukrainian hotel market overview study results (2024), selected according to the criteria of relevance, reliability, and completeness of statistical data. For the characterisation of transport provision, the length of paved roads and the availability of railway and aviation hubs in the studied regions were taken into account (In 2022, Ukrzaliznytsia carried…, 2023; Kosse, 2023).

To evaluate tourist flows, the method of comparative analysis was applied, which made it possible to identify the transformation of demand in different periods. For this purpose, statistical materials on the number of domestic and foreign tourists and the average duration of the stay in the regions in 2019-2021 and 2022-2024 were used (Ukraine's tourism industry…, 2024; Ilechko, 2025). Innovation processes were studied using content analysis and a classification approach, which made it possible to identify the key directions of digitalisation and greening. The introduction of digital technologies, including online booking platforms, mobile applications and Augmented Reality/Virtual Reality (AR/VR) solutions, as well as the development of the concept of smart tourism, which covered virtual tours of museums, digitalisation of cultural infrastructure and smart-mobility services, was analysed (Polikovska, 2024; Skeiron, n.d.). Additionally, the greening of the tourism sector was evaluated through the spread of eco-certification practices for hotels, the functioning of "green" estates and the creation of specialised eco-routes (Over 50 routes…, 2018).

For an in-depth analysis of innovative involvement, three regions – Kyiv, Cherkasy, and Vinnytsia – were selected. This choice was explained by different starting conditions: Kyiv region was distinguished by a high level of digitalisation and financial capacity, Cherkasy region was characterised by a significant natural-resource base, and Vinnytsia region combined cultural and ecological potential. In addition, for these regions complete statistical information was available in open sources, which made it possible to form a set of indicators: tax revenues from tourism, tourist tax, its growth rates and the number of eco-certified hotels (Tourism taxes by…, 2025; Kornyush, 2025; In 2024, Vinnytsia community…, 2025). The application of formulae (1-2) made it possible to compare the indicators of innovative involvement of the tourism sector in the selected regions for 2024. The innovation involvement index was formed on the basis of three groups of parameters: financial indicators (tax revenues from tourism and volumes of tourist tax for 2024), the dynamics of growth of tourist tax in 2024 compared to 2023, and ecological investments, reflected through the number of hotels certified according to international Green Key standards. Each of the parameters was normalised in the range from 0 to 1, after which the integral value was calculated. The applied approach provided the opportunity to compare the regions both by absolute revenues and by the level of implementation of innovative solutions and ecological practices in the tourism sector (Formula 1):

$$Xi^{norm} = \frac{Xi - Xmin}{Xmax - Xmin}, \quad (1)$$

where *Xi* – the actual value of the indicator for the region, *Xmin* and *Xmax* – the minimum and maximum values among all regions. After this, the normalised values were combined into a single integral index by calculating the arithmetic mean (Formula 2):

$$Iregion = \frac{\sum_{j=1}^{n} X_j^{norm}}{n}, \quad (2)$$

where *n* – the number of indicators, and *j* – the index showing the number of a specific indicator in the set. Such an approach made it possible to conduct an objective comparison of the regions not only by absolute values but also by the relative level of implementation of innovative and ecological practices in the tourism sector.

Results

Analysis of the resource base and infrastructure provision of the tourism sector under wartime challenges

The development of tourism was impossible without a developed resource base and appropriate infrastructure, which determined the level of competitiveness of regions in the field of recreational and tourist services. In the context of wartime challenges, the analysis of quantitative parameters of tourist resources, the hotel network and transport infrastructure allowed the assessment of the real potential of territories, as well as the identification of disproportions that restrained the effective use. In Kyiv region there functioned at least 147 natural tourist sites, including a biosphere reserve, three national natural parks, two regional landscape parks, 97 nature reserves, 61 natural monuments, 14 parks-monuments of landscape art and 17 protected tracts. The objects of the Struve Geodetic Arc were included in

the list of the UNESCO, which increased the international value of the tourist resources of the region (Kyiv, n.d.). In Cherkasy region there were concentrated 572 objects of the nature reserve fund, including 23 of national importance, which created a strong potential for the formation of ecotourism routes (There are over half…, 2022). In Vinnytsia region there were counted 5 objects of the nature reserve fund: one national natural park "Karmeliukove Podillia" and four regional landscape parks: "Dnister", "Nemyrivske Pobuzhzhia", "Serednie Pobuzhzhia" and "Murafa" (Tourist resources of…, n.d.). Zhytomyr region had two nature reserves – Poliskyi and "Drevlianskyi", as well as more than 1,500 historical and cultural monuments, among which 390 were of national significance (About the nature reserve…, n.d.). Lviv region was represented by four national natural parks, the nature reserve "Roztochchia" and more than 1,600 cultural heritage monuments, which combined natural and cultural-historical potential (Lviv, n.d.). In Ivano-Frankivsk region there functioned six national parks and the reserve "Gorgany", while in Ternopil region there were at least 145 objects of the nature reserve fund, which ensured a diversity of tourist offers. Zakarpattia was characterised by the uniqueness of the Carpathian Biosphere Reserve and the national natural park "Zacharovanyi Krai" (National parks and reserves of Ivano-Frankivsk…, n.d; Nature Reserve Fund of Ukraine, n.d.).

The hotel infrastructure demonstrated significant fluctuations depending on the period. In Kyiv region about 564 accommodation establishments were registered, with pre-war occupancy reaching 30-40%, whereas during wartime it fell to 10-20% (Family hotels and private…, n.d.; Hotel real estate…, 2023). In Cherkasy region there were about 225 hotels, with occupancy reaching 60-70% before 2022, but in 2022-2023 it fell to 20-30% (Find hotels in…, n.d.; Krasnomovets & Drobotova, 2021). Vinnytsia region had 100-120 accommodation establishments, with average pre-war occupancy of 60-70%, which in 2022-2023 fell to 20-30%, but in 2024-2025 recovered to 34-38%. Lviv region demonstrated relative resilience: with 600-650 establishments, occupancy ranged from 50-54% in pre-war times to 30% during active hostilities, and in 2024-2025 stabilised at the level of 47-49%. In Zhytomyr region in 2022 there operated 17 official hotels and hostels with more than 1,000 places, with average capacity used by only a third. By contrast, in Ivano-Frankivsk and Zakarpattia regions in 2024 occupancy exceeded 60-70%, due to the growth of domestic tourism and population relocation (Tarasovsky & Kruchinina, 2024; 2024 Ukrainian hotel…, 2024).

The transport network of the studied regions also played a key role in ensuring tourist potential. The length of paved roads was: in Kyiv region – 8.8 thousand km, Cherkasy – more than 6 thousand km (96.5% paved), Vinnytsia – 9.5 thousand km, Zhytomyr – 8.5 thousand km, Lviv – 8.3 thousand km, Ternopil – 5 thousand km, Ivano-Frankivsk – 4.1 thousand km, Zakarpattia – 3.3 thousand km. Lviv, Ivano-Frankivsk and Uzhhorod had international airports, although the functioning of the latter was complicated for security reasons. Lviv region was represented by leading railway hubs (Lviv, Stryi, Sambir), Ivano-Frankivsk region by hubs in Ivano-Frankivsk, Kalush and Kolomyia, and Zakarpattia in Chop, Mukachevo, Uzhhorod and Batiovo. This provided not only internal but also international railway connections with Poland, Slovakia, Hungary, and Romania (Kosse, 2023). In the pre-war period Ukraine's air passenger flow exceeded 24 million people per year (2019), but with the beginning of the full-scale invasion civil transport stopped (Ukrainian airports increased…, 2020). By contrast, the railway became the main channel of movement: in the first weeks of the full-scale invasion 2.5 million passengers were transported, with a peak daily figure of 190 thousand people (In 2022, Ukrzaliznytsia…, 2023).

In Ukraine, more than 70 thousand historical and cultural monuments were officially registered, including 15.7 thousand architectural-historical, more than 64 thousand archaeological, about 7 thousand of monumental art and 15.6 thousand objects of urban planning and architecture. Natural recreational resources covered about 12.1 million hectares, which amounted to 20% of the territory of the country (Kravtsiv *et al*., 1999). However, only part of this potential was really used for organised tourism: approximately 10-20% of the objects, since more than 1,400 cultural heritage monuments and more than 2,200 infrastructure objects were damaged or destroyed as a result of the full-scale invasion, and a significant number were on occupied territories (As a result of the full-scale…, 2025).

In the pre-war period, tourist flows were characterised by significant volumes. In 2019 Ukraine was visited by about 13.6 million foreign tourists, and domestic tourism amounted to 8-10 million people. Thus, the total tourist flow reached more than 20 million people per year, with about 0.5 million people using organised tours (UkraineInvest, n.d.). In 2020 due to the COVID-19 pandemic tourist activity fell by more than 70%, but already in 2021 there was partial recovery (Omelyanyuk, 2021). With the beginning of the full-scale invasion in 2022, foreign tourism practically stopped. At the same time, domestic tourism became a key factor in supporting the sector: during 2022-2024 the number of domestic trips increased, as confirmed by the growth of the tourist tax. In 2024, 65% of the revenues from this tax accounted for Ukrainian hotels. In 2024, the tourist flow amounted to about 2.7 million people, which equalled approximately 70% of pre-war indicators, and by 2026 growth to 14.5 million people was possible, provided the hotel stock expanded and the security situation stabilised (Ukraine's tourism industry…, 2024).

The average length of stay also changed. In Lviv this indicator was 3-7 days, in Kyiv – 2-2.6 days, with a tendency to increase. Hotel occupancy during wartime ranged from 60-75% in the Carpathian region to 30-40% in Kyiv and large cities during periods of aggravation of the security situation. In summer 2024, occupancy in Lviv reached 70%, which reflected the demand for domestic tourism. The maximum capacity of Ukraine's tourist infrastructure was 14-15 million people per year. In 2019 the utilisation

coefficient exceeded 1.3 (20 million actual tourists relative to 15 million potential), which indicated infrastructure overload. In 2024 the indicator decreased to about 0.7, which reflected the loss of foreign tourism and insufficient infrastructure loading despite the activity of domestic travel (Ilechko, 2025). In pre-war times there was a tendency to exceed potential capabilities, whereas in wartime the situation changed dramatically and currently there was a gradual recovery of the tourist flow, oriented mainly towards the domestic consumer.

The analysis of tourist resources and infrastructure showed that Ukraine possessed a strong potential for tourism development, but the effectiveness of its realisation largely depended on the level of security and the condition of the material and technical base. The pre-war period was characterised by infrastructure overload due to significant flows of both foreign and domestic tourists, while wartime challenges caused a sharp decline in international tourism and shifted the focus to domestic movements. Resilience was demonstrated by western regions, particularly the Carpathians and Lviv, which maintained high hotel occupancy rates due to the growth of domestic tourism and population relocation. At the same time, limited accessibility of some monuments and destroyed infrastructure remained key barriers to the full use of tourist potential, and the recovery of the sector required a combination of investment in infrastructure with the provision of security.

Innovative approaches in the use of tourism potential for regional economic growth

The tourism sector of Ukraine is undergoing transformation, determined both by the challenges of war and by the need to search for new competitive advantages. The organisation of tourism activity has gradually changed, acquiring the features of modern practices based on digital technologies, environmental standards and the concept of smart tourism. Such changes make it possible not only to restore the functioning of the industry under conditions of reduced demand in the international market, but also to ensure its resilience, improve the quality of services and form an attractive investment climate in the regions. Innovations cover all levels of the tourism process: from the greening of the hotel and restaurant business to the introduction of interactive mobile applications, virtual tours and analytical management systems. The role lies in creating added value, increasing the efficiency of the use of tourism resources and reducing the negative impact on the environment. At the same time, these innovations ensure the growth of employment, the emergence of new market segments and the development of entrepreneurship, which is important for regions striving for economic diversification and integration into the global space of sustainable tourism. The greening of the tourism sector is gradually becoming one of the defining trends in the development of modern business. For Ukraine, which has suffered significant infrastructure losses due to the war, the use of environmental practices plays not only the role of a mechanism for preserving the environment, but also an instrument for increasing the competitiveness of regions in domestic and foreign markets. The use of energy-efficient technologies, waste minimisation, the introduction of international standards of "green tourism" makes it possible to form a positive image and attract new investments into the sphere (Kuzmin & Vesperis, 2023).

A significant example of such changes is the certification of hotel complexes according to the standards of Green Key (n.d.) and Green Globe (n.d.), which provide for the careful use of water and energy resources, the introduction of waste sorting and recycling systems, and the replacement of plastic with reusable materials. In the Bukovel resort complex, as of 2024, already 11 hotels had received international certificates, which made it possible to optimise energy costs by 25-30% and at the same time increase the attractiveness of the resort among foreign tourists (11 hotels in Bukovel…, 2025). In Kyiv, similar practices are being implemented by the hotels Holiday Inn Kyiv and Ibis Kyiv City Centre, which have integrated energy-saving systems, biological water treatment and food waste disposal (Holiday Inn Kyiv has received…, 2024).

In addition to large hotel chains, the spread of environmental practices is observed in small enterprises of tourism infrastructure. In the Carpathian region, a network of "green estates" is actively developing, oriented towards the use of renewable energy sources, local building materials and organic food products. The presence of environmental labelling makes it possible for such estates to attract tourists from the countries of the European Union (EU), where demand for ecotourism is growing. In the future, the certification of such facilities may become an important condition for the integration of Ukraine into the European tourism market. Environmental initiatives also cover the development of specialised eco-routes. In Lviv, Ivano-Frankivsk and Zakarpattia regions, programmes for the development of ecotourism are actively being implemented, which include walking, cycling, and water routes with an emphasis on the preservation of natural and cultural heritage. These programmes combine recreational opportunities with an educational component, forming new segments of tourism demand. In particular, in the Lviv region more than 50 routes for active tourism have been developed (Over 50 routes…, 2018).

The introduction of digital technologies has become a key driver of the modernisation of the tourism business in Ukraine, especially under wartime conditions, when traditional channels of promotion and sale of services proved limited. Online platforms, mobile applications and innovative services provide tourists with access to information, convenience in travel planning and secure transactions, while allowing businesses to manage the resources more effectively and adapt to market needs. One of the leading tools is online booking systems. Platforms such as Booking.com, Airbnb and local services like Visit Ukraine provide quick booking of hotels, tours and transport tickets, as well as the opportunity for online payment with the use of electronic tickets. This significantly reduces the time and resource

costs for both clients and businesses, simultaneously forming a transparent mechanism for recording tourist flows.

Mobile applications play an important role. The applications perform not only a navigational function, but also integrate information about cultural sites, transport schedules, hotel, and restaurant services. In Lviv, applications are actively used that allow tourists to build routes taking into account security factors, as well as to download interactive guides in AR format. This increases the comfort of tourists' stay and contributes to the growth of the duration of the stay in the region (An innovative mobile…, n.d.). The importance of VR and AR excursions is growing, becoming an alternative to traditional tourist routes. Virtual tours provide the opportunity for preliminary familiarisation with cultural and natural monuments, as well as maintaining interest in regions access to which is complicated due to hostilities. For example, virtual tours of the Kyiv Fortress or the Holodomor Museum are already available online, forming the basis for the development of Ukraine's digital cultural heritage (Polikovska, 2024).

Digital tools are also actively used at the level of tourism enterprise management. Customer Relationship Management (CRM) systems and artificial intelligence tools help to form individual offers for clients, automate bookings and analyse feedback. This makes it possible not only to improve the quality of service, but also to optimise marketing costs. The concept of smart tourism involves the integration of digital technologies, innovative services and sustainable practices in tourism activities at the level of territories and individual enterprises. For Ukraine, this approach is strategic, since it makes it possible to compensate for the losses of tourism infrastructure, strengthen security guarantees and create attractive conditions for visitors during wartime challenges (Zeqiri *et al.*, 2025).

One of the directions of smart tourism is the digitalisation of museum and cultural infrastructure. In Lviv, Kyiv, and Ivano-Frankivsk, projects of virtual museum tours, digital archives and interactive exhibitions are actively developing. In particular, in Lviv there is a 3D tour of the Museum of Folk Architecture and Life "Shevchenkivskyi Hai", which allows visitors to get acquainted with unique wooden churches and traditional architecture of the Carpathian region. In Kyiv, a virtual museum of Ivan Franko with a multilingual audio guide has been created, ensuring broad accessibility of cultural heritage. In Ivano-Frankivsk region, the "Museum on a Smartphone" project (Skeiron, n.d.) has been implemented, covering a number of museums, including the Ivano-Frankivsk Regional Museum of Local Lore, the Rohatyn Historical and Ethnographic Museum "Opillia" and the Kosiv Museum of Hutsul Folk Art and Life. These examples demonstrate the active use of digital technologies in the preservation and promotion of cultural resources, which simultaneously increases the innovativeness and competitiveness of Ukraine's tourist regions (Verbovska, 2017). Such initiatives are supported not only by municipalities, but also by international donors, in particular programmes of the UNESCO (n.d.) and the United States Agency for International Development (USAID) (USAID OIG, n.d.), which ensures the financial sustainability. This makes it possible to attract visitors even in regions with limited access to cultural sites. An important direction is the development of smart mobility for tourists. In Zakarpattia and Lviv regions, systems of mobile applications integrating bus, train, and private transport schedules are being deployed, allowing tourists to plan journeys in real time. This significantly reduces transaction costs and provides greater flexibility of movement. E-tickets, which have completely replaced paper ones in air transport and are increasingly used in rail and bus services, are becoming particularly relevant.

Public-private partnership (PPP) projects play a significant role in the development of smart tourism. In Lviv, the "City in a Smartphone" programme is being implemented, which includes the digitalisation of tourist routes and online maps with information about cultural heritage (Smart city, 2020). In Ivano-Frankivsk region, with the support of the EU, a project for the development of "green" transport infrastructure for tourists has been implemented, combining electromobility and digital navigation services. In Kyiv, a pilot project is underway to create a smart hotel, which operates on the basis of automated systems of registration, room stock management and client data (Public Investments and…, 2025).

The assessment of the effectiveness of the realisation of tourism potential requires not only the analysis of traditional indicators of income and tourist tax, but also the consideration of the innovative component, which forms the competitive advantages of regions in modern conditions. In Kyiv region, in 2024 tourism revenues amounted to 284.1 million UAH, and tourist tax receipts reached 50.83 million UAH, which is 32% more compared to 2023. The dynamics indicate rapid recovery after the decline in 2022, partly explained by the introduction of digital booking channels and marketing tools (Kornyush, 2025). An additional indicator of innovative activity is the emergence of the first environmentally certified hotels under the international Green Key system, confirming the attraction of investments into "green" practices. Figure 1 shows the dynamics of tourist tax in Kyiv region for 2021-2024.

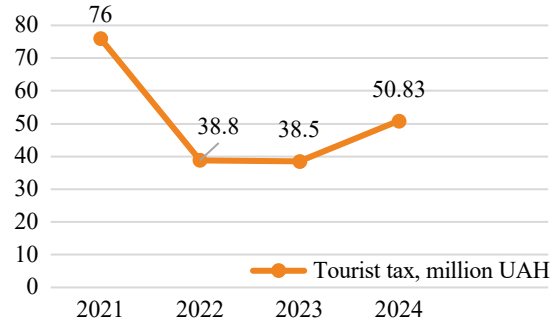

Figure 1. Dynamics of tourist tax in the Kyiv region (2021-2024)

Source: compiled by the authors based on D. Kornyush (2025)

Figure 1 reflects the dynamics of tourist tax receipts in Kyiv region during 2021-2024. In 2021, the highest indicator of 76 million UAH was recorded, after which in 2022 there was a sharp decline of more than half – to 38.8 million UAH, which is associated with the war events and the fall of tourism activity. In 2023, the tax level remained almost unchanged and amounted to 38.5 million UAH, indicating a certain stagnation of the industry. However, already in 2024, the figure rose to 50.83 million UAH, which means recovery and growth of 32% compared to the previous year. Thus, Kyiv region demonstrates a gradual return of tourism activity after the crisis decline.

Cherkasy region in 2024 provided 34.2 million UAH of tax revenues and 23.53 million UAH of tourist tax, demonstrating an increase of 9% compared to 2023. Although the growth rates are lower than those of Kyiv, the absolute indicators demonstrate the stability and adaptation of local business to new conditions. The absence of certified eco-hotels indicates that the innovative component is concentrated mainly on digital tools, while environmental investments require further development (In the first half…, 2025). In Vinnytsia region in 2024, tourism revenues reached 41.3 million UAH, and tourist tax amounted to 3.12 million UAH, which is 21.5% higher than the 2023 level. These data confirm the gradual expansion of domestic tourism and the growth of business activity, although the volumes remain more modest compared to Kyiv and Cherkasy regions. At the same time, the absence of environmental certifications indicates an underestimated potential for "green" investments in this region. To systematise quantitative indicators, an integral approach has been applied, combining tax revenues, the dynamics of tourist tax and the presence of environmental certificates into a single index of innovative involvement. Table 1 was calculated based on formulae (1-2).

Table 1. Comparative indicators of innovative involvement of the tourism sphere of Ukraine's regions in 2024

Region	Tax revenues from tourism, 2024 (mln UAH)	Tourist tax, 2024 (mln UAH)	Growth of tourist tax 2024/2023, %	Eco-certified hotels (Green Key)	Index of innovative involvement (0-1)
Kyiv	284.1	50.83	32.0	2	1.00
Cherkasy	34.2	23.53	9.0	0	0.00
Vinnytsia	41.3	3.12	21.5	0	0.38

Source: compiled by the authors based on Tourism taxes by region: Kyiv to grow 2-fold (2025); D. Kornyush (2025), In 2024, Vinnytsia community received record tourist tax revenues (2025), In the first half of the year, 3 million UAH of tourist tax was paid in Cherkasy region (2025)

The obtained results indicate that Kyiv region demonstrates the highest level of innovativeness due to the combination of digitalisation and environmental practices, Vinnytsia region is characterised by a medium level due to the dynamics of tax and growth of tax revenues, while Cherkasy region maintains a more conservative growth trajectory. Thus, the use of innovative approaches in tourism directly affects the economic results of regions, forming new benchmarks for future investments.

The transformation of the tourism sphere of Ukraine takes place under the influence of digitalisation, greening, and the introduction of the concept of smart tourism, which makes it possible to combine the recovery of the industry with the formation of long-term competitive advantages. The analysis of quantitative indicators indicates that those regions actively integrating innovative solutions demonstrate higher financial efficiency and investment attractiveness. Kyiv region holds leading positions due to the development of digital booking channels and environmental certifications. For further growth, it is advisable to expand the network of eco-certified hotels and implement AR/VR solutions in cultural and educational routes. Vinnytsia region demonstrates gradual growth and stability, therefore the active implementation of smart mobility services and the development of ecotourism through the creation of clusters of "green" estates would strengthen its cultural and environmental potential. Cherkasy region maintains a conservative approach, focused mainly on digital booking tools, but requires the activation of "green" practices. Priority may be given to the development of eco-routes, raising hospitality standards and the introduction of an electronic ticket system for visiting nature reserves. Thus, innovative approaches in the use of tourism potential act not only as a factor of recovery after crisis, but also as a key instrument for ensuring economic growth, employment, and resilience of regions in the long-term perspective.

Discussion

Tourism was considered an important factor of economic growth and sustainable development, as it combined job creation, increased investment attractiveness and the preservation of cultural heritage. In different countries and regions, its role took different forms depending on the conditions of development, available resources and societal challenges.

In the work of I.P. Castillo-Salazar *et al.* (2025), tourism in the mountainous region of Sobrarbe was considered through the prism of environmental initiatives and cooperation with communities. This contrasted with the present work, which focused on resources and infrastructure under wartime conditions. However, both studies shared the interpretation of tourism as a tool for sustainable development and recognition of the role of heritage preservation. The theme of environmental sustainability was also dominant in R. Strippoli *et al.* (2024), where the circular economy and its impact on tourism were analysed. The authors proposed systematised 10R strategies to reduce

environmental load. This study, on the other hand, demonstrated practical mechanisms for using tourism potential in wartime conditions. Thus, both works were united by the idea of sustainable development but differed in scale and priorities: the global transition to a circular economy versus local adaptation in a crisis situation.

A similar logic was traced in S. Liu *et al.* (2025), which covered 35 Asian countries in 2004-2020. Here the main focus was on the macro level: how economic growth stimulated tourism and how the Sustainable Development Goals ensured a balance between benefits and environmental responsibility. In contrast, this study demonstrated regional adaptation and emphasised practical tools of digitalisation and smart tourism. A more technological approach was characteristic of J. Song & B. Xu (2024), where a model for assessing urban tourism competitiveness using machine learning and the Topsis method was proposed. This sharply contrasted with the present work, which had an applied character and highlighted transformations of tourism under war conditions. Despite the differences in scale, the common feature remained the vision of tourism as a driver of sustainable development. In the work by A. Galli (2024), the central object of attention was Italy's cultural heritage, which determined the country's competitiveness in the global market. By contrast, the present study demonstrated how tourism under crisis conditions of war was transformed, relying on internal resources and innovations. The contexts were different – stable development in peacetime versus crisis transformation – but the common element remained the recognition of heritage as a resource for development. Modern technologies in the focus of M. Petrova *et al.* (2025) showed another path to recovery: digitalisation and VR/AR solutions were considered as tools for rebuilding destroyed territories and attracting investment. This study again focused on the practical adaptation of tourism in wartime conditions. The common ground was the interpretation of innovations as a means of ensuring sustainable development, but the difference lay in scale and tasks: rebuilding destroyed territories versus supporting resilience in crisis.

In the work of S. Hajar (2022), tourism in the Lake Toba region of Indonesia was considered as a means of using the economic potential of the territory through the creative economy and crafts. Here the key tool was strengths, weaknesses, opportunities, threats (SWOT) analysis for planning. The authors of the present study, unlike S. Hajar, emphasised digitalisation and smart tourism under wartime conditions. In both cases, tourism was considered as a tool of development, but the difference lay in the environment: strategic planning in peacetime versus adaptation to crisis challenges. The comparative analysis demonstrated that the idea of tourism as a driver of sustainable development was central in all studies, but each reflected its own context and used specific methodological approaches. In the article of A. Kritikos *et al.* (2025), the focus was on Greek island regions, where after the COVID-19 pandemic the key task was overcoming vulnerability through diversification of offers and digital transformation. The authors of the present study, however, revealed another situation – the transformation of tourism potential in 2019-2024 under war conditions. Both works emphasised the importance of innovation, but one described post-pandemic recovery, while the other – crisis adaptation.

A similar parallel was traced in P. Foroudi *et al.* (2025), where the perception of the Sustainable Development Goals by residents of different regions of Italy was studied. The authors proposed a tool for measuring these assessments and emphasised territorial differences. In contrast to the analysed study, this research emphasised the practical challenges of tourism functioning under crisis conditions. The common ground was the interpretation of sustainable development as a multidimensional process, but in P. Foroudi *et al.* it was realised through the assessment of public perceptions, whereas in the present work – through the analysis of economic and social mechanisms of recovery. The topic of regional disparities was also central in I. D'Adamo & E.N. Rossi (2024). The analysis of the distribution of Next Generation EU programme funds demonstrated how investments influenced the achievement of the Sustainable Development Goals, especially between northern and southern Italy. This resonated with the present study in recognising the need for innovation and institutional support, but the difference lay in emphasis: the Italian work was based on EU financial programmes, whereas the Ukrainian one – on tourism adaptation to war conditions.

The cultural dimension of tourism was highlighted in D. Ottaviani *et al.* (2024), where the TExTOUR project emphasised the role of cultural tourism and participatory approaches. The authors argued that community involvement and heritage preservation formed the basis of development. The present study in this case showed another perspective – the use of cultural and natural resources combined with digitalisation and smart tourism as a response to the crisis challenges of war. In the work by F. Miftari (2023), Croatia's strategy to 2030 was considered, where the priorities were low-carbon development, investment in infrastructure and improving the quality of services. This differed from the present approach, which focused on short-term adaptation mechanisms in wartime, but both studies converged on the understanding of tourism as a tool of economic resilience.

The environmental theme was addressed by F. Hu *et al.* (2024), who analysed low-carbon transformations of tourist sites in China, with special attention to ethnic minority communities and using the Drivers, Pressure, State, Impact, Response (DPSIR) model. This study, by contrast, demonstrated how greening and smart tourism were combined with other tools to support resilience in a crisis environment. Both approaches were united by attention to innovation, but the difference was defined by context: in China – the strategy of a low-carbon transition, in Ukraine – crisis recovery. A systemic approach was also characteristic of H. Liu *et al.* (2024), who studied the integration of tourism, economy, and ecology in the arid region of Xinjiang. Using a coordination model, the authors identified spatial disparities and ecological barriers. This

work demonstrated the crisis transformation of the sector under war conditions. In both cases, tourism was defined as a driver of development, but in different dimensions – systemic versus crisis.

In the work by Y. Lu (2024), tourism was considered through integration with other sectors of China's economy, which contributed to productivity and profitability. This study demonstrated the opposite context – adaptation to wartime challenges through smart tourism and greening. Despite differences, both works confirmed that tourism was a powerful factor of innovative development. Meanwhile, in the work of J. Bu *et al.* (2024), attention was focused on Baijiu tourism in China, where the application of the Analytic Hierarchy Process (AHP) method made it possible to assess the potential of industrial tourism across 27 indicators. This formalised approach differed from the present analysis, focused on infrastructure, digitalisation and regional differences in crisis conditions. Both studies agreed that systemic resource management was key to sustainable development.

The analysis demonstrated that tourism in different studies was consistently recognised as a catalyst of sustainable development, capable of combining economic benefits with social and environmental goals. Despite differences in scales, methodologies and contexts – from local niche products to comprehensive strategies in crisis conditions – the common feature remained the understanding of tourism as a tool for enhancing regional competitiveness and strengthening the national economy. In summary, sustainable tourism development was ensured when policy, innovation and local resources were combined into a single system that created the basis for economic dynamics, social cohesion and environmental responsibility.

Conclusions

The conclusions of the study demonstrated that Ukraine's tourism sector had significant development potential, but its realisation largely depended on the security situation, infrastructure condition and the level of innovation integration. In the pre-war period, tourist flows exceeded 20 million people per year, among which about 13.6 million were foreign tourists and 8-10 million – domestic. At the same time, the tourism potential exploitation coefficient exceeded 1.3, which indicated infrastructure overload. The COVID-19 pandemic led to a fall in activity of more than 70% in 2020, and the full-scale war in 2022 practically stopped international tourism and caused hotel occupancy in Kyiv and large cities to fall to 10-20%. Instead, Western regions, in particular Ivano-Frankivsk and Zakarpattia, demonstrated relative resilience: in 2024, the occupancy exceeded 60-70% due to the growth of domestic tourism and population relocation.

Quantitative assessment of the resource base showed that only Kyiv region possessed 147 natural tourist sites, including a biosphere reserve, three national parks, 97 reserves and the Struve Geodetic Arc sites included in the UNESCO list. Cherkasy had 572 nature reserve fund sites, and Lviv combined over 1,600 cultural heritage monuments with four national parks. In total, more than 70,000 historical and cultural monuments were registered in Ukraine, but as a result of the war over 1,400 cultural heritage sites and 2,200 infrastructure elements were damaged. This limited the use of only 10-20% of potential opportunities, reducing the country's competitiveness in the international market.

The data confirmed significant regional differences. In 2024, Kyiv region provided UAH 284.1 million in tourism revenues and UAH 50.83 million in fees (+32% compared to 2023), Cherkasy – UAH 34.2 million and UAH 23.53 million (+9%), Vinnytsia – UAH 41.3 million and UAH 3.12 million (+21.5%). The highest level of innovation was demonstrated by Kyiv region attributed to digital booking channels and the first eco-certified Green Key hotels, forming an index of 1, while Vinnytsia had 0.38 and Cherkasy – 0. The load assessment showed transformations: in 2019 the coefficient exceeded infrastructure potential, whereas in 2024 it decreased to 0.7 due to the absence of international tourism. The maximum capacity was estimated at 14-15 million people, but the actual flow was only 2.7 million (70% of pre-war figures). At the same time, domestic tourism partly compensated for losses: in Lviv the average stay in 2024 was 3-7 days, and hotel occupancy in summer reached 70%. The limitation of the study was the focus on quantitative data without analysing tourist behaviour. Prospects for further research lay in the study of qualitative aspects of demand, the development of smart tourism and the assessment of the impact of ecological and digital innovations on the competitiveness of regions.

Acknowledgements

None.

Funding

None.

Conflict of Interest

None.

References

[1] 11 hotels in Bukovel have received international Green Key environmental certification: What is known? (2025). Retrieved from https://surl.lu/yckqob.

[2] 2024 Ukrainian hotel market overview study results. (2024). Retrieved from https://surl.li/yluhpz.

[3] About the nature reserve Fund of Zhytomyr Region. (n.d.). Retrieved from https://eprdep.zht.gov.ua/novyny18102018-zap.htm#:~:text=.

[4] An innovative mobile application for tourists will be created in the Lviv region. (n.d.). Retrieved from https://lviv-tourist.info/innovatsijnyj-mobilnyj-zastosunok-dlya-turystiv-shho-vidviduyut-lvivshhynu/.

[5] As a result of the full-scale Russian invasion of Ukraine, 1,553 cultural heritage sites and 2,388 cultural infrastructure facilities have been destroyed/damaged. (2025). Retrieved from https://surl.li/bzomut.
[6] Bu, J., Ye, J., Wang, M., Wang, Z., He, J., Wu, T., Xu, X., & Qie, G. (2024). Sustainable development of Chinese Baijiu tourism resources: An analytical approach for evaluation and guidance. *Environment, Development and Sustainability*. doi: 10.1007/s10668-024-05494-5.
[7] Castillo-Salazar, I.P., Sanagustín-Fons, V., & Pardo, I.L. (2025). Ecotourism as a catalyst for sustainable development: Conservation governance in mountain regions. *Societies*, 15(7), article number 196. doi: 10.3390/soc15070196.
[8] D'Adamo, I., & Rossi, E.N. (2024). Impact of regional investment on the sustainable development goals: A group analysis of economic and territorial development. *Sustainable Development*, 33(2), 1816-1834. doi: 10.1002/sd.3215.
[9] Family hotels and private accommodations in Kyiv region. (n.d.). Retrieved from https://surl.lu/vfxign.
[10] Find hotels in Cherkasy Oblast, Ukraine. (n.d.). Retrieved from https://surl.li/mdlanf.
[11] Foroudi, P., Marvi, R., Cuomo, M.T., & D'Amato, A. (2025). Sustainable development goals in a regional context: Conceptualising, measuring and managing residents' perceptions. *Regional Studies*, 59(1), article number 2373871. doi: 10.1080/00343404.2024.2373871.
[12] Galli, A. (2024). Effect of cultural heritage on tourism development in Italy. *International Journal of Modern Hospitality and Tourism*, 4(2), 54-65. doi: 10.47604/ijmht.3061.
[13] Green Globe. (n.d.). *Green Globe international standard for sustainable tourism*. Retrieved from https://www.greenglobe.com/criteria-indicators.
[14] Green Key. (n.d.). *Our programme: Green Key is a standard of excellence*. Retrieved from https://surl.li/bgjeyt.
[15] Hajar, S. (2022). Tourism development policy through economic potential in supporting tourism and creative economy programs in the Lake Toba region. *International Journal of Health Economics and Social Sciences*, 4(1), 18-30. doi: 10.56338/ijhess.v4i1.2160.
[16] Haponenko, H., Listratenko, D., Yevtushenko, O., & Shamara, I. (2023). Ecologization of tourist activities as a factor of sustainable development of the regions of Ukraine. *Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism*, 18, 52-61. doi: 10.26565/2310-9513-2023-18-06.
[17] Holiday Inn Kyiv has received Green Key certification! (2024). Retrieved from https://eba.com.ua/holiday-inn-kyiv-otrymav-sertyfikatsiyu-green-key/.
[18] Hotel real estate market 2022: Key indicators, losses, new openings and forecasts. (2023). Retrieved from https://surl.li/xzywmd.
[19] Hu, F., Tang, T.L.-P., Chen, Y., & Li, Y. (2024). Sustainable tourism in China: Visualization of low-carbon transitions at three tourist attractions across three occasions. *Socio-Economic Planning Sciences*, 93, article number 101883. doi: 10.1016/j.seps.2024.101883.
[20] Ilechko, A. (2025). *The flow of tourists in Lviv is growing: Who visits the city the most and what initiatives are being implemented this year*. Retrieved from https://surl.li/cdofls.
[21] In 2022, Ukrzaliznytsia carried a record number of passengers in the connection with the EU. (2023). Retrieved from https://www.uz.gov.ua/press_center/up_to_date_topic/592766/.
[22] In 2024, Vinnytsia community received record tourist tax revenues. (2025). Retrieved from https://www.vmr.gov.ua/u-2024-rotsi-vinnytska-hromada-otrymala-rekordni-nadkhodzhennia-turystychnoho-zboru.
[23] In the first half of the year, 3 million UAH of tourist tax was paid in Cherkasy region. (2025). Retrieved from https://ck.tax.gov.ua/media-ark/news-ark/913729.html.
[24] Ivano-Frankivsk. (n.d.). Retrieved from https://www.nationalparks.in.ua/pryrodni-parky/ivano-frankivsk/#:~:text=.
[25] Karpenko, N., Shukanov, P., Logvyn, M., Yehorova, O., & Shukanova, A. (2025). Realization of tourism potential in conditions of war and post-war recovery: Regional aspect. *Current Problems of Sustainable Development*, 2(4), 80-87. doi: 10.60022/2(4)-9S.
[26] Kornyush, D. (2025). *Revenues from the tourist tax in Ukraine increased by 22% in 2024*. Retrieved from https://financenews.com.ua/3372-dokhody-vid-turystychnoho-zboru-v-ukraini-zrosly-na-22-u-2024-rotsi/.
[27] Korolchuk, L. (2023). Development of sustainable tourism in Ukraine in times of war. *Journal of Lviv Polytechnic National University. Series of Economics and Management Issues*, 7(2), 18-26. doi: 10.23939/semi2023.02.018.
[28] Kosse, I. (2023). *Change in road logistics routes in Ukraine due to the war*. Kyiv: Institute of Economic Research and Political Consultations.
[29] Krasnomovets, V., & Drobotova, M. (2021). Description of Cherkasy region's hotel industry in the context of tourism sphere in the region. *Economy and Society*, 32. doi: 10.32782/2524-0072/2021-32-23.
[30] Kravtsiv, B., Hryniv, L., Kopach, M., & Kuzyk, S. (1999). *Scientific and methodological principles of reforming the recreational sphere*. Lviv: NAS of Ukraine.
[31] Kritikos, A., Magoutas, A., & Poulaki, P. (2025). Sustainable tourism and regional development through innovation in the post-COVID-19 era: The case of Hersonissos and Chios. *Tourism and Hospitality*, 6(3), article number 134. doi: 10.3390/tourhosp6030134.

[32] Kuzmin, D., & Vesperis, S.Z. (2023). Some features of the influence on the behavior of the end consumer of tourism industry services in the conditions of the development of industry 4.0. In Yu.I. Muromtseva (Ed.), *Geography and tourism: Materials of the VI all-Ukrainian scientific and practical internet conference of the Kharkiv National Pedagogical University named after G.S. Skovoroda* (pp. 336-341). Kharkiv: Kharkiv National Pedagogical University named after G.S. Skovoroda.
[33] Kyiv. (n.d.). Retrieved from https://www.nationalparks.in.ua/pryrodni-parky/kyiv/#:~:text=.
[34] Liu, H., Chen, B., Xia, Q., Zabi, G., & Li, G. (2024). Study on the complex relationship of tourism-economy-ecological environment in arid zones: The case of Xinjiang, China. *Frontiers in Environmental Science*, 12, article number 1435660. doi: 10.3389/fenvs.2024.1435660.
[35] Liu, S., Islam, H., Ghosh, T., Sibt e Ali, M., & Afrin, K.H. (2025). Exploring the nexus between economic growth and tourism demand: The role of sustainable development goals. *Humanities and Social Sciences Communications*, 12, article number 441. doi: 10.1057/s41599-025-04733-y.
[36] Liubchenko, V. (2023). The role of tourism in sustainable development in Ukraine: Challenges and opportunities for the economy. *Economy and Society*, 57. doi: 10.32782/2524-0072/2023-57-59.
[37] Lu, Y. (2024). Transforming China's tourism industry: The impact of industrial integration on quality, performance, and productivity. *Journal of the Knowledge Economy*, 15, 18116-18153. doi: 10.1007/s13132-024-01852-w.
[38] Lviv. (n.d.). Retrieved from https://www.nationalparks.in.ua/pryrodni-parky/lviv/.
[39] Matsuka, V., & Horbashevska, M. (2024). Modern trends, mechanisms and prospects for the development of tourist regions of Ukraine. *Agrosvit*, 12, 68-75. doi: 10.32702/2306-6792.2024.12.68.
[40] Miftari, F. (2023). Sustainable tourism within the national development strategy of the Republic of Croatia until 2030. *SCIENCE International Journal*, 2(2), 45-48.
[41] Nature Reserve Fund of Ukraine. (n.d.). *We bequeath*. Retrieved from https://surl.li/hslcyo.
[42] Omelyanyuk, M. (2021). *The impact of the pandemic. The share of tourism in the global economy almost halved in 2020*. Retrieved from https://suspilne.media/125720-udar-pandemii-castka-turizmu-u-svitovij-ekonomici-za-2020-rik-skorotilasa-majze-vdvici/.
[43] Ottaviani, D., De Luca, C., & Åberg, H.E. (2024). Achieving the SDGs through cultural tourism: Evidence from practice in the TExTOUR project. *European Journal of Cultural Management and Policy*, 14, article number 12238. doi: 10.3389/ejcmp.2024.12238.
[44] Over 50 routes for active tourism have been developed in Lviv region. (2018). Retrieved from https://www.kmu.gov.ua/news/u-lvivskij-oblasti-rozrobili-ponad-50-shlyahiv-dlya-aktivnogo-turizmu.
[45] Petrova, M., Sushchenko, O., Dekhtyar, N., & Shalbayeva, S. (2025). The prospects of sustainable development of destroyed tourism areas using virtual technologies. *Sustainability*, 17(7), article number 3016. doi: 10.3390/su17073016.
[46] Polikovska, Yu. (2024). *The Holodomor Museum opened online tours*. Retrieved from https://ms.detector.media/internet/post/36593/2024-10-31-muzey-golodomoru-vidkryv-onlayn-ekskursii/.
[47] Public investments and public-private partnership as the main mechanisms for restoring the investment capacity of communities. (2025). Retrieved from https://umeda.com.ua/kyiv-region-communities-forum-a-strategic-platform-for-reconstruction-and-investment-partnership-2-2-2-3-2-2-2/.
[48] Roik, O. (2023). Directions of sustainable development of tourism in Ukraine in the conditions of post-war reconstruction. *Economic Space*, 184, 58-61. doi: 10.32782/2224-6282/184-9.
[49] Skeiron. (n.d.). *Museum in a smartphone*. Retrieved from https://skeiron.com.ua/projects/137.
[50] Smart city: Cities received a mobile application for the development of e-democracy. (2020). Retrieved from https://decentralization.ua/news/12520.
[51] Song, J., & Xu, B. (2024). Evaluation model of urban tourism competitiveness in the context of sustainable development. *Frontiers in Public Health*, 12, article number 1396134. doi: 10.3389/fpubh.2024.1396134.
[52] Strippoli, R., Gallucci, T., & Ingrao, C. (2024). Circular economy and sustainable development in the tourism sector – an overview of the truly-effective strategies and related benefits. *Heliyon*, 10(17), article number e36801. doi: 10.1016/j.heliyon.2024.e36801.
[53] Tarasovsky, Y., & Kruchinina, A. (2024). *The number of hotels and hostels in Ukraine is growing, domestic tourism contributes to the development of the industry – study*. Retrieved from https://surl.li/deektl.
[54] There are over half a thousand nature reserves in Cherkasy region. (2022). Retrieved from https://www.oblradack.gov.ua/na-cherkaschini-roztashovano-ponad-piv-tisyachi-zapovidnikiv.
[55] Tourism taxes by region: Kyiv to grow 2-fold. (2025). Retrieved from https://surl.li/ceogmh.
[56] Tourist resources of the region: Recreational potential of Vinnytsia region. (n.d.). Retrieved from https://mykrai.wordpress.com.
[57] Tsviliy, S. (2024). Tourism industry methodology: Potential for business development and regulation in countries of the world. *Economics and Region*, 3(94), 30-40. doi: 10.26906/EiR.2024.3(94).3479.

[58] Ukraine's tourism industry is breaking records in the middle of the war: How much tax has been paid to the budget? (2024). Retrieved from https://surl.li/cxxmhs.
[59] UkraineInvest. (n.d.). *Tourism*. Retrieved from https://ukraineinvest.gov.ua/industries/tourism.
[60] Ukrainian airports increased passenger traffic by 18.5% over the year. (2020). Retrieved from https://www.unian.ua/tourism/news/10828256-aeroporti-ukrajini-za-rik-zbilshili-pasazhiropotik-na-18-5.html#:~:text=.
[61] UNESCO. (n.d.). *Rebuilding the foundations of peace in Ukraine*. Retrieved from https://www.unesco.org/en/ukraine-war/impact?hub=180699.
[62] USAID OIG. (n.d.). *Ukraine oversight*. Retrieved from https://oig.usaid.gov/contact-usaid-oig.
[63] Verbovska, M. (2017). *Google launches 3D tour of Ukrainian open-air museums*. Retrieved from https://zaxid.net/google_zapustiv_3dtur_muzeyami_ukrayini_pid_vidkritim_nebom_n1431450.
[64] Yakushev, O., Moisieienko, L., Yakusheva, O., Prodanova, L., Plaksiuk, O., & Chepurda, L. (2024). Socio-economic sustainability of the tourism sector enterprises in the context of the COVID-19 pandemic: Global and Ukrainian dimensions. *Financial and Credit Activity: Problems of Theory and Practice*, 5(58), 484-499. doi: 10.55643/fcaptp.5.58.2024.4377.
[65] Zeqiri, A., Youssef, A.B., & Zahar, T.M. (2025). The role of digital tourism platforms in advancing sustainable development goals in the industry 4.0 era. *Sustainability*, 17(8), article number 3482. doi: 10.3390/su17083482.

Імплементація туристичного потенціалу в контексті сталого розвитку регіонів та національної економіки України

Наталя Трусова
Доктор економічних наук, професор
Таврійський державний агротехнологічний університет імені Дмитра Моторного
69600, вул. Університетська, 66, м. Запоріжжя, Україна
https://orcid.org/0000-0001-9773-4534

Анастасія Трусова
Асистент
Таврійський державний агротехнологічний університет імені Дмитра Моторного
69600, вул. Університетська, 66, м. Запоріжжя, Україна
https://orcid.org/0009-0008-8154-2456

Анотація. Метою даного дослідження було обґрунтувати шляхи ефективного використання туристичного потенціалу України як інструменту економічної стійкості та зростання регіонів. Методологія ґрунтувалася на емпіричному аналізі туристичних ресурсів, інфраструктури, фінансових показників і динаміки туристичних потоків у 2019-2024 роках із урахуванням інноваційних підходів до розвитку галузі. Результати продемонстрували суттєві регіональні відмінності у використанні туристичного потенціалу та рівні впровадження інноваційних рішень. Поглиблений аналіз проводився для Київської, Черкаської та Вінницької областей, що дозволило оцінити інноваційність та конкурентоспроможність їхніх туристичних стратегій. На Київщині зафіксовано 147 природних туристичних об'єктів, включно з біосферним заповідником, трьома національними парками та об'єктами Організації Об'єднаних Націй з питань освіти, науки і культури. Черкащина має 572 об'єкти природно-заповідного фонду, а Львівщина – понад 1600 пам'яток культурної спадщини та чотири національні парки. Житомирщина налічує два заповідники й понад 1500 історико-культурних пам'яток. Аналіз готельної інфраструктури показав різкі відмінності між довоєнним і воєнним періодами: завантаженість у Києві впала з 30-40 % до 10-20 %, тоді як у Карпатському регіоні у 2024 році перевищила 60-70 %. Фінансові показники підтвердили нерівномірність відновлення: у 2024 році Київщина забезпечила 284.1 млн грн доходів від туризму та 50,83 млн грн туристичного збору, Черкащина – 34,2 млн грн і 23,53 млн грн відповідно, а Вінниччина – 41,3 млн грн і 3,12 млн грн. Середня тривалість перебування туристів варіювалася від 2 днів у Києві до 7 днів у Львові, а загальний потік у 2024 році становив 2,7 млн осіб, що дорівнювало приблизно 70 % довоєнних обсягів. Практичне значення дослідження полягає в тому, що його результати можуть бути використані для розробки регіональних стратегій розвитку туризму, спрямованих на підвищення економічної стійкості, конкурентоспроможності та забезпечення сталого розвитку областей України

Ключові слова: інфраструктура; ресурс; стійкість; конкурентоспроможність; цифровізація; інновації; готелі

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 31.03.2025; Revised: 25.07.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.30

UDC 658.51

Conceptual principles for assessing effective business management

Vitalii Zianko*
Doctor of Economic Sciences, Professor
Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
https://orcid.org/0000-0003-0095-5248

Serhii Murha
Postgraduate Student
Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
https://orcid.org/0009-0008-1360-933X

Abstract. In the context of global economic changes and increased competition, management efficiency is a key factor in the sustainable development of an enterprise. Despite existing theoretical developments, the application of comprehensive methods for assessing efficiency continues to be challenging due to economic challenges and insufficient staff qualifications. This highlights the relevance of improving the methodology for assessing management activities. The purpose of this study was to provide a comprehensive theoretical and methodological substantiation of the essence and measurements of enterprise management efficiency, as well as to develop a systematic approach to its assessment in the context of economic challenges. For this, the study employed the following methods: empirical and systematic analysis, generalisation and concretisation, induction and deduction, structural and functional analysis. The study generalised the concept of management effectiveness and defines it as the effectiveness of management activities, which is manifested in the degree of achievement of goals under the condition of rational use of resources. Three key dimensions of effectiveness were identified: economic, organisational, and social, each of which is detailed through relevant indicators and criteria. The basic principles of management effectiveness assessment (comprehensiveness, continuity, balance, time dimension, dynamism, and adaptability) were systematised. A model for assessing effective enterprise management was developed and presented, covering input indicators, internal processes, output results (financial and non-financial), the influence of the external environment, an integrated assessment and recommendations for strategic decisions. The interconnection of all forms of effectiveness and their dependence on numerous external and internal factors was emphasised. The key challenges that hinder the full implementation of modern methods of effectiveness assessment in practice were identified. The practical value of the study lies in the creation of a universal model for assessing management effectiveness, which will allow enterprises to increase the objectivity of analysis, optimise resources, and make informed management decisions to improve competitiveness. Additionally, the problems identified in the implementation of this model can form the basis for the development of targeted training programmes

Keywords: management activities; management assessment model; strategic management; performance measurement system; resource optimisation

Introduction

In a dynamic business environment characterised by global economic transformations and increased competition, ensuring the effective functioning of enterprises is of critical relevance. Management efficiency is a key factor in sustainable development, as it determines an enterprise's ability to use resources rationally and adapt to constant market

Suggested Citation:
Zianko, V., & Murha, S. (2025). Conceptual principles for assessing effective business management. *Innovation and Sustainability*, 5(3), 30-41. doi: 10.31649/vis/3.2025.30.

*Corresponding author

changes. Despite major theoretical advances, practical assessment of efficiency faces challenges due to insufficient staff qualifications and the need for comprehensive, adaptive methodological approaches that account for economic, organisational, and social dimensions. Therefore, the relevance of the study lies in the development of a sophisticated assessment tool that will provide a reliable basis for making informed strategic decisions, thereby contributing to the success and viability of the enterprise.

The issue of management effectiveness is a subject of constant scientific interest, as evidenced by numerous publications. S.T. Piletska & T.Y. Korytko (2018) provided a detailed analysis of various approaches and methods for assessing management effectiveness, finding that the most suitable tools are those that incorporate not only financial but also non-financial aspects, such as the balanced scorecard. The relationship between financial indicators and management effectiveness was investigated by S.W. Jang & W.C. Ahn (2021). Using the logistics industry as an example, the researchers demonstrated that high-quality financial analysis is a valuable tool for making informed decisions. Developing this topic, A. Pingilili *et al.* (2025) emphasised that in the context of digital transformation, management efficiency is intricately linked to the integration of information technology and enterprise architecture. This ensures sustainable development and competitive advantages, especially for small and medium-sized enterprises. According to a report by the Board company (2025), the use of artificial intelligence and predictive modelling is becoming a key trend in planning, enabling management teams to make data-driven decisions and thereby markedly improve efficiency. The social dimension is also a prominent aspect of management effectiveness. T. Van Waeyenberg *et al.* (2020) showed that effective management that creates a positive psychological climate contributes to increased emotional commitment of employees and reduced professional burnout. This positively influences productivity. S.H. Awan *et al.* (2020) argued that an effective performance management system is key to increasing employee engagement and, as a result, productivity. These findings were complemented by R. Pérez Estébanez & F.J. Sevillano Martín (2025), who confirmed that integrating corporate sustainability and responsibility principles into a company's strategy positively influences financial performance by improving operational efficiency and customer loyalty. Apart from internal factors, management effectiveness also depends on the external environment. K.H. Bjurstrøm (2020) used the example of government agencies to prove that effectiveness depends on structural and managerial factors that determine the authority of the manager. H. Abidi *et al.* (2020) demonstrated that in humanitarian organisations, effectiveness is measured not only by financial indicators, but also by the quality of logistics and the ability to achieve goals. This thesis was confirmed and expanded upon by F.N. Johannes *et al.* (2025), who emphasised that the effective administration and management of state-owned enterprises largely depend on a clear corporate governance policy and its implementation.

Despite valuable scientific achievements, analysis of recent studies revealed a series of unresolved issues. Specifically, existing approaches often focus on individual aspects of efficiency without providing a comprehensive, integrated view of all its dimensions. The issue of adapting assessment methodologies to dynamic changes in the external and internal environment is also underdeveloped. The present study addressed these unresolved aspects of the overall problem. It aimed to develop a systematic model for assessing effective management, which, based on an integrated approach to all dimensions of effectiveness, can account for the dynamics of change and serve as an effective basis for sound management decisions, thereby contributing to the viability and competitiveness of enterprises. The purpose of this study was to systematise approaches to defining the essence of management effectiveness and to develop a practical model for its multifaceted assessment.

Materials and Methods

The methodological framework of the study was based on a comprehensive combination of theoretical and empirical methods, which provided a comprehensive substantiation of the essence of effective enterprise management and the creation of a model for its assessment. The first stage of the study involved the use of system analysis, which helped to identify the key components of effectiveness. This approach was also employed to consider and structure efficiency as an integrated system consisting of interrelated components. In parallel, generalisation and concretisation methods were applied to formulate an integrated definition of the term "management efficiency" based on scientific studies (Awan *et al.*, 2020; Abidi *et al.*, 2020; Jang & Ahn, 2021). The generalisation of key ideas helped to systematise existing approaches, while concretisation ensured the transformation of general theoretical provisions into concrete criteria and indicators for practical application.

The second stage of the study involved the use of inductive and deductive approaches. The inductive approach was employed to identify universal principles from the analysis of concrete cases of successful companies. Specifically, Microsoft's strategic transition to cloud services (Foley, 2020; Cloud spending growth..., 2023) and Google's innovative HR policy (Fordyce & Murray, 2023). The cases of these companies were selected to formulate universal patterns of successful management. The deduction method ensured the transition from these general patterns to the development of specific recommendations for evaluating effectiveness. Structural and functional analysis helped to develop an integrated model for evaluating management effectiveness. A structural approach was employed to break down the model into key blocks: "input resources", "internal processes", "performance results", "external environment", "integral assessment", and "recommendations". Functional analysis was applied to identify the relationships between these components, showing the transformation of input

resources through internal processes into output results. The methodological application of the principles of integrity and integration ensured that effectiveness was considered within the model as a single multi-component system, where each element influences the overall outcome.

Empirical analysis was conducted by summarising existing research and analysing practical cases to validate theoretical propositions and confirm their relevance to real-world conditions. Case studies were used to illustrate theoretical propositions, namely examples from companies such as Microsoft, Google, Apple, and Netflix. They were chosen to demonstrate how various aspects of management (strategic, operational, social) interact to achieve competitive advantages (GE and Microsoft partner to..., 2016; Hastings & Meyer, 2020; Analyzing Apple's marketing..., 2024). To illustrate the limitations of conventional approaches focused exclusively on financial performance and to confirm the relevance of integrating innovative and social dimensions into the performance evaluation system, the negative experience of Kodak was also used (Lucas & Goh, 2009).

The source base of the study included scientific publications by S.T. Piletska & T.Y. Korytko (2018), T. Van Waeyenberg *et al.* (2020), R. Pérez Estébanez & F.J. Sevillano Martín (2025), analytical reports of international organisations Board (2025), McKinsey (The data-driven enterprise..., 2022), as well as practical materials related to the activities of leading corporations. The use of various sources ensured a multidimensional approach to the study and helped to verify the validity of the model based on real examples. The set of methods employed ensured the scientific validity and practical feasibility of the developed model. The approaches applied helped not only to outline the theoretical foundations for evaluating management effectiveness but also to confirm their applied value in the modern conditions of global competition.

Results and Discussion

The effectiveness of enterprise management is a key indicator of its viability and success in a competitive environment. According to S.T. Piletska & T.Y. Korytko (2018), effective management involves constantly adapting assessment methods to a dynamic business environment. Such adaptability, based on high-quality financial analysis, enables informed decisions that lead to profit growth, which is part of fulfilling the enterprise's potential and its dynamic development (Jang & Ahn, 2021). Additionally, effective management improves staff engagement and productivity, which is a manifestation of a high level of executive discipline (Awan *et al.*, 2020). Therewith, management effectiveness largely depends on structural factors that determine the manager's freedom of action (Bjurstrøm, 2020). This emphasises that effective management requires the rational use of resources, i.e., organisational structure, to achieve goals. Effective management ensures the delivery of assistance "on time and of the right quality", which is a direct confirmation of the quality of performance of obligations and achievement of set goals (Abidi *et al.*, 2020). Summarising the findings of the cited researchers, the term "management effectiveness" can be defined as the effectiveness of management activities, manifested in the degree of achievement of set goals and fulfilment of the enterprise's potential, provided that resources are used rationally in concrete external conditions. In other words, effective management ensures a prominent level of executive discipline, quality of performance of obligations, adaptability to change, and dynamic development of the enterprise.

The practical effectiveness of an enterprise's management system is manifested through a series of results that cover key management functions and correspond to the strengths of the organisation (Pylypenko, 2016). In strategic terms, this is expressed in the adoption and successful implementation of sound decisions, as well as in the implementation of innovative, investment, and other strategic development programmes. An example of this is Microsoft, which has successfully transitioned from legacy software to cloud services, including the Azure platform. This enabled it to enter into new partnership agreements, such as a USD 10 billion cloud computing deal with the U.S. Department of Defense (Foley, 2020) and a partnership with General Electric to implement cloud solutions in the industrial sector (GE and Microsoft partner to..., 2016). This strategic initiative has enabled the company to markedly increase its share of the cloud services market. According to the Synergy Research Group, Microsoft's share of the global cloud infrastructure market grew from approximately 10% in 2017 to over 20% in 2021, ranking second among the leading market players after Amazon Web Services (Cloud spending growth..., 2023). These achievements have considerably increased the company's competitiveness and investment attractiveness.

At the operational level, management efficiency is reflected in cost optimisation, ensuring prominent product quality without defects, and prompt completion of production tasks. It also includes the implementation of a developed production infrastructure and an adaptive inventory management system, which reduces debt volumes. In the field of human resource (HR) management, effective management ensures the functioning of effective recruitment and adaptation procedures, as well as the use of effective labour motivation mechanisms. An example is Google, known for its HR policy, which focuses on flexible working hours and innovative employee support programmes. Specifically, the company introduced initiatives such as "20% Time", which allows engineers to devote a fifth of their working time to their personal projects, and the "Peer Bonus" programme, which allows employees to recognise and reward each other for their contribution to the shared goal. This has led to a marked reduction in staff turnover and the creation of a favourable moral and psychological climate within the team. Due to this policy, Google has achieved one of the lowest staff turnover rates in the industry, as employees feel valued, engaged, and protected. High staff satisfaction and engagement levels have directly translated into increased productivity and innovation (Fordyce & Murray, 2023).

In terms of financial and marketing management, practical effectiveness is reflected in the prompt preparation of budgets and financial reports. It is also reflected in the application of an effective marketing strategy that encompasses PR and other public communication tools. Apple is a prime example, as the company has successfully changed its marketing strategy by focusing on emotional connection with consumers and innovation. Instead of focusing on technical specifications, the brand generates narratives and initiates an affective (emotional) response from consumers by using minimalist design, visually appealing advertising, and emphasising how technology can improve users' lives (Analyzing Apple's marketing..., 2024). This has enabled it to expand its product range to meet market needs by transitioning from a predominantly computer company to an ecosystem with products such as the iPhone, iPad, Apple Watch, and services (Apple Music, iCloud). This diversification has contributed to considerable growth in its market share, particularly in the wearables and services segment. According to analysts, Apple's share of the global smartphone market is growing steadily, while revenue from the services segment exceeded USD 85 billion in fiscal year 2023, making it the company's second-largest source of revenue after the iPhone (Apple Inc., 2023). Additionally, the diversification of sales channels (own stores, online marketplaces) and a reasonable pricing policy that positions the products as premium contributed to the growth of its financial indicators. Finally, effective internal and external communications form an integral part of successful management.

The assessment of management effectiveness is based on a system of interrelated criteria and indicators. Therewith, the effectiveness criteria characterise the essential aspects of the process and its content, reflecting the qualitative requirements for the effectiveness of management activities. As a rule, the effectiveness criterion must fully reflect the outcomes of economic activity, record and measure the level of achievement of the set goal. Conventionally, the effectiveness criterion is formulated as the maximum excess of results over resource costs. Various indicators, which are grouped into several key groups (Piletska & Korytko, 2018), can be used for a comprehensive assessment of the effectiveness of enterprise management. The first group includes financial and economic indicators that reflect the economic results of activities, specifically the level of profitability, return on investment, liquidity, solvency, and financial stability. This also includes the ratio of assets to liabilities, as well as indicators of business activity, such as market share, export and import levels, pricing policy, the company's image, and its stage of the life cycle.

The second group includes production and technological indicators that characterise product quality according to criteria such as absence of defects, reliability, durability, and safety. This category also covers the nomenclature and range of products, their cost price, storage conditions, as well as the efficiency of production capacity and technological processes. Organisational and managerial aspects constitute the third group, reflecting the regularity of the production cycle, the performance of production plans, the optimisation of logistics schedules for the supply and shipment of products, as well as the terms of their sale. The fourth group includes management characteristics that assess the quality of decisions made in terms of their promptness, soundness, flexibility, and optimality. These indicators also reflect the compliance of management actions with the expectations of stakeholders, the quality of documentation, and the effectiveness of marketing research. Personnel and social factors constitute the fifth group of indicators, which assess the professional qualifications of personnel, the level of staff turnover, the effectiveness of the motivation system, the nature of the socio-psychological climate in the team, and the quality of interaction between employees and management.

Performance indicators are quantitative measures, usually expressed in monetary terms, reflecting the relationships between various economic variables. The financial stability of an enterprise can be assessed by the ratio of equity to debt capital, which reflects its solvency and creditworthiness. The concept of financial stability assumes that investments in entrepreneurial activity should be offset by cash flows, while profits should ensure internal self-financing, contributing to independence from external sources of asset financing. Business activity indicators enable a dynamic assessment of the overall operational efficiency of an enterprise. These include the profitability of products sold, gross and net income, production volume, the efficiency of labour and material resources, and the productivity of fixed assets. Economic performance indicators are defined as the ratio of results achieved (specifically, in operating activities or from product sales) to the volume of resources used. These resources are directed towards achieving the strategic and tactical goals of the enterprise in line with the interests of its owners. Indicators that assess the state of the enterprise's assets and liabilities reflect the efficiency of use of tangible and intangible assets acquired with equity or borrowed funds for the purpose of generating profit. At the same time, they account for the volume of short- and long-term monetary obligations for past periods, the repayment of which involves a reduction in the enterprise's resources, which are potential economic benefits. The system of management performance indicators should be based on a comparison of the outcomes achieved by the enterprise, expressed in monetary terms, with the amount of management efforts made to achieve them. Since management costs may grow unevenly, it is advisable to analyse performance in a dynamic aspect. If a significant increase in production and sales volumes, as well as an increase in profit, is observed in the period following the assessment, this reflects an improvement in management performance. In simplified terms, the effectiveness of the management system can be characterised by the level of satisfaction of staff and customer needs, as well as the overall results achieved by the organisation.

Notably, the controlled subsystem, which implements economic tasks, reflects the effectiveness of the control subsystem. In other words, the effectiveness of management

influence directly determines the state and functionality of the entire management system. From an applied standpoint, it is advisable to analyse the term "management effectiveness" in various dimensions. This allows understanding the complexity of the relevant issues and the diversity of criteria for its assessment. Therewith, when analysing the results of an enterprise's activities, the economic, organisational, and social components of management effectiveness are usually distinguished. The economic efficiency of management reflects the degree of utilisation of material, financial, labour, natural, and other resources, and can be measured through key performance indicators of production and economic activity. Thus, profitability is assessed using the profitability of the enterprise, fixed assets, and current assets. In the sphere of production and income, crucial indicators are the volume of manufactured products and the amount of profit received. The efficiency of resource use is measured by return on assets and labour intensity. The financial position is characterised by indicators such as the financial leverage ratio, the fixed asset depreciation ratio, as well as the level of liquidity and risk. Organisational management efficiency reflects the level of perfection of the enterprise's organisational structure and the effectiveness of its management system. It is characterised by the ability of management to respond to internal conflicts and stressful situations, as well as its ability to adapt to organisational changes. The quality of developed and implemented management decisions is also considered. This type of efficiency is assessed based on indicators such as the degree of centralisation of management functions; the ratio of management personnel at different levels; the proportion of managers in the total number of administrative staff.

The social effectiveness of management reflects the correspondence between the costs of the enterprise and the social results achieved, which are related to broader goals and public interests. This measure of effectiveness includes the impact of management on the professional development of employees and managers; the development of a strong corporate culture and a positive psychological climate in the team; the creation of a sense of security and staff involvement in achieving organisational goals. Additionally, the role of economic mechanisms in shaping the professional environment and life experience of staff is considered. A concrete example illustrating the relationship between social initiatives and business results is Patagonia's (n.d.) implementation of a flexible work schedule policy, paid leave for environmental volunteering, and leadership development programmes. These initiatives have created a sense of security and belonging to the company's values for staff and have positively influenced their professional development. Due to this policy, the company has achieved one of the lowest staff turnover rates in its industry, which, according to Forbes, does not exceed 4% per year, considerably reducing the costs of recruiting and training new employees (Rock, 2020). Furthermore, high staff engagement and motivation have contributed to increased productivity, innovation and, ultimately, strengthened the business's competitiveness in the market. Netflix is another example of how social initiatives can benefit both staff and business. It is known for its policy of unlimited paid leave and flexible working hours, which markedly increases trust in employees and contributes to their well-being. As one of Netflix's founders, Reed Hastings, describes in his book, this culture of "freedom and responsibility" allows the company to retain exceptionally talented professionals (Hastings & Meyer, 2020). This has led to a major reduction in staff turnover, as employees feel valued and protected, rather than merely hired labour. As a result, Netflix has managed to retain highly skilled professionals, which has directly contributed to increased productivity and innovation, a key element of its market success.

The social effectiveness of management can be assessed by a series of indicators, which are divided into two key groups. The first group includes indicators of socio-cultural development, which cover working conditions, the level of labour discipline, staff stability, the level of social security for employees, wage growth dynamics, and the absence of job loss risk. The second group includes indicators of the compliance of production and economic results with market needs, such as labour productivity, customer satisfaction, and the number of orders executed on time and in full (Podolchak, 2004). All forms of efficiency – economic, organisational, and social – are closely interrelated and interdependent. As a rule, an increase in economic efficiency stimulates the growth of other types of efficiency. Social efficiency integrates elements of economic and organisational efficiency, focusing on the comprehensive satisfaction of employees' needs. Notably, the final outcomes of enterprise management efficiency, regardless of type, directly or indirectly depend on numerous variable factors that accompany economic activity.

The key factors influencing the effectiveness of enterprise management are the alignment of interests of all participants in the economic process, including owners, managers, employees, and suppliers, as well as the professional qualities of management personnel and employees, which include their professional level, experience, knowledge, competences, and personal qualities. The existence of an effective system of work organisation, staff training, and motivation, focused on achieving strategic results, is of great relevance. The level of development of the material and technical base and technical support, which create the conditions for increasing productivity, is a significant factor. Equally crucial are the degree of information security, the effectiveness of internal and external communications, and the established organisational culture. Furthermore, management effectiveness largely depends on the social aspects of the team's activities, specifically the moral and psychological climate, which influences employee engagement and cohesion. The effectiveness of enterprise management is a multifaceted concept that is expedient to assess according to various components of its potential (Table 1).

Table 1. Key areas for assessing the effectiveness of enterprise management based on key components of its potential

No.	Components of enterprise potential	Areas of assessment of enterprise management effectiveness
1.	Production capacity	The assessment should focus on analysing the efficiency of the use of resources and equipment, the implementation of technologies, and the management of production processes. Particular attention is paid to inventory control, material and technical support, production rhythm, as well as the effectiveness of operational and strategic planning and control.
2.	Labour capacity	Management effectiveness assessment focuses on the effectiveness of creating a favourable social and psychological climate in the team. This includes analysing the effectiveness of the management apparatus, team cohesion, communication processes, and rational use of labour. Equally significant is the assessment of the effectiveness of operational and strategic personnel control.
3.	Organisational capacity	Management effectiveness is measured by the success of innovative, investment, and commercial projects, as well as the effectiveness of business plans and enterprise development programmes. To this end, operational and strategic controlling is used to assess the effectiveness of these processes.
4.	Financial capacity	The financial aspect of management effectiveness is assessed through analysis of budgeting, liquidity, financial stability, and business activity. Particular attention is paid to the effective use of assets, liabilities, equity, and borrowed capital. The effectiveness of operational activities, as well as operational and strategic financial control, are key indicators in this area.
5.	Market capacity	Management effectiveness is determined by the competitiveness of the enterprise and analysis of supply and demand. Key areas of assessment include the effectiveness of marketing research and communications, analysis of product, pricing and sales policies, and the effectiveness of operational and strategic marketing control.

Source: compiled by the authors of this study based on data from O.M. Rats (2008)

Table 1 presents a comprehensive approach to understanding and measuring performance, considering it not only in terms of financial results, but also from the standpoint of production, labour, organisational, and market activities. Each block of potential (production, labour, organisational, financial, market) covers a wide range of concrete aspects that are subject to evaluation. This emphasised that effective management is a multifaceted phenomenon that requires analysis at different levels and in different functional areas of the enterprise. Specifically, Table 1 sequentially presents both operational and strategic aspects of control and planning for most components, demonstrating the significance of both current management and long-term development.

The list of assessment areas is quite comprehensive and includes both conventional quantitative indicators (efficiency of use of labour resources, profitability, liquidity) and qualitative, albeit potentially measurable, aspects (favourable moral and psychological climate, quality of communications). Table 1 demonstrates a systematic and comprehensive approach to assessing the effectiveness of enterprise management, revealing it through the lens of five key capacities. It clearly confirms the previously expressed thesis that a comprehensive assessment of management effectiveness requires an analysis of all areas of enterprise activity, considering its functional capacities. This emphasises the impossibility of fully measuring effectiveness using a single indicator or a combination of indicators and instead requires an integrative approach that covers the operational and strategic aspects of each of the capacities. Such detail is fundamental to the development of effective monitoring systems and improving the effectiveness of management decisions at the enterprise.

Evaluating the effectiveness of enterprise management is a methodological process aimed at determining the effectiveness of the economic activities of the enterprise and its structural units based on a system of indicators. The key task of such an assessment is to measure the degree to which the set goals have been achieved. This assessment is a crucial element of the information and analytical support of management activities and can be used in both strategic and tactical contexts. Management science distinguishes a variety of methodological approaches to evaluating management effectiveness, including conventional, multifactorial, mathematical, ergonomic, conceptual approaches based on performance management, integrated, and level-based approaches. The scientific studies analysed above have demonstrated that approaches to assessing management effectiveness have undergone major transformations, driven by the introduction of innovative management technologies and the need to constantly adapt to dynamic changes in the external environment.

This evolution is best illustrated by the development and implementation of new concepts that have departed from the conventional focus on financial indicators alone. R.S. Kaplan & D.P. Norton (1992) developed a balanced scorecard that allowed assessing the management effectiveness from four perspectives: financial, customer, internal business processes, as well as learning and development. This approach helped to link strategic goals with operational activities, considering both tangible and intangible assets. M.E. Porter (1985) and other researchers popularised the concept of value-based management, where management effectiveness is measured by the creation of long-term value for shareholders. M.T. Hansen & J. Birkinshaw (2007) emphasised that management effectiveness largely depends on the ability to generate and implement innovations, which led to the emergence of new assessment methods that measure the speed of bringing new products to market and the volume of investment in research and development (R&D). Research in the field of digital transformation also

confirms that modern management must be flexible, innovative, and focused on constant change, which is reflected in the evolution of methods for assessing its effectiveness.

Despite the extensive theoretical arsenal of methods, their practical implementation faces a series of substantial complications. As a result, in practice, only a limited number of tools can provide accurate and objective measurement of management effectiveness. For example, Kodak is a classic example of how ignoring modern approaches to assessment and focusing exclusively on conventional financial indicators led to a loss of competitiveness. The company's management, focused on profits from film sales, failed to promptly respond to technological changes and the growth of the digital photography market (Lucas & Goh, 2009). This led to strategic decisions being made without accounting for non-financial aspects such as the innovative potential that was evident in the early development of the company's own digital cameras. As a result, Kodak lost its leading position, demonstrating the inadequacy of old evaluation methods in modern conditions. Thus, these barriers limit the number of concrete tools capable of providing accurate and objective measurement of management effectiveness in practice. Analysis of research has revealed that among the wide range of methodological approaches that have been developed in science, only those that have been adapted to business needs have found practical application.

Specifically, the balanced scorecard, which enables a comprehensive assessment of a company's activities, and approaches based on value-based management have gained the most popularity. These methods are distinguished by the availability of developed tools and a sound methodological rationale, which makes them effective in determining the effectiveness of management decisions. To ensure the practical effectiveness of the process of evaluating the effectiveness of enterprise management, it is essential to adhere to a series of key principles, including:

Principle 1. Comprehensiveness and integration. The assessment process should be performed with the participation of senior management and include the active involvement of all employees of the enterprise. Each employee should perceive performance assessment as part of their professional duties. Management performance should be determined according to the mission, strategy, and goals of the enterprise, which are formed with the participation of the staff.

Principle 2. Continuity. Management performance evaluation should be ongoing, reflecting the dynamics of changes in the management system.

Principle 3. Balance. Performance should be evaluated considering the interests of all stakeholders – consumers, management personnel, shareholders, the public – as well as in the context of the company's overall policy.

Principle 4. Time dimension. Effectiveness must be assessed not only in terms of past and current results, but also by forecasting the future consequences of management decisions.

Principle 5. Dynamism and adaptability. Considering the constant changes in the internal and external environment, as well as the influence of objective and subjective factors, the assessment of effectiveness should be based on flexible, dynamic models that account for economic risks. This allows obtaining more reliable and substantiated results (Shchehlova *et al*., 2017).

Considering all the above, the authors of the present study have developed a model for evaluating the effective management of an enterprise. The model for assessing effective enterprise management presented in Table 2 represents a systematic and multi-component approach to the analysis of management activities. It logically structures the assessment process into six main blocks that reflect the full cycle of the enterprise's functioning and its interaction with the external environment.

Table 2. Model for assessing effective enterprise management

No.	Model component	Detailing of indicators and areas
1	Input indicators (resource base)	• human resources (number and qualifications of personnel); • material resources (equipment, raw materials); • financial resources (capital, loans, investments); • information support; • innovative potential.
2	Processes (internal environment)	• operational efficiency; • organisational structure and management; • implementation of modern technologies; • quality management; • logistics and supply.
3	Output indicators (performance results)	*financial indicators:* • profitability (of assets, sales, capital); • net profit; • income from core activities; • liquidity and solvency indicators; • asset turnover ratio. *non-financial indicators:* • market share; • customer satisfaction level; • number of innovative products/projects; • quality of products/services; • brand reputation.

Continued Table 2

No.	Model component	Detailing of indicators and areas
4	External environment	• market analysis (competition, demand); • interaction with stakeholders (government, suppliers, investors); • social and environmental responsibility.
5	Integrated performance assessment	• building a KPI (key performance indicator) system; • determination of the overall performance index (based on weighting coefficients); • SWOT analysis.
6	Recommendations and strategic decisions	• cost optimisation; • improvement of the organisational structure; • investment in development and innovation; • change or adjustment of the enterprise's development strategy.

Source: compiled by the authors of this study based on data from O. Shchehlova *et al.* (2017)

The model begins with input indicators (resource base) covering all types of resources necessary for the enterprise's activities, from human to innovative. This is followed by processes (internal environment) that detail how these resources are transformed into results, focusing on operational efficiency, management, and technology. The "output indicators (performance results)" block clearly distinguishes between financial and non-financial results, demonstrating the comprehensiveness of the final assessment. A prominent aspect of the model is the inclusion of the external environment, which emphasises the impact of market conditions, stakeholder engagement, and social and environmental responsibility on management effectiveness. This reflects management trends that extend beyond purely internal indicators. Additionally, the "integrated performance assessment" block takes centre stage, involving the use of tools such as key performance indicators (KPIs), integrated indices, and SWOT analysis. This enables a transition from disparate indicators to a consolidated assessment. The model concludes with the "recommendations and strategic decisions" block, which emphasises the applied value of assessment – its focus on making informed management decisions and adjusting development strategies.

The developed model for evaluating effective enterprise management is a comprehensive and instrumental approach that enables a comprehensive analysis of the effectiveness of management activities. Its sequence – from resources to processes, results, external influences, and integrated assessment with subsequent recommendations – ensures the completeness and systematic nature of the analysis. The model not only allows measuring the current state but also creates a basis for strategic planning and improvement, emphasising the dynamic and adaptive nature of effective management. It serves not only as a framework for assessment, but also as a roadmap for improving the overall efficiency and competitiveness of the enterprise in a changing business environment. Such detail is fundamental to the development of effective monitoring systems and improving the effectiveness of management decisions in the enterprise. Therewith, depending on the concrete goals and nature of the management effectiveness assessment process, the objects of analysis may include enterprise management overall; individual aspects of the management structure; the level of effectiveness of management labour; the performance of individual structural units, etc. Notably, management effectiveness and its assessment depend to a considerable extent on a series of specific factors, such as industry characteristics, technical equipment, types and kinds of technological processes, scale and level of production specialisation, type of products, and staff qualifications. Understanding these contextual variables is critical for the correct interpretation of the assessment results and the formulation of sound recommendations.

The research findings, specifically the proposed model for assessing the effectiveness of enterprise management, are relevant and fully consistent with scientific trends. In this context, management effectiveness can no longer be viewed solely as a function of financial indicators. It is a multifaceted concept that extends beyond purely economic results to encompass innovative, social, and technological aspects of activity. Digital transformation is one of the most powerful drivers of management efficiency in the era of the Fourth Industrial Revolution. Management efficiency largely depends on the ability of management to generate and implement innovations, which has led to the emergence of new assessment methods. S.W. Jang & W.C. Ahn (2021) showed that the integration of digital tools not only optimises processes but also positively influences innovation and the development of new strategic business models, which ultimately increases the overall productivity of the company. This conclusion confirmed the thesis that effective management requires constant adaptation to dynamic changes in the business environment, where technological readiness becomes a decisive competitive factor. According to a McKinsey report (The data-driven enterprise..., 2022), organisations that actively use data analytics not only make more informed decisions, but also automate routine operations, freeing up employees' time for creative work, innovation, and cross-functional collaboration. This trend, which combines digitalisation, innovation, and management efficiency, has been confirmed and expanded by Ukrainian scientists, extending its focus from the micro level to the national economy. In an analysis of trends in the innovative development of the national economy, V. Kovalchuk (2023) emphasised that innovation is not merely a corporate advantage, but a direct indicator of a country's economic stability. The study proved that a consistent innovation vector, formed at the level of management decisions, is directly

linked to the macroeconomic success and competitiveness of the country overall. This argument legitimises the inclusion of innovation metrics (such as investment in R&D and product launch speed) in the model for assessing the effectiveness of enterprise management, as their activities form an integral part of the national economic potential. I. Kobushko & B. Manzhola (2023) emphasised that innovation is not simply a corporate advantage, but a direct indicator of a country's economic stability. The study proved that a consistent innovation vector, formed at the level of management decisions, is directly linked to the macroeconomic success and competitiveness of the country as a whole. This argument legitimises the inclusion of innovation metrics (such as investment in R&D and product launch speed) in the model for assessing the effectiveness of enterprise management, as their activities form an integral part of the national economic potential. A.V. Minkovska & A.S. Molchanov (2023), researching the agricultural sector, which is typically viewed as conservative and less prone to rapid change, pointed out the vital need for innovation management. Their findings show that it is precisely innovation-oriented management practices that can increase the efficiency of operations even in the most conventional industries. This highlights the universality of the innovative approach: it is not limited to high-tech companies but is a fundamental condition for directly influencing economic results and the survival of enterprises in any field. However, introducing innovations and ensuring their universality throughout the organisation is impossible without a driving force capable of initiating, supporting, and integrating these changes into the corporate culture.

Apart from technology, leadership is a critical element. It is leaders who are the architects of change, ensuring that innovative ideas are transformed into real management practices, which requires not only strategic vision but also effective human capital management and employee motivation. K.H. Bjurstrøm (2020) emphasised that structural factors and managerial autonomy are key to effective management. This is complemented by the findings of L. Gun *et al.* (2024), who found that transformational leadership, characterised by the ability to inspire and motivate, correlates positively with the success of digital transformation, indirectly increasing productivity. Such leadership, focused on change and development, gives employees ownership of their ideas, increasing their self-efficacy and demonstrating that success depends not only on technological systems but also on the human factor. S.H. Awan *et al.* (2020) further emphasised that effective leadership directly correlates with staff engagement. This correlation was extensively confirmed by D.R. Elisabeth *et al.* (2025) and M.S. Khan *et al.* (2024). Both studies found that transformational leadership positively affects employee performance, with this relationship being partially mediated by job satisfaction. In other words, a leader who creates a favourable psychological climate not only enhances innovation but also markedly increases productivity. This points to concrete psychological mechanisms through which management practices based on trust, empathy, and support directly influence the final results of an organisation's activities.

Throughout the world, the value of innovation management is undeniable, and an organisation's ability to innovate is crucial to its competitiveness. Research by H. Abidi *et al.* (2020), conducted in humanitarian organisations, confirmed that the use of suitable management practices is vital for optimising logistics processes and achieving goals. This demonstrates the universality of the innovative approach, regardless of the field of activity. Innovation management is not limited to the development of new products but also includes the improvement of internal processes and organisational structure.

Particular attention should be paid to the social effectiveness of management, which is increasingly being integrated into business models as a key element of success. The example of Patagonia (n.d.) has demonstrated that social initiatives, such as flexible working hours and paid leave for volunteering, lead to reduced staff turnover and increased loyalty. This is confirmed by numerous studies showing the interdependence of social effectiveness and financial results. However, according to M. Ahmad *et al.* (2023), corporate social responsibility can have both positive and negative effects on innovation performance. This means that social initiatives must be carefully planned and integrated into the company's strategy so that they promote rather than hinder innovation. This interaction is often non-linear. Ukrainian researchers also confirm the significance of a long-term perspective in assessing management effectiveness. V. Bihun *et al.* (2023) demonstrated that initial investments in digital transformation, despite a possible temporary decline in profitability, lead to considerable productivity growth and the creation of a sustainable competitive advantage in the long term. These findings suggest that for an objective measurement of management effectiveness, it is necessary to consider not only current financial outcomes but also the potential that forms the basis for future development. Thus, the model for assessing the effectiveness of enterprise management developed in this study is consistent with global trends. It reflects the value of a comprehensive, multi-factor approach that accommodates not only financial, but also innovative, technological, social, and environmental aspects of activity. This approach is key to ensuring sustainable competitiveness and successful operation of an enterprise in the face of global challenges and constant change.

Conclusions

Based on the analysis covering the essence of management effectiveness, its multi-component structure, evaluation principles, and influencing factors, key conclusions were formulated. The study found that the effectiveness of enterprise management is a multifaceted concept that extends beyond purely economic indicators. It encompasses three interrelated components: economic, organisational, and social, each of which has its specific criteria and indicators. This integrative approach emphasised the need for a comprehensive assessment that accounts not only for

financial results, but also for operational excellence, quality of human resource management, innovation potential, and social responsibility of the enterprise. The study found that management performance evaluation is a complex methodological process that should be based on a system of interrelated indicators. The developed assessment model demonstrated the comprehensiveness of such an approach, as it includes an analysis of resources, internal processes, output results (both financial and non-financial), the impact of the external environment, as well as an integrated assessment with further recommendations. This confirmed that a comprehensive analysis of all the functional capabilities of an enterprise is necessary for an objective measurement of effectiveness.

The study found that the process of evaluating management effectiveness should be continuous, dynamic, and adaptive, considering constant changes in the internal and external environment. This involves not only analysing past and current results, but also forecasting the future consequences of management decisions, as well as flexibility in the application of assessment models, with consideration of economic risks. It was found that all forms of efficiency are closely interrelated. Improving economic efficiency tends to stimulate growth in organisational and social efficiency, while the latter contributes to better financial outcomes. This interdependence requires coordinated management actions and a comprehensive vision of the enterprise's development.

It was found that despite a significant theoretical arsenal, the practical implementation of management efficiency assessment methods faces challenges such as insufficient understanding of economic realities, limited access to information, low staff qualifications, and underestimation of the importance of assessment by management. Therewith, the study confirmed that management effectiveness and its assessment depend substantially on industry characteristics, technical equipment, production scale, and staff qualifications, which requires an individual approach to the development and application of assessment systems. Considering the results obtained and the challenges identified, further research will focus on the development of industry-specific models for assessing management effectiveness. This involves the creation of specific models that account for the characteristics of various sectors of the economy, such as industry, services, or the IT sector, which will improve the accuracy and validity of the assessment.

Acknowledgements
None.

Funding
None.

Conflict of Interest
None.

References
[1] Abidi, H., de Leeuw, S., & Dullaert, W. (2020). Performance management practices in humanitarian organizations. *Journal of Humanitarian Logistics and Supply Chain Management*, 10(2), 125-168. doi: 10.1108/JHLSCM-05-2019-0036.

[2] Ahmad, M., Wu, Q., & Khattak, M.S. (2023). Intellectual capital, corporate social responsibility, and sustainable competitive performance of small and medium-sized enterprises: Mediating effects of organizational innovation. *Kybernetes*, 52(10), 4014-4040. doi: 10.1108/K-02-2022-0234.

[3] Analyzing Apple's marketing strategy and lessons for your business. (2024). Retrieved from https://mydigitalcmo.io/article/apples-marketing-strategy.

[4] Apple Inc. (2023). *Form 10-K*. Retrieved from https://www.sec.gov/Archives/edgar/data/320193/000032019323000106/aapl-20230930.htm.

[5] Awan, S.H., Habib, N., Akhtar, C.S., & Naveed, S. (2020). Effectiveness of performance management system for employee performance through engagement. *Sage Open*, 10(4). doi: 10.1177/2158244020969383.

[6] Bihun, V., Yokhna, M., & Tebenko, V. (2023). The impact of digital transformation on the competitiveness of enterprises: An analysis of differences in business strategies. *Economics. Finances. Law*, 10, 52-57. doi: 10.37634/efp.2023.10.11.

[7] Bjurstrøm, K.H. (2020). Principal-agent or principal-steward: How ministry-agency public relations condition the impact of management performance in the steering of government agencies. *Public Performance & Management Review*, 43(5), 1053-1077. doi: 10.1080/15309576.2020.1739087.

[8] Board. (2025). *2025 trends in enterprise planning*. Retrieved from https://www.board.com/guide/2025-trends-in-enterprise-planning.

[9] Cloud spending growth rate slows but Q4 still up by $10 billion from 2021; Microsoft gains market share. (2023). Retrieved from https://www.srgresearch.com/articles/cloud-spending-growth-rate-slows-but-q4-still-up-by-10-billion-from-2021-microsoft-gains-market-share.

[10] Elisabeth, D.R., Wardhani, P.S., & Rohman, M.F. (2025). The effect of transformational leadership style on employee performance through job satisfaction as a mediating variable. *World Journal of Advanced Research and Reviews*, 25(1), 1072-1078. doi: 10.30574/wjarr.2025.25.1.0172.

[11] Foley, M.J. (2020). *Microsoft wins $10 billion US Department of Defense JEDI cloud contract*. Retrieved from https://www.zdnet.com/article/microsoft-wins-10-billion-u-s-department-of-defense-jedi-cloud-contract/.

[12] Fordyce, J., & Murray, A. (2023). *Fortune's 2023 100 best companies to work for list is out*. Retrieved from https://fortune.com/2023/04/04/fortunes-2023-100-best-companies-to-work-for-list-is-out-ceo-daily/.
[13] GE and Microsoft partner to bring Predix to Azure, accelerating digital transformation for industrial customers. (2016). Retrieved from https://news.microsoft.com/source/2016/07/11/ge-and-microsoft-partner-to-bring-predix-to-azure-accelerating-digital-transformation-for-industrial-customers.
[14] Gun, L., Imamoglu, S.Z., Turkcan, H., & Ince, H. (2024). Effect of digital transformation on firm performance in the uncertain environment: Transformational leadership and employee self-efficacy as antecedents of digital transformation. *Sustainability*, 16(3), article number 1200. doi: 10.3390/su16031200.
[15] Hansen, M.T., & Birkinshaw, J. (2007). The innovation value chain. *Harvard Business Review*, 85(6), 121-130.
[16] Hastings, R., & Meyer, E. (2020). *No rules rules: Netflix and the culture of reinvention*. London: Penguin Press.
[17] Jang, S.W., & Ahn, W.C. (2021). Financial analysis effect on management performance in the Korean logistics industry. *The Asian Journal of Shipping and Logistics*, 37(2), 245-252. doi: 10.1016/j.ajsl.2021.06.003.
[18] Johannes, F.N., Hendriks, C., & Maramura, T.C. (2025). Corporate governance implementation: A key instrument for effective administration and management of state-owned enterprises – a scoping review. *Frontiers in Political Science*, 7, article number 1511708. doi: 10.3389/fpos.2025.1511708.
[19] Kaplan, R.S., & Norton, D.P. (1992). *The balanced scorecard – measures that drive performance*. Retrieved from https://hbr.org/1992/01/the-balanced-scorecard-measures-that-drive-performance-2.
[20] Khan, M.S., Khan, M., Du, M., & Khan, R. (2024). The impact of transformational leadership on employee's performance: The mediating role of job satisfaction and employees' commitment. *International Journal of Learning and Intellectual Capital*, 21(1), 30-44. doi: 10.1504/IJLIC.2023.10058304.
[21] Kobushko, I., & Manzhola, B. (2023). The role of digital transformation in management optimization organizations. *Problems of Modern Transformations. Series: Economics and Management*, 10. doi: 10.54929/2786-5738-2023-10-04-08.
[22] Kovalchuk, V. (2023). Analysis of trends in innovative development of the national economy. *Economy and Society*, 58. doi: 10.32782/2524-0072/2023-58-33.
[23] Lucas, H.C., & Goh, J.M. (2009). Disruptive technology: How Kodak missed the digital photography revolution. *Journal of Strategic Information Systems*, 18(1), 46-55. doi: 10.1016/j.jsis.2009.01.002.
[24] Minkovska, A.V., & Molchanov, A.S. (2023). The theoretical aspects of innovative management in increasing the efficiency of agricultural enterprise. *Business Inform*, 8, 295-300. doi: 10.32983/2222-4459-2023-8-295-300.
[25] Patagonia. (n.d.). Retrieved from https://www.patagonia.com/home/.
[26] Pérez Estébanez, R., & Sevillano Martín, F.J. (2025). Business sustainability and its effect on performance measures: A comprehensive analysis. *Sustainability*, 17(1), article number 297. doi: 10.3390/su17010297.
[27] Piletska, S.T., & Korytko, T.Y. (2018). Enterprise management efficiency, approaches and methods for its evaluation. *Problems of Systemic Approach in the Economy*, 5(67), 100-106. doi: 10.32782/2520-2200/2018-5-17.
[28] Pingilili, A., Letsie, N., Nzimande, G., Thango, B., & Matshaka, L. (2025). Guiding IT growth and sustaining performance in SMEs through enterprise architecture and information management: A systematic review. *Businesses*, 5(2), article number 17. doi: 10.3390/businesses5020017.
[29] Podolchak, N.Y. (2004). Principles and aspects of assessing the effectiveness of organization management systems. *Bulletin of Lviv Polytechnic National University*, 507, 126-131.
[30] Porter, M.E. (1985). *The competitive advantage: Creating and sustaining superior performance*. New York: Free Press.
[31] Pylypenko, S.M. (2016). The theoretical foundations for assessing the effectiveness of enterprise activity. *Global and National Problems of Economy*, 10, 452-456.
[32] Rats, O.M. (2008). Defining the essence of the concept of "enterprise functioning efficiency". *Economic Space: Collection of Scientific Works*, (15), 275-285.
[33] Rock, D. (2020). *The NLI interview: Patagonia's Dean Carter on how to treat employees like people*. Retrieved from https://www.forbes.com/sites/davidrock/2020/01/09/the-nli-interview-patagonias-dean-carter-on-how-to-treat-employees-like-people/.
[34] Shchehlova, O., Sudakova, O., & Lager, M. (2017). Enterprise management efficiency and approaches to its definition. *Uzhorod National University Herald. Series: International Economic Relations and World Economy*, 12(2), 186-190.
[35] The data-driven enterprise of 2025. (2022). Retrieved from https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-data-driven-enterprise-of-2025.
[36] Van Waeyenberg, T., Peccei, R., & Decramer, A. (2020). Performance management and teacher performance: The role of affective organizational commitment and exhaustion. *The International Journal of Human Resource Management*, 33(4), 623-646. doi: 10.1080/09585192.2020.1754881.

Концептуальні засади оцінки ефективного менеджменту підприємства

Віталій Зянько
Доктор економічних наук, професор
Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0000-0003-0095-5248

Сергій Мурга
Аспірант
Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0009-0008-1360-933X

Анотація. В умовах глобальних економічних змін і посилення конкуренції ефективність менеджменту є ключовим чинником стійкого розвитку підприємства. Попри наявні теоретичні напрацювання, застосування комплексних методів оцінки ефективності залишається складним через економічні виклики та недостатній рівень кваліфікації персоналу. Це підкреслює актуальність удосконалення методології оцінки управлінської діяльності. Метою статті було комплексне теоретико-методологічне обґрунтування сутності та вимірів ефективності менеджменту підприємства, а також розробка системного підходу до її оцінювання в умовах економічних викликів. Для досягнення поставленої мети в роботі використано методи: емпіричного та системного аналізу, узагальнення та конкретизації, індукції та дедукції, структурного та функціонального аналізу. У статті узагальнено поняття «ефективність менеджменту», визначено її як результативність управлінської діяльності, що проявляється у ступені досягнення цілей за умови раціонального використання ресурсів. Виокремлено три ключові виміри ефективності: економічний, організаційний та соціальний, кожен з яких деталізовано через відповідні показники та критерії. Систематизовано основні принципи оцінювання ефективності менеджменту (комплексність, безперервність, збалансованість, часовий вимір, динамічність та адаптивність). Розроблено та представлено модель оцінки ефективного менеджменту підприємства, яка охоплює вхідні показники, внутрішні процеси, вихідні результати (фінансові та нефінансові), вплив зовнішнього середовища, інтегральну оцінку та рекомендації для стратегічних рішень. Підкреслено взаємозв'язок усіх форм ефективності та їх залежність від численних зовнішніх і внутрішніх факторів. Визначено основні виклики, які перешкоджають повноцінному впровадженню сучасних методів оцінки ефективності на практиці. Практична цінність дослідження полягає у створенні універсальної моделі оцінки ефективності менеджменту, що дозволить підприємствам підвищити об'єктивність аналізу, оптимізувати ресурси та ухвалити обґрунтовані управлінські рішення для покращення конкурентоспроможності. Крім того, виявлені проблеми впровадження цієї моделі можуть стати основою для розробки цільових програм підвищення кваліфікації

Ключові слова: управлінська діяльність; модель оцінки менеджменту; стратегічне управління; система показників; оптимізація ресурсів

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 17.04.2025; Revised: 04.08.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.42

UDC 330.34:005.334 [52, 96]

Analysis of the COSO risk management model: Main aspects

Inna Vishtak*
PhD in Technical Sciences, Associate Professor
Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
https://orcid.org/0000-0001-5646-4996

Alina Podorozhnyuk
Student
Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
https://orcid.org/0009-0007-5526-9049

Eliza Voitko
Student
Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
https://orcid.org/0009-0005-4381-2142

Abstract. The relevance of the study was determined by the growing uncertainty in the external environment, which requires the implementation of effective risk management systems. The aim of the study was to analyse the key aspects of the Committee of Sponsoring Organisations of the Treadway Commission Enterprise Risk Management (COSO ERM) model and to justify its application for integrated risk management in enterprises. The study uses methods of analysis of scientific sources, structural and logical generalisation, and a systematic approach. The theoretical and practical aspects of risk management in an enterprise are considered, taking into account the challenges and trends of the global market. A systematic approach to risk management is analysed, which provides comprehensive coverage of all business processes related to the identification, assessment and response to risks. The key components of the COSO ERM methodology, which is one of the most recognised in global practice, are identified. The COSO ERM model is based on the principles of integrated management, where risks are viewed not as isolated threats, but as part of strategic planning and management processes. The application of the three-component COSO structure, which included enterprise objectives, internal environment and organisational levels of influence, was considered. This approach made it possible to harmonise strategic, operational and reporting processes within a single control system. The essence of the relationship between the main elements of risk management was revealed, which made it possible to adapt the model to the specifics of the functioning of enterprises in various industries. The feasibility of implementing the COSO model as a tool for increasing business resilience to external uncertainty is argued. Methodological approaches to improving risk management in accordance with the requirements of economic security and strategic development are proposed. The practical value of the study lies in the possibility of using the results by specialists in the field of risk management, internal audit and strategic management

Keywords: internal control; strategic planning; risk assessment; corporate governance; model adaptation; risk integration; business resilience

Suggested Citation:
Vishtak, I., Podorozhnyuk, A., & Voitko, E. (2025). Analysis of the COSO risk management model: Main aspects. *Innovation and Sustainability*, 5(3), 42-52. doi: 10.31649/vis/3.2025.42.

*Corresponding author

Introduction

Organisations face numerous risks that can affect their stability and effectiveness. An underdeveloped risk management system can lead to financial losses, legal sanctions and reduced competitiveness. The implementation of an integrated approach to risk management, in particular the Committee of Sponsoring Organisations of the Treadway Commission (COSO) model, has helped to reduce negative consequences and improve the effectiveness of corporate governance. This article examined how the COSO model has contributed to improving risk management processes in organisations. A significant number of scientific works have been devoted to risk management issues in the context of corporate governance and strategic planning. After the COSO model was updated in 2017, scientists actively analysed its new components, which covered aspects such as organisational culture, information flows, and the integration of risks into strategic processes.

In scientific literature, the COSO Enterprise Risk Management (ERM) model is considered the leading conceptual framework for integrating risk management into strategic enterprise management. According to J. Fraser *et al.* (2021), COSO not only identifies risks but also fosters a sustainable culture of management decision-making that takes into account both strategic and operational risks. The authors emphasised that the modernised version of COSO 2017 allows organisations to better adapt to changes in the environment, increasing their flexibility and ability to respond quickly to challenges. I. Benekos *et al.* (2020) analysed COSO ERM as a dynamic solution, pointing out that the components of the model – strategic, operational, reporting and regulatory environments – provide an adaptive framework that helps organisations respond quickly to emergencies. An ERM index is emerging that allows the effectiveness of the model's implementation to be measured in order to improve goal setting and management methods. P. Dahmen (2023) noted that COSO ERM forms the basis of organisational resilience in crisis situations. During the COVID-19 pandemic, organisations that implemented ERM effectively reduced revenue volatility and increased their ability to adapt – "flexibility like a rubber ball" – confirming the link between ERM and resilience. The article by W. Gleißner & T. Berger (2023) describes the "robust enterprise" platform, where ERM, combined with a sustainable strategy and financial security, forms, according to the authors' approach, the basis for enterprise sustainability. The main emphasis is on a portfolio approach, early risk warning and a culture of risk awareness. An analysis of sources indicates the effectiveness of the COSO model as a tool for increasing the flexibility and sustainability of organisations, while emphasising the difficulties of its application. Despite numerous studies in the field of risk management, many aspects remain insufficiently developed in the context of modern transformational changes, digitalisation and the growing uncertainty of the external environment. The methodology for adapting the universal COSO ERM model to the specific conditions of enterprises in countries with transitional economies, including Ukraine, needs to be refined. The existing literature focuses mainly on general approaches, without taking into account industry specifics, the organisational structure of enterprises and the practical difficulties of implementing integrated risk management systems. Issues related to the effective integration of internal control systems with strategic planning processes and key risk assessment remain under-researched.

The relationship between the maturity of an enterprise's organisational culture and the effectiveness of COSO ERM implementation requires separate attention. The aim of this article was to analyse the features of COSO Enterprise Risk Management (ERM) model implementation, evaluate its effectiveness, and formulate recommendations for its adaptation to achieve the strategic goals of the enterprise. The objectives were: to address gaps related to the practical application of the three-component COSO model in risk management in a transformational business environment, particularly for enterprises in countries with transitional economies, such as Ukraine; to identify barriers and problems in the practical implementation of this model in the context of digitalisation, growing external uncertainty and organisational inertia; and to develop recommendations for its adaptation to current challenges, taking into account industry specifics, the level of maturity of organisational culture and the need for integration with strategic planning and control systems.

Materials and Methods

This study was based on analytical reports of international organisations (COSO, 2017; SCCE & HCCA, 2020; Walker, 2022; Reuters, 2025), data from statistical databases on risk management (Cybersecurity and ERM…, 2024; How power and…, 2025), national legal and regulatory acts of Ukraine, such as the Law of Ukraine No. 996-XIV (1999) and the Law of Ukraine No. 2258-VIII (2017), as well as international risk management standards ISO 31000:2018 (2018) and ISO 22301:2019 (2019).

The research employed a combination of economic-analytical, comparative, and systemic methods, which allowed for a comprehensive assessment of the effectiveness of the COSO risk management model under modern challenges. The economic-statistical method served as the main tool for analysing the dynamics of change in internal control and risk management systems in organisations of various scales, particularly in enterprises of the industrial and financial sectors. The comparative method was used to identify key differences in the implementation of COSO ERM components. This approach made it possible to determine the effectiveness of the model's application depending on the field of activity, organisational structure, and external environment. The systemic approach enabled the integration of information on COSO ERM components – namely the control environment, risk assessment, control activities, information and communication, and monitoring – into a holistic analytical framework, which helped to reveal interconnections between the level of risk management and

the strategic resilience of organisations. The analysis also included an examination of the interdependence between COSO ERM implementation and indicators of operational efficiency, institutional accountability, and adaptability to crisis situations.

The content analysis method was used to systematise scientific sources and practical case studies regarding the application of COSO in companies. The main information sources included scientific publications, analytical reports, and regulatory-methodological documents on risk management (Makarchuk, 2020; Nazarova *et al*., 2021; Dvorski Lacković *et al*., 2022). To assess the institutional context and global trends, data from the IMD World Competitiveness Ranking (National Competitiveness and Productivity Council, 2024) were utilised, allowing the impact of the external environment on the effectiveness of risk management systems to be examined. The analysis of academic publications, conducted to form the theoretical and methodological basis of the study, encompassed works dedicated to the implementation of the COSO model in the areas of risk management, internal control, and strategic planning. To address the identified shortcomings, a comprehensive methodological approach was applied, which included economic-statistical, comparative, and systemic analysis. This was necessary not only to identify differences in the implementation of the COSO model across enterprises of different types but also to assess its impact on strategic resilience and the capacity for crisis adaptation. The application of the systemic approach facilitated a deeper understanding of the interconnections between individual elements of the risk management system and their influence on the overall level of organisational effectiveness.

Results and Discussion

In the business environment, risk management is a key element of effective corporate governance. A systematic approach to risk management has enabled companies not only to respond to potential threats, but also to strategically plan their activities, taking into account potential risks at various levels. One of the most effective methodologies in this area was the COSO ERM model, which provided a comprehensive approach to identifying, assessing and responding to risks. Before examining the COSO model in detail, it is important to first understand the basic concepts of risk (Table 1) and risk management (Table 2). Without a clear understanding of these concepts, it was impossible to fully appreciate the value of structured risk management methodologies such as COSO. Standards and authors' works were analysed and used to define the concepts of "risk" and "risk management". Risk is considered an integral part of any business activity, and the ability to effectively identify, assess and respond to risks has been key to ensuring the sustainability and development of an organisation. Risk management encompasses the strategies and processes that organisations have used to minimise the potential negative impact of risks on their objectives.

Table 1. Definition of the concept of "risk"

Source	Definition
ISO 31000:2018	Risk – the effect of uncertainty on objectives. This effect can be positive or negative and is associated with the possibility of deviation from expectations.
D. Hillson	Risk – an event or condition that, if it occurs, will affect project objectives. The definition focuses on the uncertainty of the future.
P. Hopkin	Risk – a combination of the probability of an event occurring and its consequences. The definition focuses on risk assessment as a quantitative approach.

Source: summarised by the authors based on P. Hopkin (2017), ISO 31000:2018 (2018), D. Hillson (2020)

Table 2. Definition of the concept of "risk management"

Source	Definition
ISO 31000:2018	Risk management – the coordinated actions of an organisation to manage and control risks that may affect the achievement of its objectives.
COSO	Risk management – a process carried out by the board of directors, management and other employees to identify potential events that may affect the organisation and manage risk within acceptable levels.
J .Fraser *et al.*	Risk management – a continuous process integrated into organisational structures that aims to identify, analyse and respond to risks.

Source: summarised by the authors based on COSO (2017), ISO 31000:2018 (2018), J. Fraser *et al.* (2021)

The COSO internal control system was established in 1992 in the United States against the backdrop of numerous cases of fraud in business practices affecting the US, the UK, Canada and Luxembourg. These events highlighted the need to improve internal control mechanisms and develop unified recommendations for the organisation of control procedures. COSO has developed a basic set of principles and guidelines that form the basis for building a reliable internal control system. These principles outline good professional practice for creating business processes that ensure the effective functioning of organisations and the achievement of their strategic objectives (Moeller, 2016; Braim & Bilal, 2023). More than 30 years have passed since the initial concept was introduced, during which both corporate structures and the level of automation of management processes have undergone significant transformation. In this regard,

the COSO model has evolved, which was reflected in the emergence of three key modifications: COSO I, COSO II and the integrated COSO ERM model (COSO, 2017; SCCE & HCCA, 2020; Walker, 2022; Reuters, 2025).

The latest version of the concept focuses on integrating risk management with the strategic objectives of the enterprise, providing tools that include objective setting, event identification, risk assessment, response development, monitoring and information support – for effective response to changes in the external and internal business environment. The implementation of the COSO ERM system allows enterprises not only to respond effectively to risks, but also to make informed management decisions based on an analytical approach to control. For a deeper understanding of the features of this system, it is advisable to analyse each of its key components separately, as shown in Figure 1, which will allow for a more accurate assessment of its impact on corporate governance.

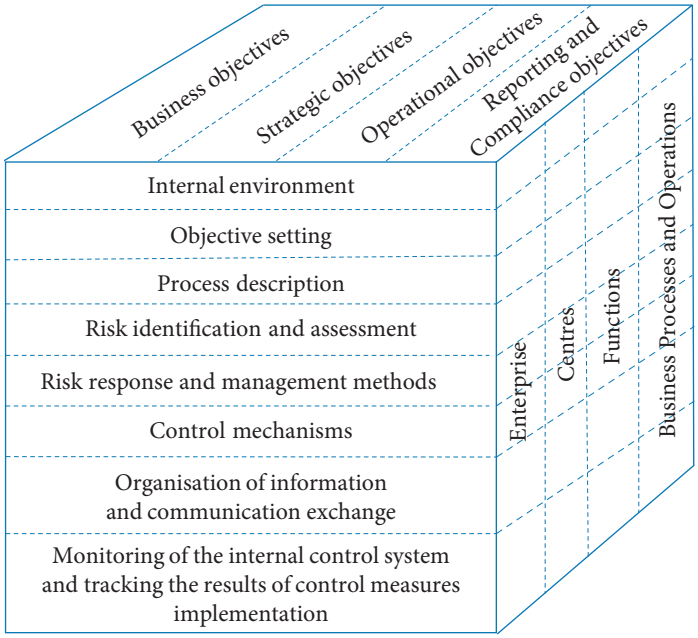

Figure 2. COSO-ERM integrated internal control concept

Source: developed based on COSO (2017)

The image illustrates a three-dimensional model of a risk management system based on the COSO ERM concept, which serves as a visual representation of an integrated internal control system. This model is depicted in the form of a cube, where each face reflects key elements of effective risk management within an organisation. The first key aspect of the COSO model is "Internal Control – Integrated Framework," which focuses on internal control. It is based on five interrelated components. The control environment provides the foundation – it covers ethical standards, staff competence, and the management system. The next step is risk assessment, which allows for the identification and evaluation of threats to achieving objectives (Koli *et al*, 2025). Control activities are the actions and procedures implemented to mitigate risks. Information and communication ensure access to data and effective interaction within the organisation. The final component, monitoring, allows for continuous evaluation of the quality of internal control and its improvement.

In the work of L. Koli *et al.* (2025), the COSO structure is presented as a logical and interdependent system that encompasses the key components of internal control. The authors emphasise the importance of each component in ensuring reliable risk management, which aligns with the classic architecture of the model. This interpretation of the COSO model's components is consistent with its generally accepted understanding and effectively demonstrates their integration into management practice. For comparison, R.R. Moeller (2016) more thoroughly underscores the connection between the control environment and corporate culture, which deepens the understanding of the first component of the COSO model as the basis for forming a long-term risk management strategy. Meanwhile, the findings of J.R.S. Fraser *et al.* (2021) expanded the analysis, demonstrating how COSO ERM components can be adapted to specific industries through flexible monitoring mechanisms and integration with digital tools, which was not detailed in L. Koli *et al.* (2025). The results of this research correlate with the authors' conclusions, confirming that the implementation of the COSO ERM model contributes to increased management maturity, the integration of risks into strategic planning, and the ensuring of enterprise resilience, particularly in the context of digital transformation.

In 2017, COSO updated its framework, creating a second important framework: "Enterprise Risk Management – Integrating with Strategy and Performance" (How

power and…, 2025). This model was aimed not only at control but also at strategic risk management. It focuses on corporate governance and risk management culture, integrates risk assessment into strategic planning and decision-making, and helps to improve performance. The model also includes a continuous review of processes and a reporting system that makes risk management transparent to all stakeholders (Cybersecurity and ERM…, 2024). COSO has become a standard in auditing, financial management, compliance, and corporate governance. It is used worldwide by large companies, banks, government bodies, and auditing firms. Applying the COSO model gives companies strategic advantages that positively affect management effectiveness, control, financial stability, and stakeholder trust. One of the main advantages is improved risk management. COSO allows for a systematic approach to identifying and assessing risks, taking timely measures to minimise them. This means that a company can not only react to problems but also anticipate them and act proactively (How power and…, 2025). The analysis of the source confirmed the strategic nature of the updated COSO ERM model, which integrates risk management into planning, control, and reporting processes, allowing companies to increase their transparency and resilience in a changing environment; the results of this study correlate with own conclusions, as they also attest to the advantages of comprehensive risk management for strengthening management effectiveness and stakeholder trust.

The COSO model significantly enhances corporate compliance with current legislation, especially in areas such as financial accounting, internal control, auditing, and corporate governance. Its application provides a framework for implementing a control system that is necessary for adhering to regulatory requirements, particularly the provisions of the Sarbanes-Oxley Act (SOX), enacted in the US in 2002 in response to financial scandals at companies like Enron and WorldCom (Beasley *et al*., 2017). The findings of this study correlate with the conclusions of M.S. Beasley *et al*. (2017), as it also demonstrates that using COSO ERM helps to create a transparent and controlled management environment, and increases corporate compliance with both national and international legislation. This is particularly relevant given the digital transformation and heightened requirements for financial and non-financial reporting. It is reasonable to agree that the practical value of COSO as a regulatory compliance framework remains considerable, owing to its adaptability and systematic nature.

According to Section 404 of SOX (Public Law No. 107-204, 2002), companies are obliged to report annually on the effectiveness of internal control over financial reporting, while independent auditors must provide attestation of these reports. The COSO Framework 2013 (an updated version of the original 1992 framework) has been officially recognised by the U.S. Securities and Exchange Commission as an authoritative approach for evaluating internal control. The use of COSO enables companies to identify key risks and control points, document control procedures and policies, regularly monitor system effectiveness, and demonstrate transparency and regulatory compliance. In addition, COSO reduces legal risks, improves the reliability of financial reporting, and enhances communication between management, supervisory bodies, and shareholders (Moeller, 2013).

Thus, the implementation of the COSO model is not merely a managerial decision but a critically important step towards legal compliance, reducing regulatory pressure, and building investor confidence, especially within a globalised market environment. It reduces legal risks and increases the overall transparency of corporate operations. Another important advantage of implementing COSO is the growth of operational efficiency. Owing to clearly defined processes and control measures, companies can optimise internal procedures, minimise duplication of functions, reduce costs, and improve cross-departmental interaction. All of these factors contribute to better decision-making based on reliable information (University of Massachusetts Amherst, 2024). Furthermore, the COSO model substantially strengthens the system of corporate governance, grounded in the principles of integrity, transparency, accountability, and effective control.

COSO (2013) identifies five key components of the internal control system, with particular emphasis on the control environment as the foundation upon which the entire risk management framework is built. These include: ethical values and integrity (whereby the organisation cultivates a corporate culture in which honesty and ethics are non-negotiable standards of behaviour); accountability (ensuring responsibility is defined at all managerial levels for both decision-making and compliance with control procedures); board of directors and audit committee involvement (providing oversight of risks and the effectiveness of internal policies); staff competence (ensuring appropriate qualifications and training); and an organisational structure that supports effective control. The role of management in the COSO model is fundamental. Management is responsible for developing and implementing the internal control system, formulating risk management policies, creating an effective information environment, and fostering a culture of transparency (COSO, 2013; Moeller, 2013). Due to these principles, the COSO model helps to increase investor and partner trust for several reasons:

1. Transparent financial reporting allows investors to have a clear understanding of the company's financial status.

2. Reduction of fraud and unethical behaviour through preventative control procedures.

3. Increased stability of management decisions, which signals a company's reliability in the long term.

4. The presence of a clear system for responding to risks reduces investor uncertainty about the company's future.

In combination, this enhances a company's investment appeal, contributes to its resilience to crises, and ensures compliance with ESG (Environmental, Social, and Governance) norms. These are increasingly seen as mandatory for large companies in the global market. A well-structured

control system based on the COSO model also strengthens information security, helps to better protect data, and reduces the risk of cyber attacks (Risk Management Association of India, 2025). Overall, implementing COSO allows organisations not only to meet standards but also to gain a competitive advantage in the market through resilience, flexibility, and long-term strategic thinking.

To better understand the specific features of the COSO ERM model, it was compared with another widely used international framework – ISO 31000:2018 (2018). Both approaches share the common objective of ensuring effective risk management but differ substantially in structure, philosophy, and scope of application. At the national level, the Law of Ukraine No. 996-XIV (1999) defines the legal and regulatory framework for accounting and reporting, including requirements for internal control that guarantee the transparency and reliability of financial information necessary for managerial decision-making. Similarly, the Law of Ukraine No. 2258-VIII (2017) emphasises the importance of ensuring the quality of internal control and risk management systems in order to achieve the reliability of financial reporting, which closely aligns with the principles of the COSO model. The findings of this research are consistent with the provisions of these legislative acts, since COSO ERM likewise integrates risk assessment, control, and monitoring processes into corporate governance systems, thereby supporting compliance with requirements on the quality of accounting, reporting, and auditing. It is reasonable to conclude that these laws provide a solid basis for the implementation of COSO in the Ukrainian corporate sector, ensuring compliance with international standards and fostering the development of effective internal control. Within this study, these normative acts were employed as a methodological foundation for analysing the potential adaptation of COSO ERM to the national regulatory environment.

COSO ERM focuses on integrating risk management into the overall system of strategic management and corporate control. Its peculiarity lies in its clearly structured, multi-dimensional model that includes components of internal control, organisational objectives, and levels of influence. It involves the active participation of the board of directors and management, which is particularly important in large corporations. ISO 31000:2018 (2018), in turn, is built as a flexible framework that can be adapted to any type of organisation. It does not contain rigid requirements or a structured model but provides general principles and guidelines for the risk management process: establishing the context, identification, assessment, response, and monitoring. The main difference is that COSO considers risks as part of achieving strategic goals, while ISO 31000:2018 (2018) focuses on a continuous cycle of assessment and response. Additionally, COSO requires greater effort regarding internal audit and control, which can complicate its implementation in small and medium-sized businesses. At the same time, ISO 31000:2018 (2018) is often used in the public sector, project management, and non-profit organisations. It is also appropriate to consider ISO 22301:2019 (2019), which focuses on ensuring business resilience by creating a business continuity management system. This standard complements the COSO approach by focusing on preparation for disruptions, overcoming them, and a quick resumption of operations, which is especially important for companies operating in a highly volatile external environment. Its advantage is its universality, and its disadvantage is less procedural detail compared to COSO. Thus, the choice between models depends on the scale of the organisation, available resources, industry specifics, and the degree of integration of risk management into the overall strategy. In the practice of large corporations, a combination of both models is appropriate: COSO as a strategic foundation and ISO as a tactical tool for specific processes.

During the analysis of risk management practices, it was established that the COSO ERM model, especially after its 2017 update, significantly transformed approaches to corporate control and risk management in both public and private organisations. The main innovation was a shift in focus from a traditional control approach to strategic risk management, which is integrated into the decision-making process at all levels (COSO, 2017). Before the implementation of COSO ERM, companies typically viewed risks in isolation within individual departments. The emergence of the COSO ERM Framework contributed to the institutionalisation of a systematic approach to risk management, covering strategic, operational, financial, and regulatory risks (Frigo & Anderson, 2011). Thus, control became not only a mechanism for detecting violations but also a tool for building a competitive advantage by identifying risks at the strategic planning stage. The results of this study correlate with the authors' findings, as it was established that the integration of COSO ERM into strategic planning processes increases an organisation's ability to proactively identify and minimise risks, which ensures long-term stability and competitiveness. The authors' approach is worth agreeing with, according to which control within COSO ERM not only performs a function of monitoring and compliance but also serves as a tool for achieving strategic advantages through the early identification of risks and the construction of a management system based on an analytical approach.

G. Mensah & D. Gottwald (2016) noted that the successful implementation of the COSO ERM Framework contributes to an organisation's increased resilience due to better alignment of objectives, resources, and risk assessment that arise both within the company and in the external environment. The research showed that companies that use COSO as a tool for strategic risk management demonstrate better results in the long term. This is worth agreeing with, as the results of this study confirm that the implementation of COSO ERM strengthens the strategic alignment between management objectives, risk assessment, and resource allocation, which correlates with the analytical conclusions obtained regarding the long-term effectiveness of such approaches. The work of J. Lam (2014) also confirmed the effectiveness of COSO as a flexible model that allows management to integrate risk management into business

processes without losing efficiency. The author emphasised that it is the adaptability of the COSO model that enables organisations to create "antifragile" management systems – capable not just of withstanding crises but of growing because of them. This can be agreed with, as the adaptability of the COSO ERM model, identified in the analysis, indeed makes it possible to form management systems that not only maintain functionality during periods of crisis but also contribute to the organisation's development through proactive risk management. In addition, an updated study (Scale digital transformation…, 2021) proves that organisations that use COSO as a basis for building internal control systems and strategic planning demonstrate a higher level of resilience in conditions of economic uncertainty. COSO allows for the creation of mechanisms for quick adaptation through effective monitoring of key risks and opportunities.

The COSO ERM model also transformed the role of a company's governing bodies the board of directors and management received clear guidelines for risk monitoring, responsibility, and accountability, which has become a standard for investors, shareholders, and regulators (Beasley *et al.,* 2017). Through the implementation of COSO ERM, the level of alignment between an organisation's strategic goals and its risk profile increases. In addition, the model has been adapted to changes in the business environment, including the growing impact of cyber risks, ESG factors, and crisis conditions (e.g., the COVID-19 pandemic), which proves its flexibility and relevance in modern corporate governance (SCCE & HCCA, 2020; Huber *et al*., 2025). Comparing the approach of C. Huber *et al*. (2025) with more classic approaches, such as in the work of J. Lam (2014), one can see a certain evolution in the focus of COSO's application. While J. Lam (2014) emphasised the flexibility of the model as a tool for adapting to external threats, C. Huber *et al*. (2025) went a step further, demonstrating its ability to be strategically integrated into management practices and increase organisational resilience in conditions of growing complexity. Thus, the results of the C. Huber *et al*. (2025) study confirmed the relevance of COSO ERM as not only a tool for compliance with regulatory requirements but also an effective means of forming a comprehensive corporate governance system capable of quickly responding to new types of risks. The results of this study correlate with the results of the present analysis of the implementation of the COSO model in the context of the transformational business environment of enterprises with a transitional economy.

T. Viscelli *et al*. (2016) also analysed the role of ERM in the development of corporate risk management, pointing out the importance of the interrelationship between strategy, budget, and risk culture. They argue that a focus on risk management directly correlates with an organisation's adaptability in crisis situations, which reflects some of the COSO principles. It is reasonable to agree with the conclusions of T. Viscelli *et al.* (2016), as the results of the study confirm that an effective combination of risk management with strategic planning and budgeting contributes to an increase in the enterprise's flexibility in response to external threats. C. Hayne & C. Free (2014) described the process of institutional internalisation of COSO ERM as an innovative practice – from the creation of standards to widespread adoption. This shows that COSO has become not just a tool, but a globally recognised model, integrated into the culture and management processes of global organisations. It is worth agreeing with the approach of C. Hayne & C. Free (2014), who argued that the COSO model has transformed from a set of technical instructions into an institutionalised management practice, recognised at a global level and integrated into corporate culture. I. Makarchuk (2020) considered strategic risk management as a prerequisite for increasing the effectiveness of corporate governance in an unstable environment. The results of this study correlate with this approach, as the expediency of integrating risk management into the overall strategy of the enterprise has been confirmed. K. Nazarova *et al*. (2021) analysed the use of a questionnaire as a tool for assessing internal control in accordance with the COSO Framework, with which it is worth agreeing, as the results of this study also confirmed the effectiveness of standardised self-assessment tools for improving the control environment. K. Zajc Kejžar *et al.* (2024) in their work showed that a high level of global uncertainty forces European companies to revise their approaches to risk management, which is consistent with the conclusions of this study regarding the need to adapt COSO ERM to new external environmental challenges. I. Dvorski Lacković *et al.* (2022) proposed a three-factor model for the implementation of ERM in non-financial companies, which emphasises the importance of organisational culture, leadership, and the regulatory framework. This approach can be agreed with, as the results of the analysis also confirmed the dependence of the effectiveness of COSO implementation on internal organisational factors. J. Awad & R. Martín-Rojas (2024) proved that digital transformation strengthens organisational resilience through the development of innovation and learning. The results of the study confirm the relevance of these factors in the context of adapting COSO ERM to the conditions of digitalisation. T. Liu & J. Qi (2024) investigated the mechanism of the impact of digital transformation on enterprise resilience from the perspective of financial sustainability. Their conclusion about the critical importance of digital processes for effective risk management is consistent with the conclusions obtained in this work regarding the adaptation of COSO to the conditions of the digital economy.

Enterprises that implemented elements of this model demonstrated a higher level of adaptability to external threats, a better structure of internal processes, and increased transparency of management decisions. The implementation of COSO ERM, particularly its components of strategic planning, internal control, and monitoring, contributed to the construction of systems oriented toward preventative response (COSO, 2017). In various sectors of the economy, the model has been used as a tool for

integrating risks into a company's overall strategic cycle. Companies that applied a holistic approach were able to reduce losses associated with crisis events such as the COVID-19 pandemic, cyber attacks, supply chain disruptions, or regulatory changes. For example, in 2008, Airbus Group deployed a centralised ERM system based on the Active Risk Manager (ARM) platform, which integrates COSO principles (Airbus Group – case study, n.d.). Due to the standardisation of risks, the centralisation of monitoring, and the transparency of processes, the company achieved: a reduction in the duplication of control measures; a rapid response to external threats; increased flexibility in crisis situations; and the preservation of operational resilience and business value. In Austria, a number of medium-sized family companies modernised their risk management processes during the pandemic by implementing both formal COSO ERM tools (e.g., risk matrices, scenario analysis) and informal practices. This comprehensive approach contributed to an increase in their resilience, employee loyalty, and operational crisis management (Cobb, 2023). The combination of COSO with modern digital tools for analytics and information exchange proved to be effective, which significantly increased the quality of real-time risk monitoring.

One of the strongest aspects of COSO ERM has been the creation of a unified management environment where strategy, control, and risk assessment function in an interconnected way. This synergy has ensured systematic accountability and fostered the development of corporate ethics and transparency. At the same time, challenges have also been observed. Some businesses have applied the model formally, limiting themselves to documenting policies without practical implementation. In such cases, the expected results were not achieved, which indicated a need to change approaches to internal communication and staff training. Another important aspect is the practice of adapting COSO ERM to the conditions of small and medium-sized businesses. Many companies use a simplified version of the model – for example, by focusing only on key risks or operational efficiency. Despite limited resources, even basic implementation allows for the creation of a foundation for long-term risk-oriented management. A further important point is the combination of COSO with other framework models, particularly ISO 31000:2018 (2018). This integration promotes a more flexible approach to risk management, especially in multinational companies. In the context of digital transformation, the effectiveness of COSO has grown when supplemented with IT solutions – analytical platforms, automated control tools, and ERP systems.

The COSO ERM methodology gained significant dissemination in organisations where compliance with regulatory requirements, financial reporting, and accountability to external stakeholders were essential. It enables risks to be formalised, changes in the external environment to be tracked, and complex processes to be effectively managed. In a number of case studies, the model demonstrated a positive impact on reducing losses, improving the effectiveness of internal audit, and strengthening investor trust. For instance, the findings of R. Moshesh *et al.* (2018) showed that the implementation of an adapted ERM framework based on the COSO model contributed to: improving alignment between strategic objectives and risk processes; reducing losses through revised organisational architecture; and enhancing the role of personnel by upgrading their skills to work with ERM. At the same time, critical review revealed that to achieve full effectiveness the model required deep cultural transformation within organisations. Without the formation of a risk management culture, leadership involvement, and systematic engagement with employees, results remained limited. In some cases, there was a lack of flexibility in adapting the model to the specifics of an industry or region, which complicated its implementation. Attention was also paid to the growing importance of innovative risks – in particular, those related to the implementation of artificial intelligence, automation, and cloud services. COSO ERM allowed for the systematisation of approaches to managing these challenges but required a constant updating of practices in response to new threats. Effective management of modern risks became possible only under conditions of a regular review of procedures, openness to change, and the involvement of external expertise. The general assessment of the practical application of COSO ERM has shown its ability to increase the flexibility and resilience of organisations. Its contribution to building systems capable of not only reacting to risks but also using them as a source of strategic opportunities was important.

Conclusions

The study achieved its set objective, which was to analyse the peculiarities of implementing the COSO ERM risk management model in the management practice of enterprises, evaluate its effectiveness, and formulate recommendations for adapting this model to the conditions of the transformational business environment. Attention was paid to Ukrainian enterprises with a transitional economy, where the level of risk, institutional uncertainty, and regulatory pressure remains high, while taking into account the experience of foreign enterprises and organisations.

An analysis of literary sources and examples of COSO ERM application made it possible to conclude that this model is one of the methodologies for organising systematic risk management. It covers five main components (control environment, risk assessment, control activities, information and communication, and monitoring) and is clearly integrated with the processes of strategic planning, internal control, and corporate governance. This ensures not only a reduction in the probability of risky events but also an increase in organisational flexibility, stability, and competitiveness of enterprises. The implementation of COSO ERM contributed to a reduction in losses during the COVID-19 pandemic, faster adaptation to regulatory changes, minimisation of cyber attacks, and a more effective response to disruptions in supply chains. It was also established that COSO significantly increases the level of reporting transparency, builds trust from external stakeholders, reduces

legal risks (in the context of compliance with acts such as the Sarbanes-Oxley Act), and ensures the accountability of management personnel.

At the same time, barriers that complicate the adaptation of COSO in Ukrainian realities were identified: a low level of risk-oriented thinking, limited financial and human resources, and weak integration with digital platforms. This applies to small and medium-sized businesses, where risk management often remains intuitive or fragmented. Promising areas for further research are an empirical analysis of the effectiveness of COSO ERM in enterprises of various industries, a comparison with alternative models, a study of the adaptability of COSO to the conditions of digital transformation (in particular, in the aspects of Big Data, AI, cybersecurity), and the development of industry-specific recommendations for enterprises in countries with a transitional economy.

Acknowledgements
None.

Funding
None.

Conflict of Interest
None.

References
[1] Airbus Group – case study. (n.d.). Retrieved from https://riskonnect.com/customer-success-stories/airbus-group/.
[2] Awad, J., & Martín-Rojas, R. (2024). Digital transformation influence on organisational resilience through organisational learning and innovation. *Journal of Innovation and Entrepreneurship*, 13, article number 69. doi: 10.1186/s13731-024-00405-4.
[3] Beasley, M.S., Branson, B.C., & Hancock, B.V. (2017). *Developing key risk indicators to strengthen enterprise risk management*. Retrieved from https://www.scribd.com/document/802587278.
[4] Benekos, I., Yannis, G., & Mavromatis, S. (2020). Implementing enterprise risk management in road organizations: Considerations and a proposed roadmap. *Risk and Decision Analysis*, 8(1-2), 39-65. doi: 10.3233/RDA-190055.
[5] Braim, S.J., & Bilal, R.B. (2023). The (COSO) framework: Implications of internal control components on the performance manufacturing companies. *Qalaai Zanist Scientific Journal*, 8(1), 1203-1227. doi: 10.25212/lfu.qzj.8.1.48.
[6] Cobb, M. (2023). *ISO 31000 vs. COSO ERM risk management standards*. Retrieved from https://www.techtarget.com/searchcio/feature/ISO-31000-vs-COSO-Comparing-risk-management-standards.
[7] COSO. (2013). *Internal control – integrated framework: Executive summary*. Retrieved from https://www.sechistorical.org/collection/papers/2010/2013_0501_COSOInternal.pdf.
[8] COSO. (2017). *Enterprise risk management: Integrating with strategy and performance*. Retrieved from https://web.archive.org/web/20171029145946/https://www.coso.org/Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf.
[9] Cybersecurity and ERM top audit committee agendas. (2024). Retrieved from https://deloitte.wsj.com/cfo/cybersecurity-and-erm-top-audit-committee-agendas-5f67bb08.
[10] Dahmen, P. (2023). Organizational resilience as a key property of enterprise risk management in response to novel and severe crisis events. *Risk Management and Insurance Review*, 26(2), 203-245. doi: 10.1111/rmir.12245.
[11] Dvorski Lacković, I., Kurnoga, N., & Miloš Sprčić, D. (2022). Three-factor model of Enterprise Risk Management implementation: Exploratory study of non-financial companies. *Risk Management*, 24(2), 101-122. doi: 10.1057/s41283-021-00086-3.
[12] Fraser, J.R.S., Quail, R., & Simkins, B. (2021). *Enterprise risk management* (2nd ed.). Hoboken: Wiley.
[13] Frigo, M.L., & Anderson, R.J. (2011). Strategic risk management: A foundation for improving enterprise risk management and governance. *Journal of Corporate Accounting & Finance*, 22(3), 81-88. doi: 10.1002/jcaf.20677.
[14] Gleißner, W., & Berger, T.B. (2024). Enterprise risk management: Improving embedded risk management and risk governance. *Risks*, 12(12), article number 196. doi: 10.3390/risks12120196.
[15] Hayne, C., & Free, C. (2014). Hybridized professional groups and institutional work: COSO and the rise of enterprise risk management. *Accounting, Organizations and Society*, 39(5), 309-330. doi: 10.1016/j.aos.2014.05.002.
[16] Hillson, D. (2020). *What is risk? Towards a common definition*. A *common definition*. Retrieved from https://www.scribd.com/document/319840259/What-is-Risk-A-Common-Definition.
[17] Hopkin, P. (2017). *Fundamentals of risk management: Understanding, evaluating and implementing effective risk management*. London: Kogan Page Publishers.
[18] How power and utility companies can proactively manage risks in a new era of uncertainty. (2025). Retrieved from https://surl.li/vjnnmw.
[19] Huber, C., Kraus, K., & Meidell, A. (2025). Integrating the balanced scorecard and enterprise risk management: Exploring the dynamics between management control anchor practices and subsidiary practices. *Management Accounting Research*, 66, article number 100924. doi: 10.1016/j.mar.2024.100924.
[20] ISO 22301:2019. (2019). *Security and resilience – business continuity management systems – requirements*. Retrieved from https://www.iso.org/standard/75106.html.

[21] ISO 31000:2018. (2018). *Risk management – guidelines*. Retrieved from https://www.iso.org/standard/65694.html.
[22] Koli, L., Kalra, S., Thakur, R., Saifi, A., & Singh, K. (2025). AI-driven IRM: Transforming insider risk management with adaptive scoring and LLM-based threat detection. *ArXiv*. doi: 10.48550/arXiv.2505.03796.
[23] Lam, J. (2014). *Enterprise risk management: From incentives to controls* (2nd ed.). Hoboken: John Wiley & Sons.
[24] Law of Ukraine No. 2258-VIII "On Auditing Financial Statements and Auditing Activities". (2017, December). Retrieved from https://zakon.rada.gov.ua/laws/show/en/2258-19/ed20171221#Text.
[25] Law of Ukraine No. 996-XIV "On Accounting and Financial Reporting in Ukraine". (1999, July). Retrieved from https://zakon.rada.gov.ua/laws/show/en/996-14/ed19990716#Text.
[26] Liu, T., & Qi, J. (2024). The mechanism of enterprise digital transformation on resilience from the perspective of financial sustainability. *Sustainability*, 16(17), article number 7409. doi: 10.3390/su16177409.
[27] Makarchuk, I. (2020). Strategic enterprise risk management. *Economy and State*, 8, 107-111. doi: 10.32702/2306-6806.2020.8.107.
[28] Mensah, G., & Gottwald, D. (2016). Enterprise risk management: Factors associated with effective implementation. *Risk Governance and Control: Financial Markets & Institutions*, 6(4), 175-206. doi: 10.22495/rcgv6i4c1art9.
[29] Moeller, R.R. (2013). *Executive's guide to COSO internal controls: Understanding and implementing the new framework*. Hoboken: John Wiley & Sons.
[30] Moeller, R.R. (2016). *Brink's modern internal auditing: A common body of knowledge* (8th ed.). Hoboken: John Wiley & Sons.
[31] Moshesh, R., Niemann, W., & Kotzé, T. (2018). Enterprise risk management implementation challenges: A case study in a petrochemical supply chain. *South African Journal of Industrial Engineering*, 29(4), 230-244. doi: 10.7166/29-4-1782.
[32] National Competitiveness and Productivity Council. (2024). *Bulletin 24-4 IMD world competitiveness rankings*. Retrieved from https://competitiveness.ie/media/mgybdk2g/ncpc-bulletin-24-4-imd-world-competitiveness-rankings-2024.pdf.
[33] Nazarova, K., Nezhyva, M., Neviadomski, K., Kyrushko, P., & Bondar, N. (2021). Questionnaire as a tool for assessment of internal control system against COSO internal control – integrated framework. *International Journal of Scientific Research and Management*, 9(11), 2569-2576. doi: 10.18535/ijsrm/v9i11.em06.
[34] Public Law No. 107-204 "An Act to Protect Investors by Improving the Accuracy and Reliability of Corporate Disclosures Made Pursuant to the Securities Laws, and for Other Purposes". (2002, July). Retrieved from https://www.dol.gov/sites/dolgov/files/oalj/PUBLIC/WHISTLEBLOWER/REFERENCES/STATUTES/SARBANES_OXLEY_ACT_OF_2002.PDF.
[35] Reuters, T. (2025). *COSO updates its Enterprise Risk Management (ERM) framework to address modern data sources*. Retrieved from https://www.rehmann.com/resource/coso-updates-its-enterprise-risk-management-erm-framework-to-address-modern-data-sources/.
[36] Risk Management Association of India. (2025). *COSO ERM framework made easy: Turning risk into strategy*. Retrieved from https://rmaindia.org/coso-erm-framework-made-easy-turning-risk-into-strategy/.
[37] Scale digital transformation with risk management. (2021). Retrieved from https://deloitte.wsj.com/cfo/scale-digital-transformation-with-risk-management-01638384271.
[38] SCCE & HCCA. (2020). *Compliance risk management: Applying the COSO ERM framework*. Retrieved from https://www.coso.org/_files/ugd/3059fc_5f9c50e005034badb07f94e9712d9a56.pdf.
[39] University of Massachusetts Amherst. (2024). *FY24 enterprise risk management biennial report*. Amherst: University of Massachusetts Amherst.
[40] Viscelli, T.R., Beasley, M.S., & Hermanson, D.R. (2016). Research insights about risk governance: Implications from a review of ERM research. *SAGE Open*, 6(4). doi: 10.1177/2158244016680230.
[41] Walker, P.L. (2022). *Enabling organizational agility in an age of speed and disruption*. Retrieved from https://www.coso.org/_files/ugd/3059fc_cef1343e024a43c0b65d23ad0178d41e.pdf.
[42] Zajc Kejžar, K., Peljhan, D., Trkman, P., Vangeli, A., & Sprčić, D.M. (2024). Risk management practices of European companies in times of high global uncertainty. *Economic and Business Review*, 26(4), 222-225. doi: 10.15458/2335-4216.1345.

Аналіз моделі управління ризиками COSO: основні аспекти

Інна Віштак
Кандидат технічних наук, доцент
Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0000-0001-5646-4996

Аліна Подорожнюк
Студент
Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0009-0007-5526-9049

Еліза Войтко
Студент
Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0009-0005-4381-2142

Анотація. Актуальність дослідження зумовлена зростанням невизначеності у зовнішньому середовищі, що потребує впровадження ефективних систем ризик-менеджменту. Метою дослідження було проаналізувати ключові аспекти моделі Committee of Sponsoring Organizations of the Treadway Commission Enterprise Risk Management (COSO ERM) та обґрунтувати можливості її застосування для інтегрованого управління ризиками на підприємствах. У дослідженні застосовано методи аналізу наукових джерел, структурно-логічного узагальнення та системного підходу. Розглянуто теоретичні та практичні аспекти управління ризиками на підприємстві з урахуванням викликів і тенденцій глобального ринку. Проаналізовано системний підхід до управління ризиками, який забезпечує комплексне охоплення всіх процесів підприємницької діяльності, пов'язаних з ідентифікацією, оцінкою та реагуванням на ризики. Визначено ключові компоненти методології COSO ERM, яка є однією з найбільш визнаних у світовій практиці. Модель COSO ERM базується на принципах інтегрованого управління, де ризики розглядаються не як ізольовані загрози, а як частина стратегічного планування та управлінських процесів. Було розглянуто застосування трикомпонентної структури COSO, що включала цілі підприємства, внутрішнє середовище та організаційні рівні впливу. Такий підхід дозволив гармонізувати стратегічні, операційні та звітні процеси в межах єдиної системи контролю. Розкрито сутність взаємозв'язку між основними елементами управління ризиками, що дало змогу адаптувати модель до особливостей функціонування підприємств різних галузей. Наведено аргументацію доцільності впровадження моделі COSO як інструменту підвищення стійкості бізнесу до невизначеності зовнішнього середовища. Запропоновано методологічні підходи до удосконалення ризик-менеджменту відповідно до вимог економічної безпеки та стратегічного розвитку. Практична цінність дослідження полягає у можливості використання результатів фахівцями у сфері ризик-менеджменту, внутрішнього аудиту та стратегічного управління

Ключові слова: внутрішній контроль; стратегічне планування; оцінка ризиків; корпоративне управління; адаптація моделей; інтеграція ризиків; бізнес-стійкість

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 15.05.2025; Revised: 20.08.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.53

UDC 378.015

Multicultural aspects in enterprise management strategy

Vitaliy Streletskyi*
Postgraduate Student
Vinnytsia National Technical University
21000, 95 Khmelnytske Shose, Vinnytsia, Ukraine
https://orcid.org/0009-0007-3364-5250

Liliia Ruda
PhD in Economic Sciences, Associate Professor
Vinnytsia National Technical University
21000, 95 Khmelnytske Shose, Vinnytsia, Ukraine
https://orcid.org/0000-0002-1598-8301

Abstract. In the context of globalisation, intercultural competence is becoming a key factor in the effective operation of enterprises working in a multicultural environment. The study aimed to analyse the impact of intercultural management and cultural intelligence on organisational management, particularly in the context of Ukrainian enterprises with international connections. The methodology was based on an analysis of scientific sources, case studies from Ukrainian practice, secondary data and the application of an interdisciplinary approach. The results showed that a high level of cultural intelligence reduces the number of conflicts in multinational teams, improves communication between departments, and increases the adaptability of employees in a new cultural environment. It was found that the motivational and behavioural components of cultural intelligence have the strongest influence on the quality of intercultural interaction, while the cognitive component remains less developed in post-Soviet organisational cultures. As a result of the analysis, the factors that determine the effectiveness of intercultural communication were systematised, and examples of corporate practices at Google, Siemens and Hitachi were summarised, demonstrating the integration of cultural intelligence into management strategies and diversity policies. Key barriers to the development of cross-cultural competence in Ukrainian companies were identified the limited formalisation of inclusive policies and insufficient attention to the cognitive aspect of cultural intelligence. An analysis of international studies confirms that the implementation of intercultural competence development programmes contributes to increased trust, cohesion and innovative potential of teams. The components of cultural intelligence, their impact on work processes in a multicultural environment, and the barriers faced by Ukrainian companies have been analysed. The study has practical value for human resource management specialists, managers, and developers of corporate training and staff adaptation policies

Keywords: cultural intelligence; intercultural management; multinational teams; international adaptation; organisational effectiveness; multicultural environment

Introduction

In the context of globalisation and the growing interdependence of national economies, effective management of cultural diversity is becoming not only a social challenge but also a strategic necessity for businesses. Cultural diversity in teams creates both potential and risks for organisational development. The problem is that organisations often invest in international expansion before establishing sustainable mechanisms for intercultural interaction and staff training; this generates hidden costs ranging from conflicts and staff turnover to reputational risks. Cultural competence training and cultural intelligence (CQ) development are designed to bridge these gaps, but their effectiveness in a business context varies greatly depending on when they are conducted and how well they are integrated into HR processes.

Suggested Citation:
Streletskyi, V., & Ruda, L. (2025). Multicultural aspects in enterprise management strategy. *Innovation and Sustainability*, 5(3), 53-65. doi: 10.31649/vis/3.2025.53.

*Corresponding author

A study by M. Mushaathoni (2024) found that employees experience misunderstandings due to insufficient preparation for cultural differences, leading to conflicts and decreased productivity. Therefore, the Ukrainian business context, which combines European standards, military challenges and rapid internationalisation of teams, requires attention. It is necessary not only to mechanically adopt "best practices" but also to build adapted training models that simultaneously increase efficiency and preserve employee agency. These contradictions between strategic goals and the daily interactions of multicultural teams determine the research relevance and practical significance.

Globalisation and migration are causing a significant increase in the number of intercultural organisations in Europe. As noted by T. Katz-Gerro *et al.* (2025), increased mobility and movement of citizens within the EU have created a population of more than 10% that is either migrant or of migrant origin, which has stimulated the emergence of new cross-cultural structures (e.g., in services, information technology (IT), cultural and educational projects). As Ukrainian companies increasingly interact with partners from the European Union (EU), the United States (US) and Asia, they are forming multicultural teams in the fields of logistics, IT, education, finance and manufacturing. This requires managers to have new competencies, not only in foreign languages, but also in the interpretation of contexts, codes, symbols and non-verbal patterns of other cultures. At the same time, Ukrainian business remains deeply value-oriented, which creates the opportunity to create a domestic model of cross-cultural management based not on the mechanical copying of Western practices, but on the principles of partnership, trust and employee agency. This determines the practical and humanistic significance of the research.

Large European companies are forced to operate in several countries at once to remain competitive. However, cultural differences among employees can pose a significant challenge that requires individualised management. The wrong approach often leads to international failure and increased adaptation costs. E. Gross-Gołacka & A. Martyniuk (2024) revealed that an intercultural approach, rather than simply multiculturalism, significantly increases social cohesion and the success of organisations in a global environment. A study by McKinsey & Company (2020) found that companies that implement diversity and inclusion policies are 25% more likely to exceed the average profitability of their industry. This is also explained by mechanisms that strengthen social capital and increase creativity within the team, particularly through improved trust and engagement (Feng & Tan, 2024).

Analysis of research has shown that cross-cultural communication is a substantial factor in the effectiveness of modern organisations. Management that takes cultural and institutional differences into account increases the competitiveness of companies and ensures coordinated interaction in international teams. In this context, the significance of social capital, trust, and the quality of internal communication is growing, as they determine the adaptability and resilience of organisations in a global environment. Cultural intelligence is a key management competency that promotes inclusive leadership, reduces conflict and increases team performance. The ability of managers and employees to interact effectively in a multicultural environment increasingly determines the success of companies, regardless of their level of technological development. Therefore, the study aimed to theoretically substantiate and analyse the impact of intercultural management and cultural intelligence on enterprise management in a multicultural environment, covering the specifics of Ukrainian companies operating in an international context.

Materials and Methods

The methodological basis of the study was based on a combination of qualitative, comparative and content-analytical approaches, which identified patterns in the formation of cultural intelligence in corporate governance and assessed the impact of intercultural communication on the effectiveness of enterprises. The choice of these methods was determined by the complexity and multidimensionality of the phenomenon under study, which includes behavioural, social and managerial components. The study analysed analytical reports, corporate documents and scientific publications reflecting current trends in the implementation of intercultural management. Reports by Siemens AG (2024), Hitachi (2024), and Google (Driving innovation, bridging gaps, 2024) were reviewed, which revealed the mechanisms for integrating the principles of diversity, inclusion, and cultural competence development into corporate policy. These companies were chosen because of their representativeness: Siemens is an example of a structured European model of diversity management, Hitachi is an example of an Asian system based on the values of collectivism and mentorship, and Google is a Western-style model focused on openness and transparency in communication. This tripartite sample was used to compare the approaches of different cultural types of management.

The empirical basis includes data from McKinsey & Company (2020; 2023) analytical reports, which contain statistical indicators of the effectiveness of diversity and inclusion policies in global companies, as well as materials from Harvard Business Review (Taras *et al.*, 2021; Friedman, 2024), which reveal the practical aspects of shaping cultural awareness among managers. To reflect the Ukrainian context, the results of a study by Y. Martynyshyn *et al.* (2019) were used, which highlighted the behavioural characteristics of Ukrainian specialists in international business communications. The main method was comparative analysis, which made it possible to identify differences in the structure of cross-cultural strategies between companies from different regions of the world. Based on this, a content analysis of corporate documents was performed to identify key areas for the implementation of cultural inclusion policies, staff training and the development of cultural intelligence. A structural-functional approach was used to interpret the links between CQ elements and organisational

effectiveness, which ensured that cultural intelligence was considered as a component of the management system. A cross-narrative analysis method was also used, which compared the models described in the literature with real corporate cases, with the experience of Siemens, Hitachi and Google. The results obtained were summarised based on an analytical synthesis that combined international and Ukrainian data to build an integrated model of cultural intelligence development in a business environment. This approach was used not only for comparative description, but also to interpret cultural intelligence as a management category that combines strategic, behavioural and cognitive levels of analysis.

Results and Discussion

1. Multicultural communication as a factor in management, social capital and global business identity

Cross-cultural intelligence is considered a significant strategic resource for a company, ensuring adaptability, innovation, and sustainability in a global competitive environment. The use of cross-cultural intelligence provides new opportunities for competitive advantage. It improves internal processes, reduces costs through effective diversity management, and enhances the company's image through ethical interaction with partners and customers, which is relevant for Ukrainian enterprises in the context of integration into the European market. Cultural standards establish rules of acceptable and unacceptable behaviour that individuals accept and expect from others. In Europe, the culture of each country shapes specific norms of behaviour. However, employees working in a multicultural environment in European markets often do not acknowledge these norms, which complicates communication and adaptation (Mushaathoni, 2024). Many international companies use tests to assess compliance with corporate culture when hiring specialists. These methods facilitate internal corporate communications but can complicate interaction with external market participants due to different organisational cultures. Therefore, cross-cultural competence is necessary for successful communication between representatives of different organisational cultures.

According to S.N. Morris (2023), cultural diversity in the workplace contributes to increased business productivity by stimulating creativity and innovation, enabling companies to adapt to challenging market conditions and develop new competitive advantages. An analytical report by McKinsey & Company (2023) confirmed that companies with high levels of ethnic and gender diversity among their management are 39% more likely to achieve better financial results than their competitors. These results demonstrate that a multicultural strategy is no longer an additional element of human resources policy but is transforming into a strategic resource that influences communication quality, innovation levels, internal cohesion, and the ability of companies to expand internationally. These aspects are becoming increasingly relevant for companies that open branches outside their country of origin. In such conditions, the key task is to harmonise the parent corporate culture with the local socio-cultural context. To prevent conflicts and increase the effectiveness of intercultural interaction, companies implement specialised management practices, where cross-cultural communication is central. These practices promote the formation of shared values, overcome language and behavioural barriers, and ensure the stable integration of multinational teams, which is a determining factor in achieving strategic sustainability and global growth.

Cross-cultural competence is an integral part of the necessary skills that need to be developed in multicultural companies to improve management systems. However, given global trends towards economic and cultural globalisation, technological development and the strengthening of intercultural ties, a new discourse has emerged in the scientific community that is not limited to competence alone, but raises the issue of a new identity for "global" people possessing knowledge of several languages, successfully operating in different countries and perceiving their ethno-cultural identity differently, while maintaining ties with their homeland. Cultural intelligence is not only an individual characteristic of a person but can also be a collective formation. The study by Y. Liao & D.C. Thomas (2025), which substantiated this idea by considering the phenomenon of collective cultural intelligence (CCQ) as a dynamic phenomenon that is formed in the process of interaction between members of a multicultural team, is notable. The study proceeded from the position that cultural intelligence is not only an individual characteristic but can also manifest itself at the group level as a result of interaction, shared experience and team learning. According to the authors, the formation of collective cultural intelligence occurs in stages: first, the individual CQ levels of team members develop, then interactions between them occur, during which knowledge is exchanged, and common ideas about cultural norms are formed. The third stage involves team learning, which leads to the emergence of shared cultural patterns of behaviour. This process is defined by the authors as the dynamic formation of collective CQ. The model by Y. Liao & D.C. Thomas (2025) also includes the influence of contextual factors such as the level of cultural diversity within the team, previous experience of intercultural interaction, and power structure. The study demonstrated that power disparity can slow down the development of CCQ, while a high level of psychological safety and openness contributes to its strengthening. Teams with more developed collective CQ demonstrate better coordination in collaboration, overcome communication barriers more effectively, and have a higher level of trust between participants.

An in-depth analysis of the role of intellectual characteristics in team functioning is presented in a systematic review by M. Davaei & M. Gunkel (2024). The study emphasised that cultural intelligence belongs to the class of "social intelligences" that determine the ability of groups to communicate effectively, adapt and be creative in diverse environments. The study covered 134 empirical works

published between 2000 and 2022 and aimed to identify how different types of intelligence – cognitive, emotional, social, cultural, practical, and team – affect the efficiency of collaboration. The results showed that cultural intelligence occupies a central place among the so-called "collective intelligences" as it provides a link between cognitive knowledge, emotional awareness and social interaction. The study emphasised that cultural intelligence has a multidimensional impact on team dynamics. First, in the coordination dimension, it facilitates the coordination of actions between participants from different cultural backgrounds, promoting effective interaction and reducing the risk of misunderstandings. In the motivational dimension, cultural intelligence fosters mutual trust, increases willingness to cooperate, and reduces interpersonal tension in multicultural teams. In terms of innovation, it enhances the creativity of the group, encourages the use of different approaches to problem-solving, and promotes new ideas due to the diversity of experiences and perspectives. The study noted that teams with high cultural intelligence demonstrate greater consistency in their actions, better overcome conflicts, and achieve higher levels of innovative activity compared to groups where this level is poorly developed. In the context of management, this review demonstrates that the combination of emotional, cultural, and social intelligence creates a synergistic effect for organisational effectiveness, especially in multicultural structures.

In a systematic review by M. Davaei & M. Gunkel (2024), more than 90 empirical studies were analysed, confirming that cultural intelligence (along with emotional and cognitive intelligence) is a key determinant of team performance. The study highlighted that the greatest effect is seen in organisations that combine CQ development with corporate training tools and staff adaptation programmes. Further development of the topic of cultural intelligence in relation to organisational effectiveness was presented in a study by A. Ibanez *et al.* (2025). The study examined in detail the impact of cultural intelligence on employee performance in environments with a high level of cultural diversity. The study examined organisations operating in a transnational format, where interaction between representatives of different cultures is a constant feature of production processes. Using an interdisciplinary approach, the researchers found that cultural intelligence is a key factor in the successful adaptation of staff and improving the overall performance of teams. The study emphasised the role of the motivational and behavioural components of CQ, which contribute to the formation of trust, mutual respect and willingness to cooperate between employees with different cultural codes. The statement by A. Ibanez *et al.* (2025) that these aspects ensure stable communication, minimise conflicts and facilitate the achievement of common goals is notable. The authors of the study also highlighted that the cognitive component of CQ, i.e. knowledge of cultural norms and customs, is only meaningful when combined with the metacognitive ability to self-reflect and adjust behaviour. Without this, knowledge remains formal and does not ensure real adaptation in interactions. In this context, metacognitive cultural intelligence is viewed as a managerial competence that helps managers make informed decisions in culturally diverse environments.

In modern management theory, the connections between organisational social capital and cultural intelligence are increasingly being highlighted. S. Feng & C.Y. Tan (2024) demonstrated that digital social and cultural capital have a strong influence on cooperation and trust between community members. Research, including materials from the Harvard Business Review (Taras *et al.*, 2021; Friedman, 2024), has predicted that companies with high levels of social capital in multicultural teams can demonstrate significantly higher employee engagement and lower levels of communication conflicts. This confirms the need to include components of trust, cultural sensitivity, and the formation of shared values in the cultural intelligence development strategy. High levels of social capital help reduce the "psychological distance" between employees, increase the sense of mutual support and willingness to share knowledge, factors that directly influence innovation and team effectiveness (Taras *et al.*, 2021). This involves integration of mandatory training in intercultural communication into the new employee adaptation programme, application of the reflective learning model in the format of cross-cultural workshops, and use of regular assessments (CQ Assessments) to help identify gaps in mutual awareness. It is necessary to implement facilitated dialogue practices, such as values mapping sessions or trust-building circles, aimed at identifying common values within the team and forming a corporate identity. Such approaches not only minimise intercultural barriers but also activate the synergy of teams with diverse backgrounds.

Similar results were observed in a study by T. Heubeck *et al.* (2024), identifying that social capital enhances interaction and improves the effectiveness of international teams. A systematic review by F. Mathey *et al.* (2024) also highlighted that social capital is associated with better resource utilisation, trust and effectiveness in international activities. The phenomenon of "transnational identities" that develop in employees operating in an international environment for a long time is also notable. Such individuals can simultaneously identify with several cultures, which facilitates their adaptation to new conditions and efficient mediation skills between different organisational cultures. According to a study by A. Mammadov & A. Wald (2025), the formation of hybrid cultural identities and a high level of cultural and emotional intelligence correlate positively with the adaptability of employees, as well as with the growth of interpersonal trust in multicultural teams, which contributes to organisational flexibility. In addition, cross-cultural competence and social capital are interrelated through communication practices within the team. The study showed that the presence of shared values, even among different cultural groups, reduces the risk of fragmentation in teams and increases the effectiveness of teamwork.

2. Cultural intelligence: structure, mechanisms of action and managerial significance

Cultural intelligence is a specific form of intelligence that ensures effective interaction in conditions of cultural diversity. Research confirms a composite structure: Metacognitive cultural intelligence is the ability to analyse personal thoughts and assumptions about other cultures and actively regulate cognitive strategies in the process of intercultural interaction. As defined by A. Semenov & A. Randrianasolo (2024), metacognitive CQ is achieved through careful planning, self-awareness, and adjustment of one's approach to the cultural context during communication. Cognitive cultural intelligence is the knowledge of cultural norms, values, and customs, which can be used to distinguish between cultural universals and differences. The study emphasised that motivation is a key driving force for the development of other CQ components, especially behavioural CQ. Behavioural cultural intelligence is the ability to transform verbal and non-verbal behaviour in accordance with the cultural context. A. Semenov & A. Randrianasolo (2024) empirically established that behavioural CQ is formed through metacognitive and motivational competence.

Cultural intelligence is a multidimensional characteristic that determines an individual's ability to interact effectively in an intercultural environment. The key components are metacognitive, cognitive, motivational, and behavioural components, each of which performs a separate function in the process of intercultural communication. Metacognitive cultural intelligence provides awareness of one's own cultural assumptions and the ability to adjust behaviour according to context, while the cognitive aspect is responsible for knowledge of the traditions, management practices and values of different cultures. The motivational component reflects an individual's desire to interact effectively with representatives of other cultures and to succeed in a diverse environment. Behavioural cultural intelligence, in turn, ensures that both verbal and non-verbal aspects of communication are adapted to the expectations of partners with different cultural codes. The coordinated interaction of these elements ensures strategic competence in cultural intelligence, especially in the international business environment, where the ability to adapt culturally is a critical factor in the competitiveness of companies and the effectiveness of intercultural management. In this regard, cross-cultural competence should be viewed as a valuable and operational component of sustainable development, the integration of which into corporate strategy can be used not only to adapt to new challenges, but also to actively shape an innovative, ethical and socially oriented environment.

From the perspective of management theory, CQ acts as an integration mechanism that combines individual abilities and organisational processes. This is confirmed by research conducted by A. Yüksel Sakınç & E. Ergün (2024), which proved that cultural intelligence acts as a mediator between leadership behaviour and management effectiveness. Managers with high CQ demonstrate the ability to adapt their leadership style, reduce tension in multicultural teams, and achieve a higher level of trust among subordinates. The study noted that the motivational and behavioural components of CQ have the strongest impact on productivity, helping leaders anticipate the reactions of employees from different cultures and minimise conflicts. Therefore, CQ should be considered not just an "additional competency" but a prerequisite for effective leadership in global business.

L. Yusuf *et al.* (2024) confirmed that high levels of motivational and behavioural CQ ensure more stable interaction between company departments and contribute to increased team effectiveness. The study noted that these components of cultural intelligence are most closely related to job satisfaction and overall staff productivity, which emphasises the managerial effect of CQ as a factor in internal organisational harmony. The study, which addressed multinational teams in international companies, showed an indirect link between CQ and employee performance through job satisfaction: employees with high cultural intelligence interpret cultural signals more accurately, are more comfortable in mixed teams, and demonstrate lower levels of emotional burnout and higher engagement.

At the same time, L. Yusuf *et al.* (2024) also contributed to the research of the internal mechanisms of CQ, proving that cultural intelligence stimulates knowledge sharing and creates a sense of psychological safety within the team, which further enhances the effectiveness of teamwork. As the authors emphasise, leaders with high CQ can recognise latent communication barriers – linguistic, social or ethical – and turn them into opportunities for learning and development. The statement is relevant, since in this context, cultural intelligence appears not only as a factor of effectiveness, but also as a core element of organisational learning that provides innovative potential, stabilises the personnel system and strengthens the psychological climate in teams. This interpretation confirms the position of the study authors that CQ is one of the key tools of modern HR strategy aimed at increasing efficiency and reducing organisational risks.

The study by D. Livermore *et al.* (2022) formed the basis for the modern approach of CQ at the level of organisational systems. The study by D. Livermore *et al.* (2022) laid the foundation for the modern concept of CQ at the level of organisational systems. Contemporary organisational research confirms that cultural intelligence can be developed through targeted management practices. In particular, K.A. da S. Teixeira & A. Zanela Klein (2024) noted that situated learning, i.e., learning based on real intercultural interactions, significantly increases the level of metacognitive CQ, as it promotes self-reflection and a further perception of the context of communication. Their results showed that the metacognitive component of CQ develops best when participants undergo practical training in a culturally diverse environment, rather than just theoretical training. This approach has direct managerial significance: companies that implement intercultural workshops and reflective learning programmes demonstrate more stable growth in

mutual trust and team effectiveness indicators. This indicates that organisational learning is a key channel for developing intercultural competence among managers. The results of five relevant international studies are summarised in Table 1, which demonstrates the logic of the relationship between the structural components of cultural intelligence, management mechanisms and practical implications for modern companies.

Table 1. Cultural intelligence in contemporary research: mechanisms of influence and management effects

Author(s)	Key focus of the study	The mechanism of cultural intelligence	Management effect /meaning
A. Yüksel Sakınç & E. Ergün (2024)	Leadership effectiveness in a multicultural environment	CQ mediates between leadership style and team effectiveness; fosters adaptability and trust.	Improved team cohesion, reduced conflicts, and increased management effectiveness
L. Yusuf *et al.* (2024)	The relationship between CQ, job satisfaction and productivity	CQ increases comfort and confidence among employees in multicultural teams	Reduced emotional burnout, increased productivity and staff loyalty
L. Yusuf *et al.* (2024)	Knowledge exchange	CQ encourages trust, openness and willingness to share experiences	Promoting team learning, innovation, and improving labour efficiency
D. Livermore *et al.* (2022)	Organisational level of cultural intelligence	CQ integrates communication and management practices at the company level	Enhancing innovation, reputational resilience, and global appeal
K.A. da S. Teixeira & A. Zanela Klein (2024)	CQ development through experience (*situated learning*)	Practical interaction in multicultural groups stimulates metacognitive development	Improvement of flexibility among managers, self-reflection skills, and team dynamics

Source: compiled by the authors

Following the table, studies confirm the multidimensional nature of cultural intelligence, which occurs not only as an individual competency but also as an integrated management resource that determines the quality of intercultural communication, team resilience, and company adaptability to the global environment. The most significant components of CQ for management are the motivational and behavioural components, as they maintain trust, manage emotional tone of the team, and create a culture of open dialogue. Thus, cultural intelligence becomes a strategic component that not only improves management efficiency but also forms the basis for sustainable development, social cohesion, and innovation in a culturally diverse environment.

3. Cultural intelligence and cross-cultural management practices: international and Ukrainian contexts

International experience demonstrates the effectiveness of a holistic approach to developing cross-cultural competence. At Hitachi Ltd., multicultural policy is integrated into key management processes through four interrelated areas: human resource management, reporting systems, partnerships, and corporate mentoring. In human resource management, this is reflected in the implementation of global leadership development programmes and training initiatives based at Hitachi University, which help to improve the intercultural competence of employees and train managers in multinational teams. In reporting, the multicultural approach is implemented through the inclusion of diversity metrics (DEI Metrics) in the corporate performance evaluation system, reflecting the company's commitment to inclusion and equal opportunities. In partnerships, this is expressed in the development of a global network of interaction between branches and regional divisions, where the cultural specifics of communications and decision-making processes are covered.

The mentoring system at Hitachi is based on the principle of "mutual learning", where experienced professionals from different countries transfer knowledge and cultural context to younger employees, thereby fostering a culture of mutual respect and openness. Such integration ensures the integrity of Hitachi's corporate culture and enhances its ability to operate effectively in a global environment. Despite the existence of various constructs that are already actively used in scientific research on cross-cultural environments, there is a need to study the effectiveness of the CQ coefficient in organisational settings. This issue has become relevant since the second half of the 2010s, approximately since 2016-2017, when transnational companies began to massively implement intercultural teams, and the need for formalised tools to assess employees' ability to adapt to diverse cultural environments increased. At the same time, there was an increase in interest in CQ as a predictor of organisational effectiveness, inclusive leadership and team cohesion. A. Mammadov & A. Wald (2025) demonstrated that cultural intelligence correlates significantly with emotional competence and contributes to the international expansion of small and medium-sized enterprises (SMEs) by improving the quality of communication and strategic flexibility of companies.

Assessment of the impact of cultural intelligence on corporate performance is becoming a key factor in the assessment and management of cultural diversity and international communication. Companies that invest in the cultural intelligence development of their employees can improve the efficiency of their intercultural communication, expand their geographical reach, and increase their

competitiveness in the international market. A. Mammadov & A. Wald (2025) examined the relationship between CQ, emotional intelligence (EI) and the effectiveness of SME internationalisation. The study looked at a sample of 399 SME owners and managers from Norway and Azerbaijan who had experience or plans to enter foreign markets. Methodologically, the study was based on a quantitative approach using structural equation modelling (SEM), which was used to assess the impact of individual components of cultural intelligence – metacognitive, cognitive, motivational and behavioural – on the success of companies' adaptation to new cultural conditions.

The analysis covered the financial, time and organisational aspects of adaptation, which reflected the total costs incurred by companies in preparing staff for intercultural interaction, entering new markets and overcoming conflicts in multicultural teams. The results showed that companies with high values of motivational and behavioural CQ components have lower adaptation costs, achieve stability in team interaction faster, and encounter communication barriers less often. Statistically significant coefficients ($\beta = 0.41$ for motivational CQ and $\beta = 0.37$ for behavioural CQ at $p < 0.01$) confirmed that the development of these components is a key factor in increasing organisational flexibility. In addition, A. Mammadov & A. Wald (2025) determined that emotional intelligence performs a mediating function, enhancing the impact of cultural intelligence on the effectiveness of international business activities. Companies whose managers have high CQ and EI scores are characterised by higher quality intercultural communication, overcome barriers to interaction with partners more quickly, and demonstrate a reduction in indirect costs of staff adaptation, in particular, costs of training, conflict resolution, and staff turnover. This indicates that the development of cultural intelligence combined with the emotional competence of managers is a strategic factor in the internationalisation of SMEs. This combination ensures their flexibility, adaptability and ability to maintain stable partnerships in a multicultural business environment.

Analysis of the impact of cross-cultural factors on a company involves examining various aspects, such as the cultural flexibility of staff, the effectiveness of intercultural communication, the success of international projects, and the ability to adapt to different cultural environments. Integration of cultural intelligence into a corporate management strategy increases customer satisfaction, reduces conflicts, and improves the effectiveness of business processes in an international context. In this context, cross-cultural competence is increasingly viewed not only as a tool for effective communication in an international business environment, but also as an integral part of a company's sustainable development strategy. It forms the basis for achieving social stability, high ethical standards, and long-term economic efficiency.

The social aspect of sustainable development is directly related to the internal atmosphere at the enterprise, the level of trust between employees, the ability to resolve conflicts using non-violent methods, and reducing the level of discriminatory practices. The cross-cultural competence of managers and staff facilitates the identification of potential misunderstandings related to cultural differences and their transformation into growth opportunities for the team. A high level of such competence contributes to the development of an inclusive corporate culture, which in turn reduces staff turnover and strengthens ethical standards in the workplace.

In addition, the development of a multicultural approach in a company's internal policy has a positive impact on its reputation. Companies that openly declare principles of cultural sensitivity and intercultural integration are more likely to attract socially responsible investors and strengthen trust among partners and customers in different countries. A.E. Randel & V. Alexandra (2024) confirmed that cultural inclusiveness, as declared in a company's internal policy, significantly increases the perception of the firm as a responsible player in the global market. This creates a positive image and strengthens the social capital of the organisation, which is substantial in an intercultural business environment. In Ukraine, such practices can be implemented through the development of internal codes, training programmes, the adaptation of educational courses and the formation of public standards of inclusiveness. At the same time, Ukrainian realities require consideration of the specifics of wartime, which has intensified relocation processes, expanded participation in international programmes and the need for cultural adaptation. Cross-cultural sensitivity in these conditions becomes critical for maintaining reputation, minimising communication errors and achieving effective cooperation with international donors and investors.

The experience of countries with developed cross-cultural management practices has confirmed the effectiveness of a systematic approach to developing intercultural competence at both the strategic and operational levels. In particular, the corporate sector in Germany actively uses intercultural counselling programmes for managers who work with international teams. Such programmes are aimed to analyse the cultural context, avoiding stereotypes and develop adaptive leadership skills. An example is Siemens AG, which implements Diversity & Inclusion principles in its HR strategies. According to the Sustainability Report 2024, intercultural training of personnel is a mandatory element of corporate sustainability policy (Siemens AG, 2024). In the United States, one of the leading models is diversity management. It covers not only ethnic or national diversity, but also gender, age, religion, and more. Google Limited Liability Company has been actively implementing a diversity support policy since 2003, as evidenced by the report Driving innovation, bridging gaps (2024), which reflects changes in the structure of the personnel, as well as the results of training programmes to increase inclusion. These approaches reduced turnover among minority representatives by 16% over the past five years.

The Japanese approach, on the contrary, is based on harmonising relationships and collectivism. Companies

operating internationally combine national values with the requirements of the global environment, emphasising cultural loyalty and long-term relationships with partners. Hitachi Ltd. implements mentoring and professional development programmes for employees from different countries, which help them adapt to the corporate culture and form intercultural interaction within the global structure (Hitachi, 2024). It is also worth considering successful examples of international companies that can serve as benchmarks for Ukrainian businesses: Siemens AG implements systematic training aimed at developing intercultural communication skills among project managers working in multinational teams. According to the report (Siemens AG, 2024), the company is consistently developing training programmes aimed at creating an inclusive working environment and improving the intercultural competence of employees. As part of its Diversity, Equity & Inclusion corporate strategy, leadership skills and communication flexibility in international teams are emphasised, ensuring effective interaction between representatives of different cultures and company divisions.

This practice can be applied in Ukrainian companies that hire relocated specialists, as well as those that actively cooperate with foreign partners. An example of empirical confirmation of this need is the study by Y. Martynyshyn *et al.* (2019), the first to systematically describe the specifics of intercultural communication among Ukrainian businesspeople in international contexts. The study identified high flexibility, emotional openness, and willingness to adapt during business negotiations as key features of the Ukrainian behavioural model. At the same time, most respondents noted difficulties in perception of their partners' non-verbal signals and differences in attitudes towards time and formality in communication. Notably, Ukrainian businesspeople are more prone to improvisation and focus on practical results, while their foreign partners prefer regulated procedures and structured dialogue. The study authors identified three basic types of responses to intercultural differences: observation and adaptation, active integration, and defensive behaviour. The predominance of the first type indicates the dominance of an adaptive, situational approach to communication, which can be effective even without prior cultural training. This combination of empathy, intuitive comprehension, and pragmatism defines the specifics of the Ukrainian style of intercultural interaction.

Therefore, the study by Y. Martynyshyn *et al.* (2019) demonstrated that Ukrainian professionals are characterised by high behavioural and motivational sensitivity, while the cognitive component of cultural intelligence remains underdeveloped, creating potential for further development through educational programmes on intercultural competence. Based on a content analysis of the results of the study by Y. Martynyshyn *et al.* (2019), the authors of this study systematised the key behavioural characteristics of Ukrainian specialists in an intercultural environment. The conclusions are summarised in Table 2, where the four components of cultural intelligence – motivational, cognitive, behavioural and metacognitive – are interpreted through typical manifestations, interaction strategies and their analytical interpretation. Such a generalised interpretation does not duplicate the authors' research model but extends its content within the framework of the modern concept of CQ, reflecting the peculiarities of the Ukrainian style of intercultural communication based on practical experience, empathy and flexibility in communication.

Table 2. Ukrainian model of intercultural behaviour

Component of intercultural competence	Manifestation in the behaviour of Ukrainian specialists	Typical reaction/interaction strategy	Analytical interpretation
Motivational	High interest in cooperation, willingness to engage in contacts, desire for mutual understanding	Emphasis on trust building and practical results	A profound inner readiness for mutual comprehension, which becomes the motivating force for intercultural cooperation and replaces formal learning tools
Potential consequences	Limited knowledge of cultural norms and etiquette, poor awareness of the context of other cultures	Frequent use of personal cultural templates	Low knowledge structure, but openness to learning
Behavioural	Flexibility, perceptiveness, and the ability to "read" the partner and adapt communication style	Improvisation, non-verbal adaptation	High level of situational sensitivity; intuitive model of cultural intelligence dominates
Metacognitive	Partial awareness of personal cultural reactions, lack of systematic self-analysis	Observation without formalisation of experience	Potential for development of strategic CQ through reflection and learning
Overall result	A combination of empathy, pragmatism and adaptability	Efficient communication even without prior preparation	The Ukrainian model is based on practical experience rather than theoretical constructs.

Source: compiled by the authors based on Y. Martynyshyn *et al.* (2019)

In summary, it is possible to note that the results of Y. Martynyshyn *et al.* (2019) are partially consistent with the conclusions of R.B. Johnson & D. Mirza-Grisco (2018). The latter emphasised that in the adaptation of the CQ scale in Central and Eastern Europe, the cognitive component often occurs less frequently due to cultural and language barriers. In turn, Y. Martynyshyn *et al.* (2019) noted that in the Ukrainian context, the cognitive component of cultural intelligence is indeed less developed, which correlates with general observations about the difficulties of

integrating cognitive elements into post-Soviet cultures, providing scope for further development of the cognitive dimension of CQ through the integration of educational programmes, corporate training and international initiatives focused on intercultural competence.

4. Cross-cultural sensitivity in action: international experience and Ukrainian approaches to implementation

Ukraine, being in a transitional socio-economic and political context, needs to adapt and implement such practices regarding local realities. Effective integration of global experience is possible provided that a set of interrelated measures is implemented. It is advisable to involve specialists in intercultural training who can develop and conduct training programmes in a business environment aimed at developing cultural awareness among staff and improving the intercultural competence of managers. Another relevant component is the development of educational programmes focused on building cross-cultural literacy from an early age, which will help foster openness, tolerance and communicative flexibility in future specialists. In addition, the regulatory framework needs to be improved to ensure support for the principles of cultural inclusion in both public administration and the corporate sector, creating the institutional conditions for the establishment of an inclusive and competitive organisational culture in Ukraine.

The practical implementation of cross-cultural management principles in Ukraine involves a series of consistent measures aimed at improving the intercultural competence of staff and creating an inclusive corporate environment. First, it is advisable to develop internal codes of cultural interaction in enterprises, considering the multicultural composition of teams, which is particularly relevant for industries with a high level of international communication, such as information technology, logistics, trade and consulting. Another critical component is the organisation of mandatory training programmes on intercultural communication for executives and middle managers. Such programmes are essential for ensuring effective cooperation in projects with international participation and interaction with European and global partners.

It is also advisable to integrate intercultural issues into business education, in particular by including specialised modules in Master of Business Administration (MBA) programmes, advanced training courses and educational programmes for civil servants. The public-private partnership system needs further development, as it could become a platform for the pilot implementation of cross-cultural management models in large enterprises with international participation, especially in the energy, transport and infrastructure sectors. Another relevant area is encouraging businesses to implement transparent cultural inclusion policies, which involve the use of ESG (environmental, social and governance) reporting tools. The application of such approaches, which are widespread among leading international companies, creates opportunities for adapting best practices in the Ukrainian business environment and contributes to enhancing reputational trust at the international level. Given the realities of wartime in Ukraine, which have led to large-scale relocation processes in the national business environment and stimulated the intensification of contacts with foreign partners, donors and investors. In these conditions, cross-cultural sensitivity becomes substantial as a strategic competence that ensures the adaptation of enterprises to new market, communication and management conditions.

Cross-cultural sensitivity is not only the ability to recognise cultural differences, but also the ability to adapt organisational practices, communication styles, and management approaches to the expectations of partners with different cultural codes. Its presence ensures that Ukrainian companies can avoid the risks of miscommunication, reduce transaction costs, enhance reputational trust, and successfully integrate into the international business environment. This competence is particularly relevant in the context of Ukrainian companies' participation in international grant programmes and export initiatives. In such situations, interaction is conducted based on well-defined communication protocols, reporting structures, and business ethics standards, which may differ significantly from established practices in Ukraine.

At the same time, in cultures with more collectivist values (Japan, South Korea, China), maintenance of harmony and reputation of the interlocutor is highly valued; therefore, direct criticism or pressure may be perceived as aggression or loss of face. In the context of intercultural studies, the study by M.J. Gelfand *et al.* (2021), which analysed the relationship between the level of cultural rigidity or flexibility (tightness-looseness) of a society and the ability of states to respond effectively to global challenges, is notable. Based on a comparison of data from 57 countries, the authors demonstrated that societies with higher levels of cultural rigidity showed greater discipline and collective coordination during the COVID-19 pandemic. In such cultures, rapid acceptance of rules and compliance with social norms contributed to lower morbidity and mortality rates, indicating effective mechanisms of collective coordination of behaviour. The obtained results extrapolate the conclusions of M.J. Gelfand *et al.* (2021) to the sphere of intercultural interaction in business. The authors' proven ability of "rigid" cultures to be organised and adhere to common norms indicates that structure, clear rules and collective discipline can positively influence the effectiveness of teams in a multicultural environment. At the same time, excessive rigidity of cultural frameworks can limit creativity and flexibility in decision-making; therefore, the optimal approach for international companies is to strike a balance between formalised procedures and room for individual initiative.

In Germany and Austria, there is a typical priority of legal precision, formalised agreements and compliance with procedures. This does not always correlate with the practices of Ukrainian small and medium-sized businesses, where flexibility and informal agreements are still substantial. As demonstrated by D.C. Thomas &

M.F. Peterson (2017), the high level of structure in the negotiation process in these countries is associated with a high level of legal culture and trust in institutions. In countries with low power distance (such as Sweden and the Netherlands), management practices are based on horizontal interaction, transparency of processes and active employee participation in decision-making. For Ukrainian companies, where a vertical management model is traditionally maintained, this requires a transformation of communication style within international teams. According to analytical data from the Country comparison tool (n.d.), organisational cultures with low power distance are oriented towards horizontal management models, which are characterised by transparency, openness to dialogue and collective decision-making. Such models create an atmosphere of mutual trust and partnership, help reduce communication barriers and facilitate coordination in multicultural teams. For companies operating in an international environment, determination of these management principles is of practical importance, as it facilitates the effective combination of different styles of interaction and maintains consistency in the work of multicultural teams. Thus, cross-cultural sensitivity is not only an ethical norm of global business etiquette but also a factor of economic efficiency that reduces the cost of communication errors, improves the quality of partnerships, and contributes to the sustainable development of the enterprise in the context of relocation and foreign economic activity. Integrating international experience into the management system of Ukrainian enterprises requires not a mechanical borrowing of practices, but their meaningful cultural translation, accounting for national realities, business ethics, organisational structure, and communication traditions.

In the context of current challenges, the study considered the following adaptation vectors to be appropriate. The introduction of individual elements of international models in the form of flexible management modules, such as ethical charters, cultural diagnostic tools, or formats for reflective meetings, can be gradually integrated into companies' internal policies. The need to create training programmes for managers that combine basic management training with intercultural analytics, communication psychology and case studies relevant to Ukrainian conditions. Cooperation between businesses, universities and public institutions to exchange experiences in adapting cross-cultural strategies. This will help avoid the isolation of individual industries and accelerate the formation of a nationwide approach. It is advisable to integrate international practices through pilot initiatives with subsequent qualitative analysis of their results. This will not only promote better acceptance of change by staff but also contribute to the accumulation of local experience, which can become the basis for scaling up.

Thus, in the Ukrainian context, it is advisable to consider not the "implementation" of international experience, but the co-creation of adapted practices that preserve the value of global principles but are created from the local environment. In this process, it is not only borrowing that is key, but also reflection on personal experience as a resource that can be valuable in international exchange. In this regard, it is advisable to consider Ukrainian practical experience as a source of applied solutions for organisations operating in unstable or transformational conditions. The results of enterprises adapted to the challenges of war demonstrate the formation of new approaches to teamwork, flexible management, informal leadership, and internal staff mobility. Practices that can be integrated into the international management paradigm within the framework of partnership initiatives include local models of crisis-resistant planning developed in conditions of partial or complete loss of infrastructure, disruption of logistical links, and information instability. They involve the formation of flexible response scenarios, multi-level communication channels and decision-making based on real-time situational analysis. This approach can be adapted in companies operating in unstable markets or facing geopolitical risks. It is also worth noting horizontal decision-making formats in multicultural or distributed teams based on the principles of mutual accountability, openness to bottom-up initiatives, and shared risk management. Instead of a rigid hierarchy, Ukrainian companies are increasingly using mechanisms of collective discussion, facilitation, and delegation, which facilitates the rapid adaptation of strategies to changing conditions.

The use of informal ethical norms to preserve organisational integrity, particularly in the context of interregional staff integration (e.g., following the relocation of production or project units), can also be integrated. Creating a common moral field that supports corporate cohesion in an environment of cultural, geographical or emotional divide. This practice helps to reduce internal conflicts and build loyalty and trust. Lastly, the introduction of flexible and situation-oriented educational models that can quickly retrain or train staff without interrupting their main activities. For example, mini-courses, mentoring sessions within the team, or project-based learning with external experts can be introduced.

Such approaches contribute to maintaining operational continuity in an unstable environment and are an alternative to traditional long-term forms of professional development. These approaches, which emerged as a response to extreme external circumstances, are gradually shaping a new management culture with a high level of adaptability, humanity and focus on real results. Such practices can be institutionalised as part of management standards in conditions of high uncertainty, and can also be integrated into international educational, research and consulting programmes as examples of effective organisational transformation. Thus, the exchange of management practices should not take place on the principle of unilateral transfer of knowledge from dominant countries to the periphery, but in the format of an equal partnership, in which Ukrainian practical experience acts not as an auxiliary element, but as an independent source of innovation in the field of intercultural management, adaptation and sustainable development.

Conclusions

The study identified intercultural management and cultural intelligence as key factors for the successful operation of companies in a globalised environment. An analysis of the experience of companies such as Google, Siemens, Hitachi, as well as Ukrainian enterprises operating in international markets, showed a positive correlation between the development of CQ policies and the growth of intercultural interaction efficiency. This confirms the relevance of CQ not only in theory but also in the practical aspects of modern business. The study showed that the introduction of training courses on cultural competence development, increasing motivational CQ among employees, and the practice of "integrative acculturation" contribute to reducing conflicts, increasing initiative, and improving team dynamics in a multicultural environment. The study identified that the motivational component of CQ is most relevant for leadership positions, as it forms the basis for trust and effective communication. Furthermore, based on an analysis of international companies' policies, the study concluded that CQ is increasingly being used as one of the criteria for selecting management personnel. In this context, the introduction of CQ-oriented recruitment procedures in the Ukrainian business environment is relevant.

The study highlighted cases of local companies that successfully adapted to intercultural challenges through institutional modernisation, the introduction of internal codes of conduct, the formation of inclusion policies, and the creation of international teams. This was used to offer recommendations for managing intercultural personnel that are tailored to Ukrainian realities. A substantial part of the study was recommendations on localising intercultural training and the need for a special approach to implementing CQ in the post-Soviet environment. Such an approach should consider the specifics of hierarchical management traditions, distrust of transformations, and the need for management support for change.

Further research should address the empirical quantitative measurement of CQ levels in Ukrainian enterprises using standardised scales (e.g., Cultural Intelligence Scale), as well as analysing the relationship between CQ levels and key performance indicators (KPIs), including staff turnover, adaptation in international teams, talent retention, and long-term brand capitalisation. It is interesting to study CQ in innovative scientific companies, start-ups, and international projects with high staff turnover. Analysis of long-term effects of intercultural policy on brand capitalisation of companies, corporate reputation, and ability to retain talent in a globalised labour market is noteworthy. All these areas outline prospects for further empirical research aimed at expanding the theoretical base and practical recommendations for managing cultural diversity in Ukrainian and international organisations.

Acknowledgements

None.

Funding

None.

Conflict of Interest

None.

References

[1] Country comparison tool. (n.d.). Retrieved from https://surl.li/tlidfk.

[2] Davaei, M., & Gunkel, M. (2024). The role of intelligences in teams: A systematic literature review. *Review of Managerial Science*, 18, 259-297. doi: 10.1007/s11846-023-00672-7.

[3] Driving innovation, bridging gaps. (2024). Retrieved from https://surl.li/egaktz.

[4] Feng, S., & Tan, C.Y. (2024). Toward conceptual clarity for digital cultural and social capital in student learning: Insights from a systematic literature review. *Humanities and Social Sciences Communications*, 11, article number 68. doi: 10.1057/s41599-023-02519-8.

[5] Friedman, R. (2024). *How high-performing teams build trust*. Retrieved from https://hbr.org/2024/01/how-high-performing-teams-build-trust.

[6] Gelfand, M.J., Jackson, J.C., Pan, X., Nau, D., Pieper, D., Dension, E., Dagher, M., van Lange, P.A.M., Chiu. C.Y., & Wang, M. (2021). The relationship between cultural tightness-looseness and COVID-19 cases and deaths: A global analysis. *Lancet Planet Health*, 5(3), 135-144. doi: 10.1016/s2542-5196(20)30301-6.

[7] GrossGołacka, E., & Martyniuk, A. (2024). Globalisation and the challenges of managing cultural diversity: From multiculturalism to interculturalism. *Journal of Intercultural Management*, 16(3), 37-57. doi: 10.2478/joim-2024-0010.

[8] Heubeck, T., Storz, A.-S., & Meckl, R. (2024). Success factors of global virtual teamwork: A social capital perspective. *Digital Business*, 4(2), article number 100081. doi: 10.1016/j.digbus.2024.100081.

[9] Hitachi. (2024). *Hitachi integrated report*. Retrieved from https://surli.cc/cbmhkq.

[10] Ibanez, A., Molina Barzola, M., & Jimber del Rio, J.A. (2025). Cultural intelligence and performance in highly international, diverse working environments: A mediating model in the money exchange sector. *Cogent Business & Management*, 12(1), article number 2491685. doi: 10.1080/23311975.2025.2491685.

[11] Johnson, R.B., & Mirza-Grisco, D. (2018). The adaptation of the Cultural Intelligence Scale in Central and Eastern Europe: Application of focus groups methodology. In *Proceedings of international academic conferences*. (p. 63) Prague: International Institute of Social and Economic Sciences. doi: 10.20472/IAC.2018.043.017.

[12] Katz-Gerro, T., Yodovich, N., Rössel, J., Sivonen, S., & Llonch-Andreu, J. (2025). Europeans' perspectives on the cultural impacts of globalisation and migration. In *Engagement with culture in transformative times*. Abingdon: Routledge. doi: 10.4324/9781003460497-9.
[13] Liao, Y., & Thomas, D.C. (2025). The emergence of collective cultural intelligence in teams in multicultural contexts: A dynamic perspective. group & organization management. *Group & Organization Management*, 50(2), 420-460. doi: 10.1177/10596011251314099.
[14] Livermore, D., Van Dyne, L., & Ang, S. (2022). Organizational CQ: Cultural intelligence for 21st-century organizations. *Business Horizons*, 65(5), 671-680. doi: 10.1016/j.bushor.2021.11.001.
[15] Mammadov, A., & Wald, A. (2025). The role of cultural intelligence and emotional intelligence in the internationalization of SMEs: Does global mindset matter? *Management International Review*, 65, 115-144. doi: 10.1007/s11575-024-00561-5.
[16] Martynyshyn, Y., Khlystun, E., & Kovalenko, Y. (2019). The cross-cultural communications in business trips: Statistical measures in coordinates of Ukraine. *Communications - Scientific Letters of the University of Žilina*, 21(4), 104-112. doi: 10.26552/com.C.2019.4.104-112.
[17] Mathey, F., Lysova, E.I., & Khapova, S.N. (2024). How is social capital formed and leveraged in international careers? A systematic review and future research directions. *Management Review Quarterly*, 74, 1209-1248. doi: 10.1007/s11301-023-00332-w.
[18] McKinsey & Company. (2020). *Diversity wins: How inclusion matters*. New York: McKinsey & Company.
[19] McKinsey & Company. (2023). *Diversity matters even more: The case for holistic impact*. Retrieved from https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-matters-even-more-the-case-for-holistic-impact.
[20] Morris, S.N. (2023). Cultural diversity in workplace and the role of management. *American Journal of Industrial and Business Management*, 13(5), 380-393. doi: 10.4236/ajibm.2023.135024.
[21] Mushaathoni, M. (2024). Workers' perceptions regarding approaches to intercultural communication in the workplace: A study in a South African University. *Journal of Intercultural Communication*, 24(1), 174-188. doi: 10.36923/jicc.v24i1.325.
[22] Randel, A.E., & Alexandra, V. (2024). From cultural intelligence to workgroup inclusion through synchrony preference and perceived workgroup similarity. *Journal of World Business*, 59(1), article number 101490. doi: 10.1016/j.jwb.2023.101490.
[23] Semenov, A., & Randrianasolo, A. (2024). An extended conceptualization of cultural intelligence. *International Journal of Cross Cultural Management*, 24(3), 563-586. doi: 10.1177/14705958241268289.
[24] Siemens AG. (2024). *Sustainability report 2024*. Berlin: Siemens AG.
[25] Taras, V., Baack, D., Caprar, D., Jiménez, A., & Froese, F. (2021). *Research: How cultural differences can impact global teams*. Retrieved from https://hbr.org/2021/06/research-how-cultural-differences-can-impact-global-teams.
[26] Teixeira, K.A. da S., & Zanela Klein, A. (2024). The development of cultural intelligence (CQ) in situated learning. *Sage Open*, 14(4). doi: 10.1177/21582440241288056.
[27] Thomas, D.C., & Peterson, M.F. (2017). *Cross-cultural management: Essential concepts*. Thousand Oaks: SAGE Publications, Inc.
[28] Yüksel Sakınç, A., & Ergün, E. (2024). Leadership behaviors and leader effectiveness: The mediating role of cultural intelligence. *Sustainability*, 16(24), article number 11054. doi: 10.3390/su162411054.
[29] Yusuf, L., Rostiana, R., & Budiana, I. M. (2024). Cultural intelligence as a determinant of performance: Unveiling the role of job satisfaction and the impact of knowledge sharing. *INSPIRA: Indonesian Journal of Psychological Research*, 5(2), 183-195. doi: 10.32505/inspira.v5i2.9428.

Роль мультикультурних аспектів в управлінні підприємством

Віталій Стрелецький
Аспірант
Вінницький національний технічний університет
21000, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0009-0007-3364-5250

Лілія Руда
Кандидат економічних наук, доцент
Вінницький національний технічний університет
21000, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
https://orcid.org/0000-0002-1598-8301

Анотація. В умовах глобалізації міжкультурна компетентність стає ключовим чинником ефективної діяльності підприємств, що працюють у багатокультурному середовищі. Метою дослідження був аналіз впливу міжкультурного менеджменту та культурного інтелекту на управління організаціями, зокрема в контексті українських підприємств із міжнародними зв'язками. Методологія базувалася на аналізі наукових джерел, кейсів з української практики, вторинних даних і застосуванні міждисциплінарного підходу. Отримані результати засвідчили, що високий рівень культурного інтелекту забезпечує зменшення кількості конфліктів у багатонаціональних командах, покращення комунікації між підрозділами та підвищення адаптивності працівників у новому культурному середовищі. Виявлено, що мотиваційний і поведінковий компоненти культурного інтелекту найбільше впливають на якість міжкультурної взаємодії, тоді як когнітивний компонент залишається менш розвиненим у пострадянських організаційних культурах. У результаті проведеного аналізу систематизовано чинники, що визначають ефективність міжкультурної комунікації, узагальнено приклади корпоративних практик Google, Siemens і Hitachi, які демонструють інтеграцію культурного інтелекту у стратегії управління та політику різноманіття. Виявлено ключові бар'єри розвитку крос-культурної компетентності в українських компаніях, зокрема обмежену формалізацію інклюзивних політик і недостатню увагу до когнітивного аспекту культурного інтелекту. Аналіз міжнародних досліджень підтверджує, що впровадження програм розвитку міжкультурної компетентності сприяє підвищенню довіри, згуртованості та інноваційного потенціалу команд. Проаналізовано складові культурного інтелекту, їхній вплив на робочі процеси в мультикультурному середовищі та бар'єри, з якими стикаються українські компанії. Дослідження має практичну цінність для фахівців з управління персоналом, керівників і розробників політик корпоративного навчання та адаптації персоналу

Ключові слова: культурний інтелект; міжкультурний менеджмент; багатонаціональні команди; міжнародна адаптація; організаційна ефективність; мультикультурне середовище

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 01.04.2025; Revised: 30.07.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.66

UDC 339.5:004.738.5(477):005.8

Introduction of information technologies in international trade in the development of foreign economic activity: Security aspect

Andrij Zaverbnyj*
Doctor of Economic Sciences, Professor
Lviv Polytechnic National University
79013, 12 Stepan Bandera Str., Lviv, Ukraine
https://orcid.org/0000-0001-7307-536X

Abstract. The purpose of the article was to study and develop the information support for managing international trade by Ukrainian enterprises under the conditions of expanding the foreign economic activity, considering the security aspect. The theoretical and methodological foundations of the research were based on the application of a comprehensive interdisciplinary approach that effectively combined the economic theory of international trade, information and economic security, risk management, and digital transformation. The main research methods included system analysis, comparative study, and digitalisation analysis. A review of the literature and legal framework on the implementation of innovative information technologies in the international trade of Ukrainian enterprises and the security aspects was conducted. The study emphasised that the security aspect of digitalising the information support of international trade by Ukrainian enterprises is of considerable importance. Security challenges and threats were identified as key barriers to the digital transformation of foreign economic activity, particularly international trade. The peculiarities of using information technologies in foreign economic activity are revealed, especially in the context of digital transformation, cybersecurity, and regulatory compliance. The prospects opened by integrating digital solutions such as electronic platforms, blockchain, big data, and artificial intelligence are outlined. Proposals have been developed to enhance the level of information security under the conditions of globalisation and digitalisation of world trade relations. A sequence of information support for managing international trade by Ukrainian enterprises in the process of developing the foreign economic activity, considering the security aspect, has been proposed. Information systems capable of assessing the competitive environment, taking into account all macroeconomic, institutional, microeconomic, security, and other market factors relevant to enterprises – measuring, assessing, and forecasting competition within industries, countries, and regions, as well as identifying technological lag and customer needs (especially new ones when entering foreign markets) – have been identified. It has been established that, to ensure the effective operation of an enterprise, particularly in the context of foreign economic activity, it is necessary to create a reliable information system capable of meeting the complex needs of the enterprise over a long period of time

Keywords: digitalisation; globalisation; economic security; information; cybersecurity

Introduction

The issue of developing, implementing and actively using information technologies (IT) by enterprises in the international trade has become extremely relevant in view of the reforms and digitalisation of country's economy, the dynamism, and globalisation of the world economy. After all, trends in the global economy make digitalisation a key factor in increasing the efficiency of international trade. Ukrainian enterprises, actively expanding the participation in foreign economic activity, are increasingly facing the urgent need to introduce the latest IT to ensure the required level of the own competitiveness, transparency, and security of trade (including international) operations. Along with the potential of digital solutions, there are also serious challenges and threats associated with cyber threats (especially

Suggested Citation:
Zaverbnyj, A. (2025). Introduction of information technologies in international trade in the development of foreign economic activity: Security aspect. *Innovation and Sustainability*, 5(3), 66-78. doi: 10.31649/vis/3.2025.66.

*Corresponding author

in 2014-2025), imperfect infrastructure, and low levels of digital culture in certain business segments.

I.Z. Savras & V.I. Fedynets (2023) examined the role of digitalisation in the innovative development of enterprises, in particular the positive effects of digitalisation on innovation, obstacles to the implementation of innovations in the context of digitalisation. H. Blakyta *et al.* (2025) noted that the issue of digitalisation and its impact on various spheres of society and on the activities of enterprises and organisations has been one of the most pressing in many areas of scientific research. Digital technologies were defined as a driver of sustainability and adaptability for Ukrainian enterprises, which underscored the importance of researching this topic. H. Blakyta *et al.* (2025) also noted that it was precisely the crisis conditions (the COVID-19 epidemic, war) that prompted Ukrainian enterprises to intensify the use of digital technologies. However, researchers have focused on conceptual theoretical and methodological issues, while quantitative studies of digitalisation and digital transformation have not gained sufficient traction, primarily due to a lack of data.

Digital transformation in organisational management is a complex, multifaceted process that requires an integrated approach combining technical and organisational aspects. A. Drabovskyi (2025) pointed to the successful implementation of a digital strategy as a significant result. It depends on the formation of a digital culture within the enterprise and the improvement of the digital competencies of the management team. As the author pointed out, transformational leadership plays a significant role in this process, as it is capable not only of adapting the organisation to new conditions, but also of initiating innovation and promoting the active participation of all levels of staff in the implementation of changes.

The issue of currency security was examined by B. Ilychok *et al.* (2024). The authors devoted the research to improving the effectiveness of public administration in the field of currency security in Ukraine. The researchers provided a general description of the essence, state, and dynamics of the effectiveness of public administration of the state's currency security. The authors also assessed the state and dynamics of Ukraine's currency security indicators based on the characteristics of the state's currency policy indicators compared to similar indicators in Poland. A Danish company named Maersk (2022) in the research on the digitisation of the supply chain and increasing innovation in the industry, used solutions aimed at reducing trade disputes and promoting the development of global trade. It should also be noted that the issue of digitalisation is relevant in various spheres of life in Ukraine. O. Bulavynets (2025) studied the essence of digitalisation of social transfers as an important step for further modernisation of social protection systems and increasing the efficiency of the administration. According to the study, digitalisation involves the integration of modern IT to automate the processes of providing social benefits, ensuring accessibility, transparency, and speed in the distribution of social assistance, including that received from abroad. It was important to note O. Bulavynets (2025) conclusion that the processes of introducing digital technologies pose new challenges for the state: the need to ensure cybersecurity, protect personal data, and train the population to use new tools.

In dynamic conditions of globalisation and digital transformation of the economy, information technology plays and will continue to play a key role in the development of such international economic relations as international trade. Enterprises, actively developing the foreign economic activity, implement modern IT solutions that serve as a tool for improving the efficiency of foreign economic operations, a prerequisite for maintaining the competitiveness of these enterprises and the products and services in the global market. The process of integrating modern information and communication technologies into foreign economic activity is usually accompanied by several problems: insufficient, outdated, inflexible digital infrastructure in the country or region, limited opportunities for financing the implementation and use of these technologies, staff shortages (especially in times of war), legislative and regulatory barriers, etc. These problems create challenges for enterprises in the digitalisation of the international trade operations, logistics, customs clearance, e-commerce, use of analytical platforms. Despite significant achievements in the field of introduction of modern IT into international trade of Ukrainian enterprises in the context of the foreign economic activity, the security aspect of these processes has not been sufficiently systematised and studied. The aim of the study was to analyse the issues surrounding the implementation of up-to-date IT in the international trade of Ukrainian enterprises, taking into account security aspects.

Materials and Methods

The study used a comprehensive interdisciplinary approach that integrated the provisions of the economic theory of international trade, information security theory, economic security, risk management, and the concept of digital business transformation. This approach was used to comprehensively examine the issues of digitalisation of information support for foreign economic activity of enterprises under martial law. The study was based on the following methods. The system analysis allowed covering the interrelationships between information security, digital solutions, and the peculiarities of the functioning of enterprises in the context of foreign economic activity. The method of comparative research was used to analyse the current regulatory framework in the field of information security and digitalisation in Ukraine in comparison with international standards and practices. The review and analytical methods were applied to study literary sources (Tron, 2016; Lupak, 2019; Glushchevsky *et al.*, 2023) and statistical materials on the level of digitalisation, IT infrastructure, and cyber threats in the field of international trade. Analysing digital solutions (technologies), including the use of electronic data interchange (EDI), enterprise resource planning (ERP), customer relationship management (CRM), blockchain, big data,

and cloud services, allowed determining the level of readiness of Ukrainian enterprises for digital transformation in international trade. The following companies were selected for analysis: Nova Poshta (n.d.), PrivatBank (n.d.), SoftServe (2024), with one state structure (The State Cyber Protection Centre…, 2024). The companies were selected because these companies were recognised leaders in Ukraine both in terms of gross income and in the implementation of information technologies in international trade within the development of foreign economic activity.

The methodology of the study also included a number of Ukrainian laws: Law of Ukraine No. 675-VIII (2015), Law of Ukraine No. 1789-VIII (1992), Law of Ukraine No. 2155-VIII (2017), Law of Ukraine No. 2297-VI (2010), Law of Ukraine No. 851-IV (2003), as amended in 2023, Law of Ukraine No. 1089-IX (2020), as amended in 2025, etc. The selection of these specific Ukrainian laws as a methodological basis was due to their fundamental role in regulating digital processes, ensuring information security, and supporting the digital transformation of international business operations. Law of Ukraine No. 675-VIII (2015) established the legal framework for conducting business activities online, which was directly relevant to international trade, as it provided mechanisms for the validity of electronic contracts and transactions. Law of Ukraine No. 1789-VIII (1992) defined the general principles of information relations, including access, dissemination, and protection of information, which formed the basis for secure data exchange in foreign economic activity. Law of Ukraine No. 2155-VIII (2017) introduced the use of digital signatures, authentication, and trust services that guaranteed the reliability and legal recognition of electronic interactions in cross-border trade. Law of Ukraine No. 2297-VI (2010) ensured compliance with international standards of data privacy and protection, which was crucial when Ukrainian companies engaged in trade with EU and other international partners. The Law of Ukraine No. 851-IV (2003, amended in 2023) regulated the creation, storage, and legal force of electronic documents, thus facilitating secure digital document exchange in foreign trade. Law of Ukraine No. 1089-IX (2020, amended in 2025) provided the legal framework for electronic communication networks and services, which was essential for maintaining cybersecurity and uninterrupted digital interaction in international trade. These legislative acts formed a comprehensive methodological framework for analysing the security dimension of IT implementation in international trade.

The application of international standards such as ISO/IEC 27001:2022 (2022) and the NIST Cybersecurity Framework (n.d.) as methodological foundations for the security aspect of the implementation of information technologies in international trade in the development of foreign economic activity was justified by their global recognition and practical significance in ensuring cybersecurity and information protection. ISO/IEC 27001:2022 (2022) established the international standard for information security management systems (ISMS). Its implementation ensured systematic risk management, continuous monitoring, and compliance with global requirements for data confidentiality, integrity, and availability. For enterprises engaged in international trade, adherence to ISO/IEC 27001:2022 (2022) strengthened trust with foreign partners and provided evidence of compliance with international security benchmarks. The NIST Cybersecurity Framework (developed by the U.S. National Institute of Standards and Technology) provided a flexible structure for managing cyber risks based on five key functions: identify, protect, detect, respond, and recover. Its use helped businesses establish comprehensive security processes, mitigate cyber threats, and ensure the resilience of cross-border digital operations. By incorporating ISO/IEC 27001:2022 (2022) and the NIST Cybersecurity Framework (n.d.) into the methodological foundation, the study ensured alignment with the best international practices. This not only complemented Ukrainian legislation but also reflected the requirements of global trade partners and international organisations, thereby enhancing the security and competitiveness of Ukrainian enterprises in the global digital economy.

Results

In the context of globalisation and growing cyber threats, the implementation of information technologies in international trade becomes a key factor in the effective development of enterprises' foreign economic activity. Ensuring digital and information security, in turn, is a prerequisite for maintaining the competitiveness and resilience of Ukrainian business in global markets. According to T. Vasyltsiv *et al.* (2017), R. Lupak (2019) and A. Zaverbnyi *et al.* (2024), the key challenges can be grouped into several interrelated areas. First, there is the instability of the IT infrastructure, which reflects the insufficient digital maturity of enterprises and the personnel; this issue will be addressed in more detail later, but it is also compounded by the absence of effective strategies for cyber defence development. A second pressing concern is the imperfection of the existing regulatory framework: the current legislation on protecting commercial and personal information requires substantial harmonisation with international standards and norms. Equally important is the acute shortage of qualified personnel, as the lack of highly skilled IT specialists able to integrate new solutions into enterprises' foreign economic processes hampers international trade; under martial law, this deficit is exacerbated by the mobilisation of mainly men, ongoing rocket attacks, civilian casualties, and intensified emigration flows. Finally, the situation is aggravated by a significant rise in cybersecurity threats, with a growing number of incidents aimed at disrupting supply chains, stealing data, and substituting communications. It is a comprehensive, multi-level system of legislative and regulatory acts aimed at protecting the information space and ensuring the information sovereignty of the state. In the process of developing information technologies in the management of international trade, priority should be given to the general legal principles governing information and

informatisation, integrating these principles into international law. This will allow forming the basis for further integration of specific technological solutions.

The legal framework that establishes the key principles of access to information, its use, and protection comprises the national laws: the Law of Ukraine No. 675-VIII (2015), the Law of Ukraine No. 1789-VIII (1992), the Law of Ukraine No. 2155-VIII (2017), the Law of Ukraine No. 2297-VI (2010), the Law of Ukraine No. 851-IV (2003, amended in 2023), the Law of Ukraine No. 1089-IX (2020, amended in 2025), among others. Collectively, these legal acts form the foundation for the utilisation of information technologies across various domains, including international trade and foreign economic activity. It should be emphasised that this legislative framework is subject to ongoing amendments and additions, reflecting the need to adapt to the international environment and the high dynamism of digitalisation processes. Some amendments are scheduled to be introduced during 2025. The Law of Ukraine No. 675-VIII (2015) defines the organisational and legal principles of e-commerce, including the procedure for concluding electronic transactions, the legal equivalence of electronic and written contracts, consumer rights, and transparency regarding information about sellers and delivery. Its international component lies in the requirement to comply with European data protection standards when dealing with clients from the EU, which has significant implications for companies engaged in cross-border trade. The 2022 edition introduced new provisions, particularly concerning the status of intermediary service providers, such as operators, payment systems, and domain registrars. Nevertheless, problematic aspects remain: the law lacks comprehensive alignment with international practice and UNCITRAL jurisdiction, which creates a regulatory lag. Moreover, the boundary between the extensive liability of sellers and the limited liability of intermediary service providers is not always clearly delineated.

The Law of Ukraine No. 1789-VIII (1992) regulates the fundamental principles of access to information, including the right to obtain, disseminate, and protect it. Although the law does not contain explicit provisions on international trade, it allows for the application of principles aligned with international information standards. Over the years, the law has undergone continuous updates: for instance, between 2010 and 2020, amendments introduced new formats of digital interaction and refined terminology. However, the law continues to face certain challenges: its regulation remains highly fragmented, and it lacks modern provisions on digitalisation, particularly in relation to e-commerce, big data, and related domains.

The Law of Ukraine No. 1089-IX (2020, amended in 2025) comprehensively regulates the field of electronic communications, including the radio frequency spectrum, the competences of public authorities, the rights, and responsibilities of market participants, and user protection. The international dimension of this law is manifested in the implementation of EU standards (notably the European Electronic Communications Code) as part of Ukraine's Association Agreement with the EU. This ensures Ukraine's gradual convergence with the EU's Digital Single Market. The 2025 edition reinforced this alignment by introducing provisions on general authorisation, out-of-court dispute resolution, and equal conditions for operators. Nevertheless, several challenges remain, including Ukraine's dependence on the European regulatory framework, which may complicate the process of transposition, as well as potential conflicts between infrastructure regulation and the regulation of e-commerce.

Looking forward, it is advisable to focus on the prospects of intensifying the use of digital technologies in the foreign economic activities of enterprises and organisations. Despite existing problems, risks, and threats, digitalisation possesses considerable transformational potential. In particular, the application of blockchain technologies can ensure transparency and integrity of international contracts, traceability of goods, and the prevention of document falsification – factors of critical importance in turbulent and high-risk conditions. Similarly, the use of big data and advanced analytics in supporting the information needs of international trade management among Ukrainian enterprises enables more accurate forecasting of foreign markets, consumer behaviour, and risks of political or economic destabilisation. The introduction and systematic use of electronic document management systems, alongside platforms such as EDI, ERP, and CRM, will greatly simplify customs clearance, customs control, logistics, and international financial settlements. In international trade, EDI, ERP, and CRM can be integrated through a unified security module that controls access, encrypts data, and monitors incidents (Table 1). Furthermore, the adoption of artificial intelligence and machine learning can facilitate automated decision-making in trade management, risk management, customer servicing, and reputation management (particularly crucial for enterprises entering foreign markets for the first time). Finally, the use of cloud technologies provides businesses with the ability to scale up the foreign economic operations significantly, without incurring substantial costs associated with developing and maintaining proprietary IT infrastructures. The challenge faced by most modern enterprises lies in the reliance on outdated management methods in providing information support for the business activities, particularly within the framework of foreign economic operations. The adoption of advanced, innovative approaches to business process management, including international trade, is not generally prioritised within the strategic development agendas. A number of enterprises are limited in utilising modern accounting information systems alone. Such an approach prevents these enterprises from promptly and comprehensively forecasting external environmental conditions – critical when entering foreign markets – planning international trade activities, evaluating the efficiency of the business processes in the context of foreign economic activity, and performing other tasks that are essential for

contemporary management in online (real-time) mode. To address these challenges, enterprises must first identify the key business processes and examine common approaches to the automation and digitalisation. The outcome of such an analysis will highlight areas requiring improvement across the enterprise as a whole. These improvements should be implemented with due regard to the specificities of its international and foreign economic operations. Effective management of such activities requires the establishment of business processes tailored to international trade conditions. In general, it is advisable to analyse the information support of economic activity, including international trade, in a systematic and staged manner. This process should begin with the identification of trade-related business processes, the allocation of points of responsibility within these processes, and the mapping of information flows that accompany international trade operations. When identifying business processes in international trade, it is important to differentiate between universal and specialised processes. Universal trade-related processes are typically classified into the following categories: procurement of goods; value creation (formation and delivery of services, or execution of works); and sales of goods, services, or works. Specialised processes, by contrast, are enterprise-specific and relate to the management of relationships with competitive customers. Since most enterprises generally operate with a relatively limited client base, maintaining effective and sustainable communication with customers is of particular importance. Enterprises systematically engaged in foreign economic activity, and international trade in particular, continually require diverse forms of information support for the business processes, such as data on international market conditions, fluctuations in exchange rates, and modifications in customs procedures. The principal interconnections between these stages are presented in Figure 1.

Table 1. Detailed description of the use of EDI, ERP, and CRM in international trade for the development of foreign economic activity with a focus on information security

Platform names	Purpose in foreign economic activity	Characteristics of the safety aspect when using	Description of potential risks in case of insufficient protection
EDI	Automation of electronic exchange of commercial documents between partners (invoices, customs declarations, delivery notes, orders). Ensuring a unified data format in international transactions (EDIFACT, ANSI X12).	Encryption of communication channels (TLS, VPN) to protect against interception of commercial, customs, and other information. Authentication of counterparties (electronic certificates, PKI) to prevent document forgery. Audit logs to record the time, author, and content of transmitted documents. Protection against MITM attacks during international data transmission through certified EDI provider gateways.	Interception/substitution of contract data. Unauthorised access to commercial and customs information.
ERP	Centralised management of financial, logistics, production, and foreign economic activity processes. Integration with customs and transport modules for the automation of international transportation. Planning of currency transactions, warehouse stocks, and export-import schedules.	Role-based access control (RBAC) to restrict access to confidential data. Regular backups (in encrypted form) for recovery in case of cyberattacks or failures. Anomaly monitoring (detection of unauthorised changes in financial and logistical data). Integration with SIEM systems for real-time detection of security incidents.	Compromise of financial and foreign economic information, contract terms. Loss of data on inventories, delivery schedules, and other data on foreign economic transactions.
CRM	Maintaining a database of international clients and partners, tracking transaction history, communications, and correspondence. Personalised marketing campaigns for foreign markets. Communication support (email, VoIP, messengers, web forms).	Protection of customer personal data in accordance with GDPR, CCPA, and the Law of Ukraine No. 2297-VI Encryption of storage and transmission of customer contact, financial, and foreign economic information. Access control (MFA, IP filtering) to prevent unauthorised access. Detection of phishing attacks on employees who work with the international customer base.	Leaks of customer and partner data can damage reputation and even lead to fines. Use of hacked contacts for fraudulent transactions in international trade.

Source: compiled by the author based on Law of Ukraine No. 2297-VI (2010), S.P. Tron (2016), R. Lupak (2019), V. Glushchevsky *et al.* (2023), Yu. Neustroiev (2025), T. Talakh & V. Talakh (2025)

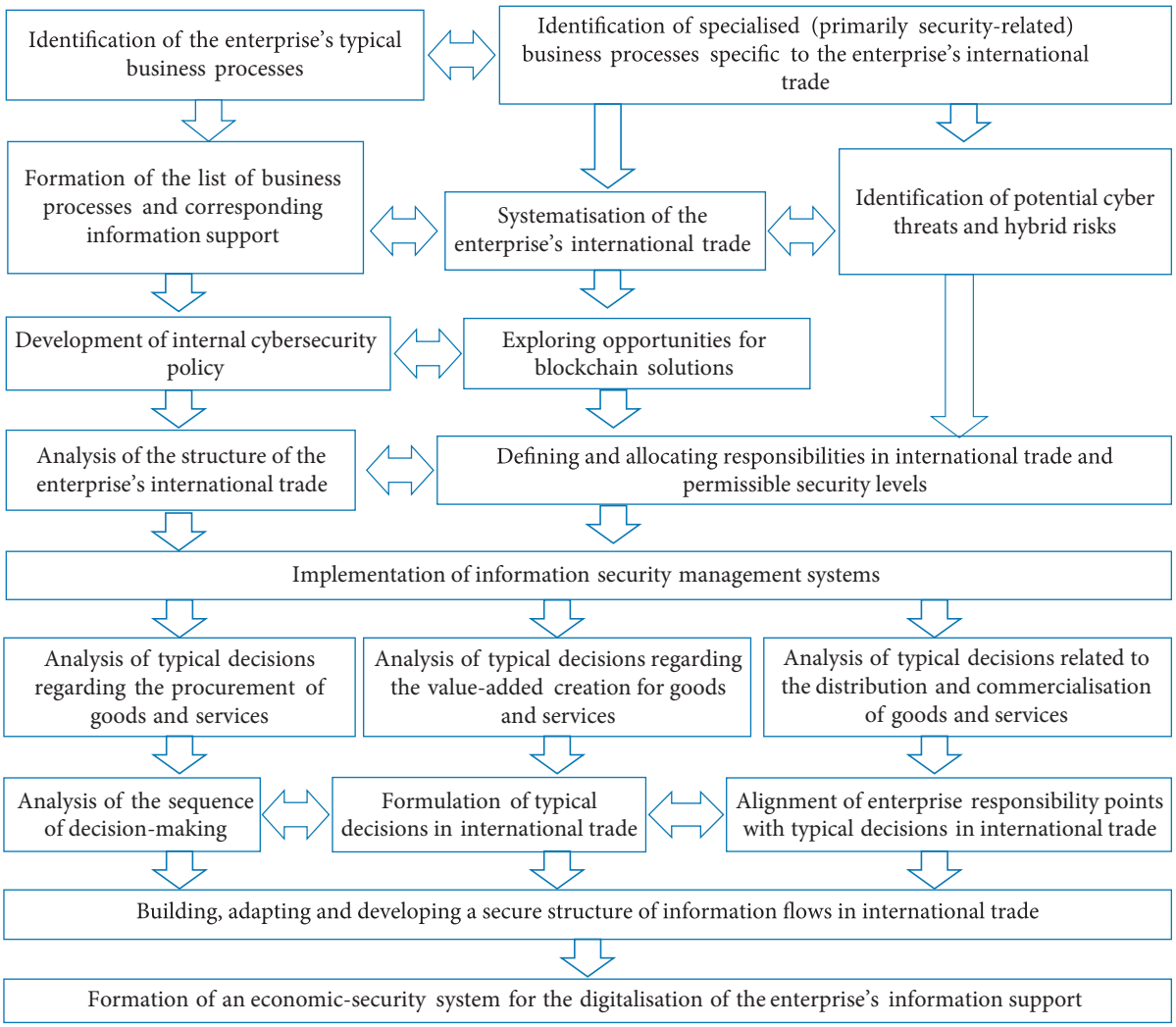

Figure 1. The recommended sequence of information support for the management of international trade by enterprises in the context of development of the foreign economic activity, taking into account the security aspect
Source: supplemented and developed based on S.P. Tron (2016), R. Lupak (2019), V. Glushchevsky *et al.* (2023)

An important element of information support for the management of international trade by enterprises in the context of the development of the foreign economic activity is the formation and implementation of information security management systems (Fig. 1). Thus, the digitalisation of information support for international trade of enterprises is the process of introducing digital technologies (primarily modern and efficient ones) into the processes of collecting, processing, analysing, storing, and transmitting data that ensure this activity of the enterprise. In foreign economic activity, digitalisation primarily covers electronic trading platforms, CRM systems, blockchain technologies (usually only for logistics, but potentially can have a much wider range of applications, as transparency and impossibility of manipulation increases the level of reliability, security, reducing risk, etc.), electronic document management, customs clearance systems, etc. Information and economic security are a set of technical, organisational, and legal measures aimed at protecting data from unauthorised access (theft), distortion, and loss. And given the openness of the global information space and martial law in Ukraine, enterprises, entering foreign markets and operating in the market, are particularly vulnerable to digital threats. Summarising this research, systematise potential areas for ensuring the digital security of enterprises engaged in foreign economic activity, including international trade, in the current turbulent economic environment.

The formation and further development of an effective digital security system for businesses in Ukraine requires a comprehensive approach that encompasses both internal regulations and integration with international standards. The implementation and use of ISMS in accordance with international standards ISO/IEC 27001:2022 (2022) or NIST Cybersecurity Framework (n.d.) provides structured management of risks arising during the processing and storage of information. In Ukraine, Nova Poshta (n.d.) has obtained ISO/IEC 27001:2022 (2022) certification, which has enabled it to guarantee the

security of its customers' personal data and ensure the trust of its international partners. Globally, more than 44,000 organisations are certified to ISO/IEC 27001:2022 (2022), confirming the universality and effectiveness of this tool. Developing and implementing an internal cybersecurity policy that includes regular employee training, improving the digital literacy, and simulating phishing attacks is a key measure in countering social engineering. The experience of the Ukrainian banking sector, in particular PrivatBank (n.d.), shows that phishing attack simulations and online courses for employees have reduced the number of successful attacks by 68% (Table 2). According to IBM research, similar programs in global practice can reduce this figure to 70% (Cost of a data breach report, 2025). Systematic digital audits of partner platforms and supply chains make it possible to identify weaknesses before malicious actors exploit these vulnerabilities. An alternative is blockchain technology, which ensures transparency and immutability of transactions, eliminating the need for regular audits, although it requires significant investment. The Ukrainian agricultural holding MHP is already implementing blockchain in the control of logistics operations, which reduces data verification costs by more than 15%. Similar international solutions, such as those used by Maersk (2022), have reduced data verification costs by 20% (About MHP, n.d.).

Table 2. Comparative analysis of measures for the formation and development of a digital business security system

Measures for the formation and development of a digital business security system	Examples of implementation in Ukraine	International practice	Expected effects of implementation
Implementation of ISMS in accordance with ISO/IEC 27001:2022, NIST CSF	Nova Poshta is certified according to ISO/IEC 27001:2022 for the protection of personal data and partner trust	Over 44,000 organisations are certified according to ISO/IEC 27001:2022	Reduced risk of data leaks, increased reputational resilience
Internal cybersecurity policy with staff training and phishing attack simulations	PrivatBank reduced the success rate of attacks by 68% through training and phishing simulations	IBM: staff training reduces the success rate of attacks by 70%	Minimisation of the human factor, reduction of social engineering threats
Digital audit of partners and supply chains / blockchain technology	MHP implements blockchain in logistics control, reducing costs by 15%	Maersk reduced data verification costs by 20% due to blockchain	Transparency of supply chains, early detection of vulnerabilities
Use of modern security measures (MFA, encryption, NGAV, monitoring)	SoftServe implemented MFA, which prevented 95% of unauthorised access attempts	Microsoft: MFA blocks 99% of automated attacks	Increased cyber resilience, reduced number of incidents
Participation in national and international cybersecurity programs	Cooperation between IT companies and ECSO for information exchange and solution testing	The Digital Europe program funds cyber projects and data exchange	Access to technologies, coordinated response mechanisms
Single incident response centre	The State Centre for Cyber Protection of the State Special Communications Service reduces response time from days to hours	CERT-EU reduces incident resolution time through centralisation	Rapid detection, quick neutralisation of threats

Source: developed based on State Service of Special Communications and Information Protection of Ukraine (n.d.), PrivatBank (n.d.), About MHP (n.d.), IIEA (n.d.), ISO/IEC 27001:2022 (2022), Maersk (2022), SoftServe (2024), Microsoft digital defence report 2024 (2024), Cost of a data breach report (2025), CERT-EU (2025)

The systematic use of modern information security measures – multifactor authentication (MFA), data encryption, the latest antivirus platforms with regular updates, and user activity monitoring – significantly increases companies' cyber resilience. The Ukrainian IT company SoftServe (2024) has implemented multifactor authentication on all internal services, which has prevented over 95% of unauthorised access attempts. The Microsoft digital defence report 2024 (2024) confirmed that MFA blocks over 99% of automated attacks.

Participation in national and international cybersecurity programs, particularly within the framework of integration into the EU digital market, provides access to advanced technologies and coordination mechanisms for response. An example is the cooperation between Ukrainian IT companies and the European Cyber Security Organisation (ECSO, n.d.), which allows for the exchange of information about threats and joint testing of new security measures (IIEA, n.d.). The creation of a single incident response centre ensures the rapid detection and localisation of cyber threats. In Ukraine, this function is partially performed by the State Cyber Protection Centre State Special Communications (2024), which cooperates with private entities to reduce the response time to incidents from several days to several hours. The similar experience of CERT-EU (2025) in the European Union confirms the effectiveness of a centralised response. The security aspect of digitalisation of information support for international trade of enterprises is extremely important. After all, it is security challenges and threats that are the determining barriers to the digital transformation of foreign economic activity, including international trade of enterprises.

The main areas of security include: cyber hygiene for staff: training employees to recognise phishing and social engineering attacks; implementation of ISO/IEC 27001 and NIST CSF standards in information security management systems; two-factor authentication, encryption, and user activity monitoring; creation of a single incident response centre (CERT) at the enterprise or industry level.

It is advisable for businesses to carry out digital transformation. This should be done taking into account the principle of "security by default". This is absolutely justified under martial law, but it can also be used in the post-war period of recovery and revival. Contracts with foreign partners of Ukrainian companies should necessarily include a provision (clause) on data/information protection. It may also be advisable to create information security departments (costly and ineffective for small businesses), and to engage external cybersecurity specialists (on an outsourcing basis). Expanding the access of businesses (its entities) to state digital platforms (in particular, Diia.Business, the Single Window for International Trade, etc.) should be accompanied by strengthening security protocols at the global (national/state) level, etc.

Discussion

A. Drabovskyi (2025) research emphasised the importance of addressing cybersecurity and data protection (as an integral part of a digital transformation strategy that helps reduce risks and increase trust in innovative solutions). And it is effective resistance management (Tomashkov & Oherchuk, 2023; Drabovskyi, 2025) that is a critical factor in the processes of introducing new technologies and management methods. By overcoming internal barriers, an organisation can achieve high competitiveness in the digital economy. It was worth agreeing with A. Drabovskyi (2025) that in order to ensure sustainable development and modernisation of an enterprise, it is necessary to implement comprehensive strategies focused on continuous improvement, innovation, and adaptive management, which allow responding to modern challenges and effectively utilising the potential of digital technologies. V. Tsopa (2023) carried out a detailed risk assessment in the studies. The authors of the present study agreed with V. Tsopa (2023) that risk (in all spheres of life) is inherent in every process and, under market conditions, is linked to the results of economic activity. V. Tsopa (2023) clearly defined the conceptual framework of risk, in particular the causes, consequences, and objects of risk.

In the research, O. Lyzunova *et al.* (2025) noted that the use of digital technologies allows enterprises to optimise the processes of documenting foreign trade operations, reduce the risks of errors and fraud, and ensure compliance with international standards. However, O. Lyzunova *et al.* (2025) narrowed the research to the field of accounting. It is worth agreeing with O. Lyzunova *et al.* (2025) that the intensification of innovation contributes to improving the quality of analytical information used for management decision-making, reducing the time required to process large amounts of data, and facilitating the monitoring of financial flows and interaction with counterparties from different countries. O. Lyzunova *et al.* (2025) linked the future of digitalisation of foreign economic activity with the widespread use of artificial intelligence and big data, which will increase the accuracy of forecasting and automate decision-making. Process automation, transparency, and speed of work significantly increase the efficiency of foreign economic activity management. Scientists point out that successful digitalisation will allow enterprises not only to adapt to modern conditions, but also to become leaders in the industries.

Yu. Neustroiev (2025) stated in the research that economic security is a dynamic state (which is constantly influenced by numerous variables) and requires the systematic application of specialised criteria, indices, and indicators capable of accurately reflecting the state of economic stability and risks, as well as vulnerability factors. Similar views were presented in a study by A. Tkachenko & D. Mezherytskyi (2023) where the authors emphasised that strengthening economic protection mechanisms is a necessary condition for maintaining business sustainability and stability in conditions of uncertainty. This is consistent with this research. Yu. Neustroiev (2025) also argued that innovation is an effective tool for ensuring a country's economic security, as it can significantly increase competitiveness in the international market. This is a reasonable conclusion. The author also pointed out that it is innovation that initiates the development of socially responsible business, contributes to the prosperity of individual enterprises and local communities, and creates conditions for strengthening the national economy. This was confirmed by global practice. While innovation plays a decisive role in the development of developed countries' economies, it is also necessary to take into account that some innovations can have negative environmental consequences, which must be calculated and balanced within the framework of economic security.

E-commerce constitutes a significant share of international trade, and this component demonstrates a steady growth trend. The issues of e-commerce are addressed in the works of A.U. Rehman *et al.* (2022) and S. Kniaz *et al.* (2023). The authors' definition of the characteristics of e-commerce in relation to warranty servicing and customer support was considered accurate. The authors of this scientific study quite reasonably proposed that, in order to improve the system of servicing and warranty support for consumers in the field of e-commerce, it is advisable to implement a customer loyalty programme; enhance the qualifications of personnel (particularly employees of service centres); improve delivery services through high-quality packaging of goods by applying innovative solutions; and introduce the option of payment upon delivery for purchased goods (as an element of strengthening economic security and corporate reputation).

An important achievement is the mechanism proposed by I. Rudenko (2023) for integrating logistics marketing and information management into the strategic development of enterprises. The structure of the mechanism

provides for the inclusion of a marketing module, an information management module, analytics and control, a logistics module, and a customer service module. It is worth agreeing with the author I. Rudenko (2023) that the implementation of this mechanism will enable the enterprise to achieve strategically important results, in particular: reduction of production costs, increase in customer loyalty (especially international customers), increasing the flexibility of the supply chain, and ensuring a quick response to changes in the markets (domestic and foreign). H. Anishchenko *et al.* (2025) analysed the system of accounting and information-analytical support for managing the process of restoring the resource potential of agricultural enterprises, which constitutes an important element in the implementation of information technologies in international trade. This interpretation was considered valid. In the study, M.S.A. Alsheyab (2025) examined the advantages of electronic transferable records as a step towards the digitalisation of cross-border trade. This represents a crucial component of the digitalisation of international trade in conjunction with the domain of security. It is essential to emphasise the importance of digitalisation as a driving force for the sustainable development of enterprises within the European vector (Blakyta *et al.,* 2025). The validity of this element is acknowledged for the effective advancement of the digitalisation of international trade, as it contributes significantly to the sphere of security in the implementation of international trade.

M. Blikhar *et al.* (2023) investigated shadow economy vs economic security: trends, challenges, prospects. Fully agree with the close interconnection of these factors. The results of the study of the dynamics of the integral indicator of the shadow economy and changes in real GDP in Ukraine are important, and the volume of official GDP created by shadow wages has been estimated. Forecasts of the shadow economy and poverty levels for the coming years have been made, and growth trends have been identified. It has been established that the growth of the shadow economy has a significant impact on the poverty rate of the population. M. Bortnikova & S. Slipachuk (2025) analysed improvement of new management technologies implementation at enterprises in the conditions of foreign economic activity in the research. The proposed reengineering implementation technology is quite relevant in scientific work. It provides an opportunity to carry out comprehensive preparation for the implementation of business processes, to assess the feasibility of introducing a new mechanism in terms of identifying the costliest measures and the safety of the application. And it is the implementation of reengineering that is a strategic decision that will increase the efficiency, competitiveness, and adaptability to changes of Ukrainian business. This is important in the context of European integration and the expansion of foreign trade.

Key factors of the impact of digitalisation on entrepreneurship were reflected in the work of V. Glushchevsky *et al.* (2023), highlighting the importance and significance. The conducted study demonstrated the impact of economic digitalisation on entrepreneurship, reshaping the business landscape and opening new opportunities for entrepreneurs. The analysis of factors influencing entrepreneurship in the course of economic digitalisation, with due consideration of security aspects, provided a deeper understanding of these transformations and the implications for business, including international business. Among the key factors identified in this research were technological progress, the spread of digital technologies, shifts in consumer behaviour, e-commerce, globalisation, and transformations in business models. This recognition of influential factors underlined the necessity of a structured approach for entrepreneurs seeking to leverage digital opportunities. Of particular importance is the recognition of the influence of these factors on the modern business environment, enabling entrepreneurs to adapt to new conditions. A significant outcome of the study was the proposed classification system of the examined factors, based on two criteria: the type of interaction with enterprises (internal and external), and the sphere of influence (technological, socio-economic, and organisational). Such classification provided a clear framework for understanding challenges and opportunities arising from economic digitalisation, supporting more informed strategic decisions.

Scientific works on managing the risks of introducing information technologies into international trade in the development of foreign economic activity are also important. This was reflected in the studies of K. Hrabina & V. Shendryk (2023), which indicated that, in order to ensure management efficiency, it is advisable to apply risk management of IT projects with due consideration of threats and opportunities. In this context, risk management becomes an integral part of enterprise strategy under conditions of global digitalisation. The assertion of O. Melnyk & D.-I. Yakymets (2025) that the establishment of a risk management system constitutes a key factor in the successful integration of Ukrainian enterprises into the European economic space is valid. The development and implementation of a risk management framework for the foreign economic activity of enterprises under conditions of European integration – based on the application of advanced tools for risk identification, assessment, and optimisation – should be considered a strategic priority for enterprises seeking success in global European markets. The importance of forming a risk management system during the implementation of information technologies in international trade when developing foreign economic activity was also emphasised by U. Savkiv *et al.* (2022). Taken together, these studies highlighted the centrality of risk frameworks in ensuring stability and competitiveness for enterprises operating in international markets.

Micro-level issues have not been sufficiently researched, as noted in the works of B. Ilychok *et al.* (2024). The authors demonstrated that the dynamics of the shadow economy indicators in Ukraine are inconsistent with the goals and objectives of the Economic Security Strategy of Ukraine for the period up to 2025. Addressing these

inconsistencies is critical for enhancing monetary policy and reinforcing state governance. The measures proposed for minimising the negative factors of influence provide a basis for improving the implementation of monetary policy and enhancing the effectiveness of state governance in ensuring Ukraine's currency security. O. Likhota (2025) had examined the impact of international cooperation, particularly with the EU, and identified relevant factors for consideration in the formulation of economic security policy. I. Nazarova (2023) noted that developers of international regulatory frameworks strive to keep pace with economic progress by expanding the scope of the concept of the electronic document, resulting in international interpretations that are better aligned with contemporary standards of partnership relations, without requiring visual legibility for human perception or attachment to a physical medium. These findings emphasised the interconnectedness of international cooperation, regulatory adaptation, and enterprise security in the context of global digitalisation. The challenges of introducing information technologies into international trade were highlighted in the works of O. Kibik *et al.* (2022). The interpretation regarding the use of modern e-commerce methods, digital platforms, and blockchain to provide companies with new advantages and opportunities is timely and valid. Integrating these innovations into enterprise strategy allows for both immediate gains and long-term competitiveness. Enterprises adopting a strategic development approach that combines innovative methods, analysis of internal and external resources, and adequate adaptation to the realities of the digital economy achieve significant results. Organisations such as the European Commission, and coordinating bodies such as the Steering Committee for the Implementation of the e-Government Action Plan, play a crucial role in creating a forum for engaging all key stakeholders, with the participation of private legal entities ensuring market adoption of outcomes (Schmidt & Krimmer, 2022).

The importance of information provision as an element of enhancing the economic security of enterprises was also emphasised by T. Talakh & V. Talakh (2025). Properly structured information channels become a backbone for informed decision-making and risk management. The application of advanced European experience in the implementation of information technologies in international trade in the development of foreign economic activity is significant in Ukraine, as reflected in the works of C. Schmidt & R. Krimmer (2022) and T. Zubko *et al.* (2021). Based on modelling, a statistically significant correlation has been identified between the indicators of information volume and related services, and the volumes of trade, confirming the dependence of economic security of trading enterprises on digitalisation. The proposal to complement the existing methodology for assessing the economic security of trading enterprises with indicators reflecting the impact of digital technologies is particularly important. This approach ensured that evaluation frameworks remain relevant in a rapidly evolving digital business environment. The development of Economy 4.0 as an element of trade digitalisation, including international trade, is analysed in V. Makedon & O. Mykhailenko (2024). The impact of Economy 4.0 on global logistics operations of transnational corporations highlighted its relevance for the implementation of information technologies in international trade, although the security aspect remains unaddressed. Global crises, such as the COVID-19 pandemic, armed conflicts, and climate change, significantly impact logistics, leading to declines in international trade indicators. Wars, such as the war in Ukraine, increase costs and delivery times, while heightening risks of loss or damage due to the necessity of bypassing conflict zones. Climate-related challenges exacerbate risks associated with freight transport. In response, modern transnational corporations adopt innovative solutions to enhance customer convenience, optimise delivery routes, and track cargo efficiently. Investment in innovations aimed at modernising logistics is steadily increasing, providing considerable competitive advantage to actively investing corporations. Despite significant achievements in researching the implementation of information technologies in international trade, the security aspect remains somewhat overlooked in the development of foreign economic activity.

Conclusions

The analysis of the choice, implementation and further use of IT in the activities of enterprises revealed a number of problems/threats to the use of IT, the specifics of the application, etc. The main ways to solve (resolve) these problems should be the following: changing the traditional outdated information system at enterprises; convincing the management (especially the top management) of the urgent need to invest in modern IT systems for managing strategic potential through a feasibility study; clearly defining strategic and tactical goals and objectives of the IT system of enterprises; developing and using an effective system for managing the strategic potential of enterprises, taking into account digital transformation, enhancing the level of information security, integrating innovative technologies, and fostering an adaptive organisational culture capable of ensuring sustainable development in a dynamic competitive environment. Enterprise information technologies have become high-speed virtual machines for solving various issues, including in international trade. By actively and systematically using IT technologies, Ukrainian enterprises will be able to increase the competitiveness, as well as the competitiveness of goods sold, services provided, and work performed.

A comparative analysis of measures to establish and develop a digital business security system has revealed positive and effective results in Ukraine, namely: Nova Poshta is certified according to ISO/IEC 27001 for the protection of personal data and partner trust; PrivatBank reduced the success rate of attacks by 68% through training and phishing simulations; MHP implements blockchain in logistics control, reducing costs by 15%; SoftServe implemented MFA, which prevented 95% of unauthorised access

attempts. With regard to foreign experience, it can be stated that over 44,000 organisations are certified according to ISO/IEC 27001; IBM: staff training reduces the success rate of attacks by 70%; Maersk reduced data verification costs by 20% due to blockchain; Microsoft: MFA blocks 99% of automated attacks. In general, for the effective functioning of an enterprise (not only in the context of foreign economic activity), it needs to form a secure information system that would be able to meet all the complex needs of the enterprise for a long time. Given the dynamism of the global economic environment, security aspects, the growing role and importance of the use of digital technologies in foreign economic activity (in particular, international trade), further research should be directed to the following areas: assessing the level of effectiveness of digital solutions in foreign economic activity; detailing and analysing the impact of specific information technologies (ERP systems, blockchain platforms, electronic identification systems, etc. to increase the operational efficiency of international trade of enterprises; formation of the digital ecosystem of international trade of Ukraine; research of the possibilities of creating integrated national, sectoral IT platforms, IT clusters to coordinate export-import activities, taking into account the world practices of digital regulation; modelling the risks of cyber threats in international trade, etc.

Acknowledgements
None.

Funding
None.

Conflict of Interest
None.

References
[1] About MHP. (n.d.). Retrieved from https://mhp.com.ua/uk/pro-kompaniiu.
[2] ALsheyab, M.S.A. (2025). Legal analysis of the merits of electronic transferable records: Toward cross-border trade digitalization. *International Journal of Law and Management*, 67(1), 145-163. doi: 10.1108/IJLMA-09-2023-0209.
[3] Anishchenko, H., Pidlubna, O., & Basok, A. (2025). Accounting, information, and analytical support for managing the process of restoring the resource potential of agricultural enterprises. *Efficient Economy*, 7. doi: 10.32702/2307-2105.2025.7.85%20.
[4] Blakyta, H., Bagatska, K., & Susidenko, V. (2025). Digitalization as a driver of enterprise sustainability in the European vector. *Business Inform*, 2, 135-142. doi: 10.32983/2222-4459-2025-2-135-142.
[5] Blikhar, M., Syrovatskyi, V., Bek, U., Vinichuk, M., Kucher, L., & Kashchuk, M. (2023). Shadow economy vs economic security: Trends, challenges, prospects. *Economic Studies*, 32(3), 130-147. doi: 10.13140/RG.2.2.24624.23049.
[6] Bortnikova, M., & Slipachyk, S. (2025). Improvement of new management technologies implementation at enterprises in the conditions of foreign economic activity. *Management and Entrepreneurship in Ukraine: Stages of Formation and Problems of Development*, 5(2), 27-34. doi: 10.23939/smeu2025.02.027.
[7] Bulavynets, O. (2025). The current state of social transfers: Digitalization and inclusiveness. *Business Inform*, 2, 156-162. doi: 10.32983/2222-4459-2025-2-156-162.
[8] CERT-EU. (2025). *Threat landscape report 2024: A year in review*. Retrieved from https://www.cert.europa.eu/publications/threat-intelligence/tlr2024/pdf.
[9] Cost of a data breach report. (2025). Retrieved from https://www.ibm.com/reports/data-breach.
[10] Drabovskyi, A. (2025). Innovative strategies for managing organizations in the context of digital transformation. *Efficient Economy*, 4. doi: 10.32702/2307-2105.2025.4.4.
[11] ECSO. (n.d.). Retrieved from https://ecs-org.eu/.
[12] Glushchevsky, V., Holomb, V., & Byrskyi, V. (2023). The impact of digitalization on entrepreneurship: Key factors. *Humanities Studies*, 16(93), 160-167. doi: 10.32782/hst-2023-16-93-16.
[13] Hrabina, K., & Shendryk, V. (2023). Method of the risk management of IT projects taking into account threats and opportunities. *Management of Development of Complex Systems*, 55, 18-28. doi: 10.32347/2412-9933.2023.55.18-28.
[14] IIEA. (n.d.). *Digital*. Retrieved from https://www.iiea.com/digital?gad_source=1&gad_campaignid=22339636043&gbraid=0AAAAAD30q8AVhDNm9N0fR19xDedl4yFuh&gclid=Cj0KCQjwqebEBhD9ARIsAFZMbfx8mA1XUIOLR0q-bNqPKMYVsBS__XVcG512jEZTYpSEDLMfogtnR3saAnJ4EALw_wcB.
[15] Ilychok, B., Dziurakh, Y., Karkovska, V., Kucher, A., Marmulyak, A., & Tsyrkin, A. (2024). Public management of currency security in Ukraine: Challenges and perspectives in modern realities. *Financial and Credit Activity Problems of Theory and Practice*, 3(56), 308-320. doi: 10.55643/fcaptp.3.56.2024.4311.
[16] ISO/IEC 27001:2022. (2022). *Information security, cybersecurity and privacy protection – information security management systems – requirements*. Retrieved from https://www.iso.org/standard/27001.
[17] Kibik, O., Taran-Lala, O., Saienko, V., Metil, T., Umanets, T., & Maksymchuk, I. (2022). Strategic vectors for enterprise development in the context of the digitalization of the economy. *Postmodern Openings*, 13(2), 384-395. doi: 10.18662/po/13.2/460.
[18] Kniaz, S., Heorhiadi, N., Kucher, L., Tyrkalo, Yu., & Bovsunivska, A. (2023). Development of a customer service system in electronic commerce. *Business Management*, 2, 64-82. doi: 10.58861/tae.bm.2023.2.04.

[19] Law of Ukraine No. 1089-IX "On Electronic Communications". (2020, December). Retrieved from https://zakon.rada.gov.ua/laws/show/1089-20#Text19.
[20] Law of Ukraine No. 1789-VIII "On Information". (1992, October). Retrieved from https://zakon.rada.gov.ua/laws/show/2657-12#Text.
[21] Law of Ukraine No. 2155-VIII "On Electronic Identification and Electronic Trust Services". (2017, October). Retrieved from https://zakon.rada.gov.ua/laws/show/2155-19#Text.
[22] Law of Ukraine No. 2297-VI "On Personal Data Protection". (2010, June). Retrieved from https://zakon.rada.gov.ua/laws/show/2297-17#Text.
[23] Law of Ukraine No. 675-VIII "On Electronic Commerce". (2015, September). Retrieved from https://zakon.rada.gov.ua/laws/show/675-19#Text.
[24] Law of Ukraine No. 851-IV "On Electronic Documents and Electronic Document Management". (2003, May). Retrieved from https://zakon.rada.gov.ua/laws/show/851-15#Text.
[25] Likhota, O. (2025). Legislative support of the US information policy. *Economics. Finances. Law*, 3, 65-68. doi: 10.37634/efp.2025.3.12.
[26] Lupak, R. (2019). Directions for realization of the potential of the information and communication technologies sector in the context of ensuring the quality characteristics of the internal market and the development of the information society in Ukraine. *Galician Economic Herald*, 60(5), 79-94. doi: 10.33108/galicianvisnyk_tntu2019.05.079.
[27] Lyzunova, O., Lysenko, S., & Prydatko, E. (2025). Implementation of digital technologies in the accounting of foreign economic activity of the enterprise. *Economic Space*, 199, 71-75. doi: 10.30838/EP.199.71-75.
[28] Maersk. (2022). *A.P. Moller-Maersk and IBM to discontinue TradeLens, a blockchain-enabled global trade platform*. Retrieved from https://www.maersk.com/news/articles/2022/11/29/maersk-and-ibm-to-discontinue-tradelens.
[29] Makedon, V., & Mykhailenko, O. (2024). Impact of economy 4.0 on global logistics operations of transnational corporations. *Economic Space*, 189, 276-282. doi: 10.32782/2224-6282/189-49.
[30] Melnyk, O., & Yakymets, D.-I. (2025). Features of risk management of foreign economic activities of enterprises in the conditions of European integration. *Economics. Finances. Law*, 3, 114-117. doi: 10.37634/efp.2025.3.21.
[31] Microsoft digital defence report 2024. (2024). Retrieved from https://www.microsoft.com/en-us/security/security-insider/threat-landscape/microsoft-digital-defense-report-2024.
[32] Nazarova, I. (2023). Electronic document in the context of international economic and legal relations. *Journal of European Economics*, 22(1), 33-48. doi: 10.35774/jee2023.01.031.
[33] Neustroiev, Yu. (2025). *Innovative development in the observance of economic security of sectoral and territorial economic systems and complexes*. (Doctoral dissertation, Odesa National University of Technology, Odesa, Ukraine).
[34] NIST Cybersecurity Framework. (n.d.). Retrieved from https://www.nist.gov/cyberframework.
[35] Nova Poshta. (n.d.). Retrieved from https://novaposhta.ua/en/.
[36] PrivatBank. (n.d.). Retrieved from https://privatbank.ua/en.
[37] Rehman, A.U., Bashir, S., Mahmood, A., Karim, H., & Nawaz, Z. (2022). Does e-shopping service quality enhance customers' e-shopping adoption? An extended perspective of unified theory of acceptance and use of technology. *PLoS ONE*, 17(2), article number e0263652. doi: 10.1371/journal.pone.0263652.
[38] Rudenko, I. (2023). The information technology market as a driver of post-war recovery. *Foreign Trade: Economics, Finance, Law*, 128(3), 67-82. doi: 10.31617/3.2023(128)06.
[39] Savkiv, U., Sydor, H., & Tymkiv, A. (2022). Risk management of foreign economic activity of enterprises in wartime. *Scientific Bulletin of Ivano-Frankivsk National Technical University of Oil and Gas (Series: Economics and Management in the Oil and Gas Industry)*, 2(26), 79-88. doi: 10.31471/2409-0948-2022-2(26)-79-88.
[40] Savras, I.Z., & Fedynets, V.I. (2023). Digitalisation and innovative development of the enterprise: Trends, challenges and prospects. *Herald of Lviv University of Trade and Economics. Economic Sciences*, 74, 108-114. doi: 10.32782/2522-1205-2023-74-14.
[41] Schmidt, C., & Krimmer, R. (2022). How to implement the European digital single market: Identifying the catalyst for digital transformation. *Journal of European Integration*, 44(1), 59-80. doi: 10.1080/07036337.2021.2011267.
[42] SoftServe. (2024). *Service organization controls (SOC) 3 report*. Retrieved from https://surl.lt/xixvhk.
[43] State Service of Special Communications and Information Protection of Ukraine. (n.d.). Retrieved from https://cip.gov.ua/en.
[44] Talakh, T., & Talakh, V. (2025). Features of the methodology for analyzing trade enterprises and its information support. *Economy and Society*, 71. doi: 10.32782/2524-0072/2025-71-11.
[45] The State Cyber Protection Centre of the State Service of Special Communications and Information Protection of Ukraine (SCPC SSSCIP) is increasing technical capabilities of the National Center for Reserving State Information Resources. (2024). Retrieved from https://scpc.gov.ua/en/articles/366.
[46] Tkachenko, A., & Mezherytskyi, D. (2023). The role of economic security as a tool for ensuring business stability. *Management and Business*, 1(2), 128-140.

[47] Tomashkov, S.B., & Oherchuk, Yu.V. (2023). Assessment of the impact of risks of foreign economic activity. *Management and Entrepreneurship in Ukraine: The Stages of Formation and Problems of Development*, 5(2), 142-151. doi: 10.23939/smeu2023.02.142.
[48] Tron, S.P. (2016). Analysis of information support of trade enterprises. *Uzhorod National University Herald. Series: International Economic Relations and World Economy*, 7(3), 135-138.
[49] Tsopa, V. (2023). *Identification and classification of risks*. Retrieved from https://qualityexpert.com.ua/interviews/657215-identyfikatsiya-i-klasyfikatsiya-ryzykiv.
[50] Vasyltsiv, T., Lypak, R., & Vasyltsiv, V. (2017). Analysis of macroeconomic, industrial, financial, intellectual and human resources component of Ukraine information and communication technologies sector security. *The Economic Discourse*, 1, 161-172.
[51] Zaverbnyi, A., Zalizna, L., & Trach, M. (2024). Digitalization as an important factor in the formation of the competitiveness of an export-oriented enterprise: An information aspect. *Economy and Society*, 60. doi: 10.32782/2524-0072/2024-60-19.
[52] Zubko, T., Hanechko, I., Trubei, O., & Afanasyev, K. (2021). Determining the impact of digitalization on the economic security of trade. *Eastern European Journal of Enterprise Technologies*, 6(13(114)), 60-71. doi: 10.15587/1729-4061.2021.248230.

Впровадження інформаційних технологій у міжнародну торгівлю при розвиванні зовнішньоекономічної діяльності: безпековий аспект

Андрій Завербний
Доктор економічних наук, професор
Національний університет «Львівська політехніка»
79013, вул. Степана Бандери, 12, м. Львів, Україна
https://orcid.org/0000-0001-7307-536X

Анотація. Метою статті було дослідження та розвиток інформаційного забезпечення управління міжнародною торгівлею українськими підприємствами за умов розвивання їх зовнішньоекономічної діяльності із врахуванням безпекового аспекту. Теоретико-методологічні основи даного дослідження базувалися на застосуванні комплексного міждисциплінарного підходу, котрий ефективно поєднав економічну теорію міжнародної торгівлі, інформаційну і економічну безпеки, управління ризиками, цифрове трансформування. Основними методами виступали: системний аналіз, порівняльне дослідження, аналізування цифровізування. Проведено огляд літературних джерел та правової бази за проблематикою запровадження інноваційних інформаційних технологій у міжнародну торгівлю українських підприємств, їх безпековий аспект. У роботі зазначено, що безпековий аспект цифровізування інформаційного забезпечення міжнародної торгівлі українських підприємств має суттєве значення. Саме безпекові виклики та загрози виступають визначальними бар'єрами для цифрового трансформування зовнішньоекономічної діяльності, зокрема міжнародної торгівлі підприємств. Розкрито особливості використання інформаційних технологій у зовнішньоекономічній діяльності, зокрема в контексті цифрового трансформування, кібербезпеки, регуляторної відповідності. Окреслено перспективи, що відкриваються завдяки інтегруванню цифрових рішень, таких як електронні платформи, блокчейн, big data, штучний інтелект. Розроблено пропозиції щодо підвищення рівня інформаційної безпеки в умовах глобалізування, цифровізування світових торговельних відносин. Запропоновано послідовність інформаційного забезпечення управління міжнародною торгівлею українськими підприємствами за умов розвивання їх зовнішньоекономічної діяльності із врахуванням безпекового аспекту. Визначено інформаційні системи, які є здатними оцінювати конкурентне середовище, враховувати всі важливі для підприємств макроекономічні, інституційні, міркроекономічні, безпекові та інші фактори ринку, вимірювати, оцінювати, прогнозувати конкуренцію в галузі, в країні, в регіоні, технологічне відставання, потреби клієнтів (передусім це стосується нових, при виході на іноземні ринки), замовників. Встановлено, що для забезпечення ефективної роботи підприємства, зокрема в умовах зовнішньоекономічної діяльності, необхідно створити надійну інформаційну систему, здатну тривалий час задовольняти комплексні потреби підприємства

Ключові слова: цифровізація; глобалізація; економічна безпека; інформація; кібербезпека

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 03.05.2025; Revised: 08.08.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.79

UDC 004:336

Information technologies in finance: The impact of fintech services on traditional banks

Liudmyla Fedevych*
PhD in Economic Sciences, Associate Professor
Lviv Polytechnic National University
79000, 12 Stepan Bandera Str., Lviv, Ukraine
https://orcid.org/0000-0002-3097-7467

Serhii Trevoho
Postgraduate Student
Lviv Polytechnic National University
79000, 12 Stepan Bandera Str., Lviv, Ukraine
https://orcid.org/0009-0000-1921-5843

Abstract. In the context of rapid development of digital technologies, the financial sector is undergoing significant transformations under the influence of financial technologies (fintech), which are becoming a driver of innovation in the banking sector. The aim of the study was to investigate the role of fintech in the digital transformation of the banking sector and the peculiarities of its impact on the interaction between fintech companies and traditional banks. To achieve this goal, the methods of scientific abstraction, structural decomposition analysis, synthesis, logical generalisation, as well as content-comparative and logical-prognostic methods were used. The results of the study showed that fintech services are significantly transforming the financial market, increasing the accessibility, speed and personalisation of services. In Ukraine, the growth in deposits after the banking crisis is associated with the development of mobile banking and the emergence of neobanks, in particular Monobank. It has been established that the digitalisation of banking services has contributed to the reorientation of customers towards current accounts and non-cash transactions. Fintech companies have become an important factor in increasing competition in the short-term lending segment, which has encouraged banks to reduce application processing times and introduce scoring systems. Despite this, banks remain dominant in the field of long-term loans, including mortgages. An analysis of international experience (USA, EU, China) has shown that the most effective development model is a combination of competition and cooperation between banks and fintechs. In Ukraine, a symbiotic model is taking hold, where fintechs and banks cooperate through APIs, joint products and platforms. The results showed that the introduction of fintech solutions did not displace banks, but rather accelerated their digital transformation and contributed to an increase in public confidence in the financial system. The practical value of the work lies in the formulation of recommendations for the integration of fintech solutions into banking processes, which will contribute to improving the efficiency of financial services and the development of the digital economy. The reported results can serve as a basis for further research in the field of digital innovation in the financial sector

Keywords: digital transformation; banking sector; digitalisation; neobanks; lending; deposits

Introduction

In the context of global digitalisation, where the latest technologies are penetrating all spheres of public life, the financial system has undergone significant transformations. Changes in consumer behaviour patterns, growing demand for fast and convenient access to financial services, and increased competition among market participants are powerful incentives for the introduction of innovative solutions. As noted by V. Khaustova *et al.* (2024), the digital economy is shaping new rules of the game for financial institutions, forcing them to adapt to new realities, review

Suggested Citation:
Fedevych, L., & Trevoho, S. (2025). Information technologies in finance: The impact of fintech services on traditional banks. *Innovation and Sustainability*, 5(3), 79-89. doi: 10.31649/vis/3.2025.79.

*Corresponding author

business models, implement digital technologies, and seek new approaches to improving customer service efficiency. The development of financial technologies (fintech) has gained significance, covering a wide range of solutions – from digital wallets and mobile applications to blockchain platforms and automated lending systems. Fintech companies that provide financial services using information technology (IT) are gradually changing the structure of the market, creating both new opportunities and risks. The advantages of fintech include fast transactions, 24/7 service availability, lower transaction costs, and personalised service. At the same time, challenges are growing in the areas of regulation, personal data protection, fraud prevention, and ensuring the stability of the financial environment. As emphasised by G. Garg *et al.* (2023), it is the combination of highly dynamic technological innovation and insufficiently developed regulatory mechanisms that determines the ambivalent nature of fintech's impact on the traditional banking system.

N. Del Sarto & P.K. Ozili (2025) identified fintech as one of the key factors in promoting financial inclusion in developing countries. The authors emphasised that digital services make it possible to overcome barriers to access to financial services in remote regions and among vulnerable population groups. This contributes not only to an increase in the overall level of financial inclusion, but also to increased economic activity at the micro level. Another large-scale review was presented in the work of J.A. Jafri *et al.* (2025), which identified the dominant themes in fintech research. The focus was on digital payments, mobile wallets, blockchain, and personalised and fast lending. It was noted that most publications focused on the practical aspects of technology application, while the issue of interaction between banks and fintechs was considered fragmentarily. As T. Staverska *et al.* (2023) point out, the relevance of financial technologies lies in their ability to improve and simplify financial services, ensuring greater accessibility and efficiency of financial management in the context of digital transformation.

Researchers B. Fejes & M. Stocker (2024) substantiated the positive impact of digital innovations at the micro level, in particular on the competitiveness of financial organisations. According to their research, additional investments in IT lead to increased productivity, customer base growth, and improved financial performance of banks. Thus, some studies focus on the internal efficiency of banking institutions, while others emphasise broader challenges, including regulatory and technological aspects, among which blockchain plays an important role. H. Biju *et al.* (2024) identified key research clusters, including regulatory issues, cybersecurity, digital platform infrastructure, and the social implications of fintech adoption. The study by A. Alamsyah & S. Syahrir (2024) systematised the advantages of blockchain technology for the financial industry – transparency, immutability of records, contract automation – and at the same time highlighted the potential risks associated with scalability, regulation and legal uncertainty.

Ukrainian researchers have also joined in analysing the impact of fintech on the national financial sector. H. Zhosan & O. Smolkina (2024) examined the adaptation strategies of fintech companies in the context of war and changes in consumer behaviour during the crisis period. The work of A. Semenog *et al.* (2023) analysed the specifics of how neobanks operate in Ukraine, in particular their marketing strategy, technological flexibility, and problems related to the regulatory framework and consumer distrust of digital financial solutions. These works laid the foundation for further discussion of the regulatory environment, which was also actively analysed by other Ukrainian researchers. The issue of the regulatory environment was explored by B. Pshyk & U. Hrudzevych (2023) and S. Reverchuk & O. Tvorydlo (2023), who emphasised the need for balanced state supervision of fintech innovations. R. Zhurko & Y. Shcherbak (2025) emphasised that the key challenges for Ukraine remain the integration of fintech into the banking system and overcoming institutional barriers.

There was a consensus in the scientific literature on the role of fintech as a factor in the transformation of financial markets. It was noted that fintech companies act as a catalyst for changes in consumer behaviour, modifications to business processes and the emergence of new service delivery channels. However, questions remain about the nature and depth of the impact of fintech services on traditional banks, especially in countries with transition economies. The consequences of digitalisation for financial stability, the mechanisms for adapting banking institutions to the challenges of fintech competition, and the ways of regulatory response remain insufficiently studied. In view of the above, the aim of the study was to conduct a systematic analysis of the impact of fintech services on the activities of traditional banks in the context of digital transformation. The objectives of the study were to identify the key areas of this impact and to determine the specifics of the interaction between banks and fintech companies in Ukraine in comparison with global trends.

Materials and Methods

The study was based on a combination of general scientific and specialised methods, which ensured a comprehensive assessment of the impact of fintech services on the activities of traditional banking institutions. Each method carried a specific functional role within the research logic, which included theoretical reflection on the problem, analysis of empirical material, comparative analysis of international experience, and the generalisation of key trends in the digital transformation of the financial sector. General scientific methods, in particular the dialectical and systemic approaches, made it possible to examine economic phenomena in their development, interconnection, and interdependence. The dialectical method was applied to analyse the interaction between banks and fintech companies under dynamic socio-economic conditions, which enabled the identification of patterns in the transformation of banking business models. The systemic approach allowed the

banking system and the fintech ecosystem to be viewed as interconnected elements of a single financial environment, thereby facilitating the identification of mechanisms of competition and cooperation among market participants and the evaluation of their combined impact on the stability and efficiency of the financial sector.

Statistical analysis was based on official reports and Supervisory Statistics of the National Bank of Ukraine (NBU), which made it possible to assess the volume of assets and their growth rates in leading Ukrainian banks during 2023-2025 (Supervisory data, n.d.; NBU focuses on innovations…, 2019; NBU annual report 2019…, 2020; NBU annual report 2020…, 2021; Banking sector review, 2021; NBU annual report 2021…, 2022). For the analysis, ten banks were selected that play a key role in the banking sector, including both state-owned and private institutions, as well as systemically important ones: JSC CB PrivatBank, JSC Oschadbank, JSC Raiffeisen Bank, JSC UNIVERSAL BANK (Monobank), JSC SENS BANK, JSC PUMB, JSC UKRSIBBANK, JSC Ukreximbank, JSCB UKRGASBANK, and JSC OTP Bank. This selection made it possible to cover diverse business models, forms of ownership, operational scales, and levels of fintech integration. The analysis of asset dynamics provided the empirical basis for substantiating how exactly the implementation of fintech solutions influences asset structures, profitability, and banking strategies. To evaluate the cost of key financial services of traditional banks and fintech companies in Ukraine, data from official tariffs for 2024 were used. The analysis was carried out according to the following criteria: loan interest rates, transfer fees, and account maintenance costs (Monobank, n.d.; Credit card with free service…, n.d.; PrivatBank has almost equated…, 2023; Bilous, 2024; Sakhno, 2024). For clarity, the results were presented in tabular form and summarised using graphical visualisation methods.

To assess the specificity of the Ukrainian experience, a content-comparative analysis was conducted with international examples. Three representative cases were selected: the United States, as an example of a country with a highly developed consumer lending market and active competition between the private fintech sector and traditional banks; the European Union, as an integrated financial space with regulatory encouragement of open banking (PSD2) and the development of neobanks; and China, as a case where fintech is developing under the leadership of BigTech companies (Alipay, WeChat Pay), with a high level of digital payment penetration and significant state regulation. The choice of China was motivated by its model of combining private innovation with state control, which contrasts with the liberal approach of the USA and the regulatory integration in the EU. This approach provided a multidimensional comparison and enabled a more thorough assessment of the specific features of the Ukrainian market within the global context. The comparison made it possible to determine the maturity level of the fintech environment, the specifics of consumer behaviour, the degree of regulatory integration, and the scale of bank-fintech partnerships in each country. The logical-forecasting method was applied at the final stage of the study to formulate assumptions about the future dynamics of bank-fintech interaction.

A structural-functional analysis was employed to determine the role of individual fintech products in transforming banking business models, in particular mobile applications, virtual cards, and instant payment services, which made it possible to identify the most influential functions of banking institutions. The forecasting method was used to develop scenarios for the further development of the fintech industry and its impact on banking activities. Extrapolation of trends, combined with consideration of global drivers such as open banking, artificial intelligence, and big data, made it possible to outline possible directions for the transformation of the financial sector. Content analysis of scientific sources was applied to critically examine publications, materials from international conferences, and analytical reports. This method enabled the systematisation of theoretical approaches to fintech and their correlation with practical aspects of the functioning of the banking system. The use of a comprehensive approach ensured the integrity of the study, the integration of theoretical and empirical data, and the formulation of scientifically grounded conclusions regarding the role of fintech services in the transformation of banking institutions.

Results and Discussion

Fintech is the implementation of the latest digital technologies in the field of finance to provide customers with more convenient and efficient services. Unlike traditional banks, fintech companies mainly operate online, without physical branches, using mobile applications and internet platforms. This approach offers a number of advantages. According to estimates by international regulators, the development of fintech reduces the cost of financial services and expands access to them for previously underserved populations (Financial Stability Board, n.d.). In Ukraine, fintech is seen as a driver of digital transformation in the financial sector, making services simpler and more accessible to customers (NBU focuses on innovations..., 2019). Other key advantages of fintech solutions include speed (transactions are carried out faster), the ability to use services 24/7 from anywhere, a more personalised approach, and innovative products (e.g., mobile wallets, P2P transfers, crowdfunding loans, etc.). As a result of competition from fintech, traditional banks are forced to modernise – expand online services, implement remote customer identification and collaborate with technology companies to meet growing consumer expectations. Between 2017 and 2024, the volume of deposits in Ukrainian banks increased significantly, facilitated by both the overall stabilisation of the banking system and the spread of fintech platforms, which simplified the process of attracting deposits. After the banking crisis of 2014-2016, public confidence began to recover. In 2019, the volume of hryvna deposits of the population increased by 17.5%, and foreign currency deposits by 15.4% (Fig. 1).

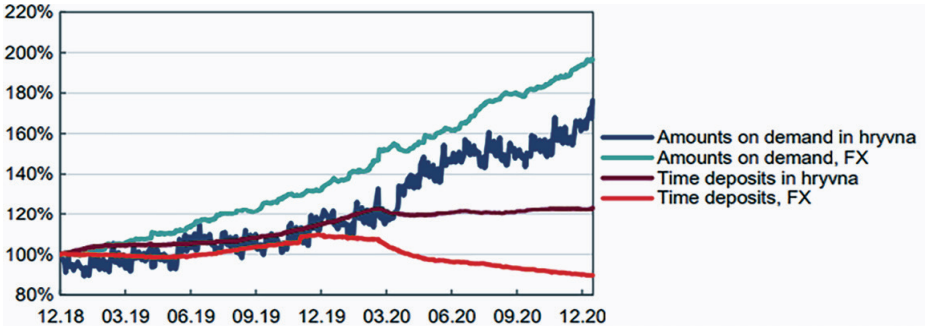

Figure 1. Growth in hryvna deposits of the population

Source: Banking sector review (2021)

The emergence of the first neobanks – digital banks without branches – was a notable factor. In particular, Monobank, a mobile bank, began operating in Ukraine in 2017 and attracted 3.8 million customers in less than five years, covering 35% of mobile banking users in the country (Rogalskiy, 2021). Due to the ease of opening accounts via the app and attractive terms, such fintech banks stimulated the inflow of funds into the banking system. Traditional financial institutions responded by expanding their online services and launching their own digital products to retain customers. The COVID-19 pandemic accelerated the inflow of funds into accounts in Ukraine. In 2020, when access to branches was limited, many customers switched to remote financial management. As a result, hryvnia deposits of households grew by a record 26.5% over the year (compared to +17.5% in 2019), with growth mainly driven by demand deposits (current accounts) (NBU annual report 2020..., 2021).

On the other hand, the population hardly increased its investments in foreign currency deposits (+0.6% in dollar terms), preferring liquidity. In 2021, the trend continued: Ukrainians kept more and more of their savings in current accounts at banks, with demand deposits reaching a historic high of 57% of all deposits held by individuals (NBU annual report 2021…, 2022). This means that more than half of the population's funds in hryvnia are in card and current accounts, from where they can be spent instantly through digital services. The popularisation of mobile applications and cashless payments from fintech companies has directly influenced this structure: customers have started to place less money in long-term deposits and keep more of it available for online transactions. It is worth noting that despite competition from non-bank fintech products (e-wallets, cryptocurrencies, etc.), the total deposit portfolio of Ukrainian banks has not decreased but, on the contrary, has grown at an accelerated pace, as can be seen from the data in Table 1.

Table 1. Deposit portfolio of individuals in the 10 largest banks of Ukraine for 2023–2025, thousand UAH

Bank	Indicator			Growth (decline) rate %	
	2023	2024	2025	2024	2025
JSC CB "PrivatBank"	333,937,113	391,513,964.1	438,047,392	17.24	11.89
JSC "Oschadbank"	166,734,768	188,332,626.8	210,186,016	12.95	11.60
JSC "Raiffeisen Bank"	57,247,770.7	59,923,897.06	70,735,781	4.67	18.04
JSC "UNIVERSAL BANK"	49,214,589.8	65,027,331.34	81,738,092.2	32.13	25.70
JSC "SENS BANK"	42,981,710.8	47,797,517.5	47,277,043.7	11.20	-1.09
JSC "PUMB"	38,046,277.4	47,551,197.23	54,918,102.6	24.98	15.49
JSC "UKRSIBBANK"	35,735,612.3	41,363,033.56	48,080,167	15.75	16.24
JSC "Ukreximbank"	32,699,911.5	37,849,725.21	40,245,457.2	15.75	6.33
JSC "UKRGASBANK"	32,128,062.5	33,586,565.58	33,900,195.9	4.54	0.93
JSC "OTP BANK"	25,128,430.5	25,871,609.71	20,927,686.7	2.96	-19.11

Source: compiled by the authors based on Supervisory data (n.d.)

The data in Table 1 indicate a steady increase in the deposit portfolios of individuals across most institutions. JSC CB "PrivatBank" remains the leader in absolute volumes, demonstrating stable, albeit somewhat decelerated, growth (17.24% in 2024 and 11.89% in 2025). Significant growth rates are characteristic of JSC "Universal Bank" (32.13% and 25.70%) and JSC "PUMB" (24.98% and 15.49%), confirming their active strengthening in the retail segment. At the same time, JSC "Raiffeisen Bank" showed moderate growth in 2024 (4.67%) followed by a sharp acceleration in 2025 (18.04%). A stable dynamic was recorded by JSC "UKRSIBBANK" and JSC "Oschadbank", while JSC "Ukreximbank" demonstrated gradual but less intensive growth. A negative trend is observed in JSC "SENS Bank" (a decline of 1.09% in 2025) and JSC "OTP Bank", where after a slight increase in 2024,

the portfolio contracted sharply by 19.11% in 2025. This reflects intensifying competition in the sector and a redistribution of the client base in favour of more dynamic market players.

In 2022, despite the start of the full-scale war, the volume of deposits still grew by 23.6%. By the end of 2023, deposits increased by 28.6%, reaching UAH 2.36 trillion (Ukrainian money supply…, 2024). A significant share of this growth was driven by hryvnia deposits (+35.2% in 2023), supported by restrictions on cash circulation, rising incomes, and the conversion of savings into cashless form. Even during wartime, households and businesses have continued to entrust banks with their funds, relying on their digital services. According to NBU data, in 2024, demand deposits in hryvnia among households expanded most actively, while term deposits grew more slowly (Samoiliuk, 2025). Therefore, fintech platforms in Ukraine did not trigger an outflow of deposits from banks; on the contrary, due to digitalisation, the banking sector attracted more resources by providing clients with convenient tools for storing and using money.

The lending sector in Ukraine during 2017-2024 was also affected by fintech trends, although the effect here is more complex. After the 2014–2-015 crisis, banks were very cautious in resuming lending, particularly corporate loans. Growth in lending began with consumer loans: in 2019, the volume of hryvnia loans to households increased by almost 31% (Fig. 2).

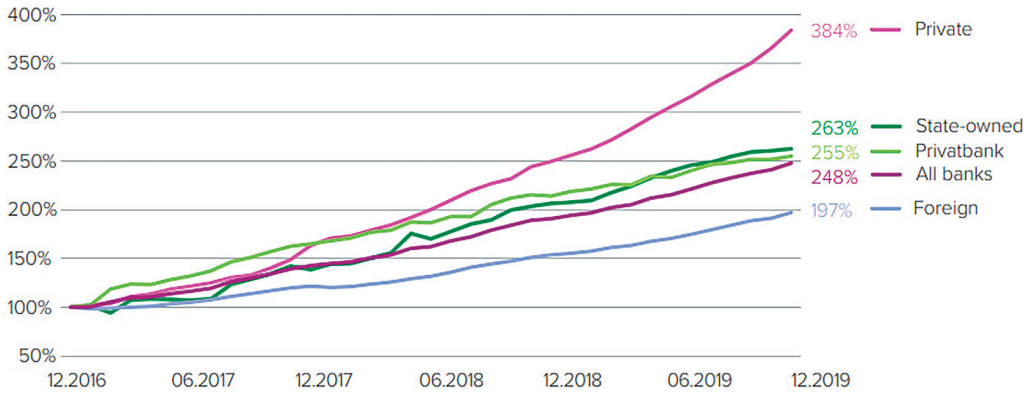

Figure 2. Net hryvnia retail loans

Source: NBU annual report 2019: Ten indicators of changes in the economy and financial system of Ukraine (2020)

Banks actively issued retail loans (credit cards, cash loans) amid rising household incomes. At the same time, the corporate portfolio continued to shrink (-6.2% in 2019) (NBU annual report 2020…, 2021), as businesses were less willing to take out loans and banks imposed strict requirements after cleaning up the system of problem debts. During this period, fintech lenders entered the market, filling niches not covered by large banks. Dozens of online microcredit services appeared, issuing small payday loans to the population via the internet in a matter of minutes. Peer-to-peer (P2P) platforms that directly connect borrowers and investors, as well as new online credit unions, also began to operate. Although such fintech companies cannot attract deposits and are significantly inferior to banks in terms of volume, they have created competition in the small and short-term lending segment.

Pressure from non-bank lenders has forced traditional banks to improve their approaches. Banks have reduced application processing times, simplified procedures, and begun to make more active use of scoring and data from alternative sources (telecom, online payments) to assess customer solvency. In 2020, the NBU lowered its discount rate to a historic low and launched state support programmes, which also stimulated business lending (NBU annual report 2020..., 2021). Despite the economic shock caused by the pandemic, the net portfolio of hryvnia mortgages grew by 11.5% in 2020, with low interest rates and a state programme to make mortgages cheaper driving the market recovery. In 2021, this trend accelerated: mortgage lending volumes grew by more than 60% over the year due to affordable rates and the "YeOselya" programme (NBU annual report 2021..., 2022). Thus, banks have remained the dominant players in the lending market and managed to expand loan issuance, partly adopting fintech practices such as speed and user convenience. At the same time, the share of fintech companies in Ukraine's credit market remains relatively small due to low capitalisation, limited regulatory coverage, consumer trust risks, and competition from state financing programmes, although it is growing rapidly. This segment includes online business loans (factoring platforms, loans for sole proprietors via fintech services), as well as consumer instalment and "Buy Now, Pay Later" (BNPL) services. For example, several retail chains and fintech start-ups began offering customers the option to pay for purchases in instalments through mobile applications. Traditional banks have responded by collaborating with fintechs: many banking products are now integrated with non-bank platforms. In Ukraine, a unique symbiosis has emerged – both competition and cooperation coexist. On one hand, fintechs have captured part of the consumer lending market (especially small loans, where banks were previously inactive). On the other hand, banks have begun

partnering with fintechs – for instance, Monobank operates under the licence of its partner bank (Universal Bank), while the state-owned PrivatBank launched an open API for fintech developers. This demonstrates that the boundary between banking and fintech services is gradually blurring. For borrowers, this competition is generally beneficial, as it broadens their choices and improves lending conditions. Therefore, fintech organisations have encouraged Ukrainian banks to lend more actively to households and businesses on more modern and customer-friendly terms, while not yet displacing them from the market.

In the United States, the fintech revolution has manifested itself in the segment of neobanks and online lending. Already in 2018, American fintech companies issued 38% of all personal (consumer) loans, surpassing even traditional banks in terms of market share (Neely, 2021). For comparison, in 2013, their share was only 5% – that is, in five years, fintech companies rapidly captured the consumer loan market. Platforms such as LendingClub, SoFi, Prosper and others belong to the category of peer-to-peer (P2P) lending and digital financial marketplaces that provide a direct link between borrowers and investors. They offer simplified loan application procedures, reduced transaction costs, and faster access to financing, as the entire process – from application to loan issuance – is conducted entirely online without the need to physically visit bank branches. At the same time, non-bank payment services such as PayPal, Venmo, and Square (Cash App) have grown, offering instant P2P transfers and digital wallets. Traditional American banks responded by launching their own mobile apps and internet banking services, and some even created digital "subsidiaries" or bought fintech start-ups. Nevertheless, banks lost market share in some segments: between 2013 and 2018, their share of the personal loan market fell from 40% to 28% (Neely, 2021). Competition has also emerged in the payments sector: Apple Pay, Google Pay and other BigTech services are actively competing with bank cards. In summary, fintech has significantly displaced traditional banks in the retail segment in the United States, forcing the banking sector to invest in technology and rethink its business models. As noted by the US Federal Reserve, traditional financial institutions are now competing in the "hyper-competitive" field of fintech innovation (Neely, 2021).

In EU countries, the fintech industry is also developing rapidly, although the approaches are somewhat different – the emphasis is on regulatory promotion of competition and integration of fintech into the existing financial system. In 2018, the EU introduced the PSD2 directive, which opened banking systems to open banking – third-party fintech services. This gave rise to numerous account aggregators, payment apps and alternative financial platforms. Europe has seen the growth of its own neobanks: Britain's Revolut, Germany's N26, the Netherlands' bunq and others. They have attracted tens of millions of users by offering attractive rates and mobile apps. For example, by the end of 2024, Revolut had 50 million customers worldwide (10 million in the UK) (Revolut hits 50 million customers..., 2024) and obtained banking licences in several countries. Traditional banks in the European Union have adapted to new technological challenges by introducing mobile banking services and establishing cooperation with fintech companies through the use of open API solutions. As a result, the penetration rate of fintech services in Europe is very high – globally, an average of 64% of consumers use fintech services (Kumar, 2025), and in developed European countries, this figure is close to 70-80%. The pandemic has only accelerated this trend: in the first months of the 2020 lockdowns, the use of fintech applications in Europe increased by 72% (Greene, 2025). The European model of financial innovation is characterised by a cooperative approach, within which banks and fintech companies often interact on a partnership basis: fintech start-ups provide technological solutions or customer service, while banks provide the necessary regulatory and licensing infrastructure. The EU is managing to increase competition and innovation in the financial market without radically displacing banks, but with their gradual transformation.

The Chinese financial sector has experienced a real fintech boom, surpassing many other countries in terms of scale. BigTech companies play a dominant role. The Alipay (Ant Group) and WeChat Pay (Tencent) payment platforms have almost completely replaced cash – the vast majority of the population makes payments via smartphone. In addition to payments, Chinese tech giants have also entered the lending market. Ant Group, through its Ant Credit (Huabei, Jiebei) service, and Tencent, through WeBank, have begun to provide microloans to consumers and small and medium-sized businesses on a massive scale, using big data for scoring. As a result, the volume of such loans has reached enormous proportions – according to BIS estimates, lending by BigTech companies in China will reach about 8% of the country's GDP by 2023 (Caballero *et al.*, 2025). This is a high figure, considering the short history of these services. Traditional Chinese banks initially lost a significant share of the retail finance market to fintech platforms. In the mid-2010s, a shadow segment of P2P lending even emerged, growing by hundreds of percent annually until the government began to strictly regulate and "clean up" this market. The Chinese state is integrating fintech into the regulatory field – Ant Group was forced to reorganise its lending business into a financial holding company under the supervision of the central bank. The situation can be summarised as follows: in China, fintech has become an integral part of the financial system, and banks are transforming themselves by collaborating with tech giants. Many banks have connected to the Alipay/WeChat ecosystems to offer deposits and joint products in order to remain visible to customers. The Chinese experience shows both the enormous opportunities and risks of fintech – rapid growth without proper supervision can pose threats to financial stability, which prompted the authorities to intervene (Financial Stability Board, n.d.).

The situation in Ukraine reflects global trends: fintech is gradually taking over certain segments (payments, small

loans, money transfers), the pandemic has accelerated the transition to digital everywhere, and traditional banks are responding by going digital, partnering with fintech companies or launching their own similar products. The only difference is in scale: while in China and the US, the volume of fintech transactions is measured in hundreds of billions of dollars, in Ukraine it is still in the tens of billions of hryvnia, but the growth rate is very high. According to estimates by international organisations, fintech loans in EMEA (Europe, the Middle East and Africa) have grown by an average of 170-240% annually, and Ukraine is no exception in this process (Caballero *et al*., 2025). Banks offer more stable and cheaper loans, primarily for long-term loans (mortgages). Fintech companies, on the other hand, specialise in quick short-term loans, but these are much more expensive due to daily interest rates, as can be seen in Table 2.

Table 2. Comparison of interest rates on loans from banks and fintech companies

Parameter	Banks	Fintech companies
Interest rates (annual)		
Consumer loans	≈30-35% in UAH	1-2% per day (up to 365% annually)
Mortgage loans	≈14-30% annually	Not available, possible partnerships with banks
Credit cards	≈40% annually	≈34–35% annually

Source: compiled by the authors based on O. Bilous (2024), A. Sakhno (2024)

Traditional banks charge higher fees for interbank transfers in Ukraine, while fintech companies (such as Monobank) often offer free transfers between banks within the country. This is indicated in Table 3 compiled by the author.

Considering the cost of opening and maintaining an account, there is no difference between banks and fintech companies (Table 4). However, cash withdrawals are more expensive with fintech companies because they do not have their own automated teller machine (ATM) network.

Table 3. Comparison of transfer fees charged by banks and fintech companies

Parameter	Banks	Fintech companies
Transfer fees		
Within the same bank	0 UAH	0 UAH
Interbank (Ukraine)	≈0.5% (min. 5 UAH)	0 UAH in many neobanks
International transfers	0.5% + $12, max. $100	0.5% + $12, max. $90

Source: compiled by the authors based on Credit card with free service (n.d.), Monobank (n.d.), PrivatBank has almost equated SWIFT transfer fees to Monobank's terms and conditions (2023), Oschadbank explained when they charge a commission for cash withdrawals (2024)

Table 4. Comparison of account maintenance costs at banks and fintech companies

Parameter	Banks	Fintech companies
Account maintenance fee		
Account opening	0 UAH	0 UAH
Monthly service/maintenance	0 UAH for standard cards	0 UAH
Cash withdrawals at ATMs	Free up to 10,000 UAH/month, then ~1%	0.9% in Ukraine, 2% abroad

Source: compiled by the authors based on PrivatBank (n.d.), Monobank (n.d.), PrivatBank has almost equated SWIFT transfer fees to Monobank's terms and conditions (2023), Oschadbank explained when they charge a commission for cash withdrawals (2024)

The study found that the introduction of fintech services significantly transforms the operating model of the banking system, influences consumer behaviour and stimulates innovative development of the financial services market. These conclusions partially or fully coincide with the results presented in scientific publications, which deserve detailed discussion. A bibliometric analysis of fintech research conducted by N. Del Sarto & P.K. Ozili (2025) identified financial inclusion, digital lending and regulatory innovation as the most active areas. The authors emphasised that fintech contributes to reducing transaction costs and expanding access to banking services, which correlates with the findings of this study regarding the growth of online banking in Ukraine. Similar conclusions are presented in the study by O. Desyatnyuk *et al.* (2023), where financial inclusion was interpreted as an important element in the formation of financial instruments for business.

The study by M.-J. Gallego-Losada *et al.* (2023), using scientific literature visualisation, also showed that the topic of digital inclusion has become a key trend in fintech research. G. Garg *et al.* (2023) noted in their bibliometric work the active growth of research related to platform banking, BNPL services, and digital payments, emphasising that the key factor in the development of fintech is the integration of technologies into everyday banking practice. J.A. Jafri *et al.* (2025) also noted in their study that one of the main trends is the emergence of neobanks, which, in their opinion, not only complement traditional banking but also act as its direct competitors. The researchers emphasised the speed of service, personalisation and flexibility, which

explains the success of projects such as Revolut and Monobank. This was consistent with the findings of this study on the adaptation of banks to new realities through digitalisation and cooperation with fintech companies.

K. Abdo *et al.* (2025) found that the key scientific "hot spots" are the application of big data, artificial intelligence, and analytics in the financial sector. A. Hamza & H.G.M. Saleh (2024) confirmed this conclusion, emphasising the growing role of research in the field of digital platforms and regulatory mechanisms. These works outlined the complex nature of fintech's impact: from technological innovation to the long-term sustainability of the banking system and public trust. Research by H. Biju *et al.* (2024) concluded that the academic community has not yet reached a consensus on the long-term impact of fintech on the stability of the banking system. Some studies focus on potential risks, such as a decline in the profitability of traditional banks, an increase in cyber threats, and market fragmentation. The authors of this study partly share this position, but in the current study, more attention is paid to the adaptive mechanisms of banks to digital challenges that have proven to be effective. A similar analysis was carried out by Z. Zou *et al.* (2023), who emphasised the need to reconcile technological innovation with issues of social trust and stability. An interesting classification of fintech risks was proposed by A. Alamsyah & S. Syahrir (2024), who identified both technological threats (malicious software, data leaks) and systemic threats (market concentration in the hands of bigtech). They emphasised the need to update regulatory approaches, a point that is fully agreed upon. B. Nkatekho (2024) came to similar conclusions, stressing that the introduction of blockchain into the banking sector is transforming business models, but at the same time creating new challenges for financial intermediaries.

This work also highlighted the importance of creating a regulatory environment focused on open banking. H. Zhosan & O. Smolkina (2024) studied the Ukrainian fintech market during the war and post-war periods, focusing on its flexibility and adaptability. Their conclusions about the growing demand for remote services, mobile payments and online lending were confirmed by empirical observations in this work, in particular data from the NBU and Revolut on the growth of the customer base. A. Semenog *et al.* (2023) focused on the development of neobanks in Ukraine, pointing to the high potential of the market, but also to obstacles – lack of trust among older age groups, regulatory uncertainty, and dependence on IT infrastructure. This study also emphasised the need to improve financial literacy, reduce barriers to access to services, and strengthen partnerships with regulators.

L. Yang *et al.* (2024) showed that fintech can help reduce companies' dependence on short-term debt instruments by creating more sustainable financial strategies. B. Fejes & M. Stocker (2024) analysed the impact of IT investments on the competitiveness of financial institutions. Their research confirmed a positive correlation between digital innovation and banks' market share. This is consistent with the example of Monobank, which gained millions of users in a short period of time due to its IT-oriented model, as also noted in this work. M.C. Neely (2021) viewed fintech as a revolution in the banking sector, emphasising the changing role of banks: from full-fledged service providers to platforms that bring together fintech, insurance services and other third-party services. Further research has deepened this idea, demonstrating the transformation of banks' business models and the broader socio-economic context of digitalisation.

Y. Burtsev (2024) drew attention to trends in the development of the banking sector under the influence of financial technologies, emphasising the change in business models and the increasing role of digital channels of interaction with customers. Current results had confirmed this transformation, especially in the case of banks that integrate APIs and operate under the Banking-as-a-Service model. Research by V. Khaustova *et al.* (2024) showed that the digitalisation of the financial sector is intertwined with the development of society and contributes to innovative transformations in education, entrepreneurship and regulatory practices. T. Staverska *et al.* (2023) emphasised that fintech not only contributes to the efficiency and accessibility of financial services, but also forms the basis for the development of the digital economy as a whole. Data from the Financial Stability Board (fintech and market structure in..., 2022) indicate the growing role of fintech during the COVID-19 pandemic and its ability to ensure the continuity of financial transactions. This factor was also noted in this study as one of the reasons for the accelerated digitalisation of banking processes in Ukraine in 2020-2022. Finally, an analytical review by M. Samoiliuk (2025) showed that even during a full-scale war, Ukraine's financial sector remained functional, partly due to fintech solutions. This fact is fully consistent with the conclusions of this study on the resilience of banks and the acceleration of digital transformation. Thus, analysis of scientific sources shows that fintech acts as a catalyst for innovation, promotes greater access to financial services, creates competitive pressure on traditional banks and, at the same time, generates new risks that require adaptation of the regulatory environment. The generalised results of the study allow to conclude that the synergy between fintech companies and banking institutions, with appropriate regulatory support, will form the basis for the sustainable development of Ukraine's financial sector in the medium and long term.

Conclusions

The study found that fintech services are a key factor in the transformation of the traditional banking sector, driving changes in the way financial services are delivered, customer engagement structures and banking business models. The most noticeable impact of fintech is observed in the areas of mobile banking, digital payments, online lending, and automated customer service, indicating a gradual shift in consumer priorities and growing demand for digital services. Analysis of the results showed that traditional banks

are actively responding to the challenges of digitalisation by introducing innovative technologies and digital products, including mobile applications, open APIs and artificial intelligence-based solutions. Such measures allow banks not only to maintain their competitive positions, but also to strengthen them by improving customer service efficiency, transaction processing speed, and adaptation to the rapidly changing financial services market.

A comparative analysis of models of interaction between banks and fintech companies revealed a variety of strategic approaches, ranging from competitive confrontation to partnership and cooperation. The study showed that the most effective model is partnership, which combines the stability and regulatory reliability of the banking system with the flexibility and innovation of fintech. This approach helps to increase the customer base, raise the level of penetration of digital services, and create conditions for the sustainable development of the financial market. It has been established that fintech innovations affect the structure of banking products and change the financial behaviour of consumers. In particular, the growing popularity of digital wallets, instant transfers and P2P lending is reducing the need for traditional deposit products, while stimulating the development of current accounts and increasing the speed of funds turnover. The results of the study showed that fintech is not a threat to the banking system, but rather a driving force for its evolution and innovative development. Further research should focus on assessing the effectiveness of digital financial services, the impact of fintech solutions on consumer behaviour and the stability of banking institutions. Promising areas include customer data modelling, the use of artificial intelligence technologies to assess credit risks and ensure cybersecurity in the digital financial environment.

Acknowledgements
None.

Funding
None.

Conflict of Interest
None.

References
[1] Abdo, K., Qudah, H.A., AlQudah, M.Z., Almustafaet, E., & Alshaer, B.Y. (2025). Hotspots and trends of financial technology (FinTech) research: A bibliometric analysis. *Economics*, 13(2), 111-138. doi: 10.2478/eoik-2025-0033.

[2] Alamsyah, A., & Syahrir, S. (2024). A taxonomy on blockchain-based technology in the financial industry: Drivers, applications, benefits, and threats. In N. El Madhoun, I. Dionysiou & E. Bertin (Eds.), *Blockchain and smart-contract technologies for innovative applications*. (pp. 91-129). Cham: Springer. doi: 10.1007/978-3-031-50028-2_4.

[3] Banking sector review. (2021). Retrieved from https://bank.gov.ua/admin_uploads/article/Banking_Sector_Review_2021-02_eng.pdf.

[4] Biju, H., Mukthar, K.P.J., Dhia, A., Selvaratnam, D.P., Singh, S.K., & Singh, J.K. (2024). A bibliometric analysis of financial technology: Unveiling the landscape of a rapidly evolving field. *Discover Sustainability*, 5, article number 72. doi: 10.1007/s43621-024-00256-9.

[5] Bilous, O. (2024). *Banks slightly reduced rates: What interest can you get a loan for*. Retrieved from https://www.rbc.ua/rus/news/banki-trohi-znizili-stavki-pid-kiy-vidsotok-1734335092.html.

[6] Burtsev, Y. (2024). Development of financial technologies and modern trends in the banking sector. *Economics, Management and Administration*, 2(108), 152-159. doi: 10.26642/ema-2024-2(108)-152-159.

[7] Caballero, J., Doerr, S., Mehrotra, A., & Zampolli, F. (2025). *How far can digital innovation improve credit to small firms in emerging market economies?* Retrieved from https://www.bis.org/publ/bisbull99.pdf.

[8] Credit card with free service. (n.d.). Retrieved from https://privatbank.ua/handbook/kredytna-kartka-z-bezkoshtovnym-obsluhovuvannyam.

[9] Del Sarto, N., & Ozili, P.K. (2025). FinTech and financial inclusion in emerging markets: A bibliometric analysis and future research agenda. *International Journal of Emerging Markets*, 20(13), 270-290. doi: 10.1108/IJOEM-08-2024-1428.

[10] Desyatnyuk, O., Krysovatyy, A., & Ptashchenko, O. (2023). Development of business financial instruments in conditions of digital inclusion. *Journal of Strategic Economic Research*, 24(6), 28-37. doi: 10.30857/2786-5398.2023.6.3.

[11] Fejes, B., & Stocker, M. (2024). Impact of additional IT investments on firm-level competitiveness. *Vezetéstudomány Budapest Management Review*, 55(11), 2-15. doi: 10.14267/VEZTUD.2024.11.01.

[12] Financial Stability Board. (n.d.). *Promoting global financial stability through strong financial sector policies*. Retrieved from https://www.fsb.org/.

[13] FinTech and market structure in the COVID-19 pandemic. (2022). Retrieved from https://www.fsb.org/uploads/P210322.pdf.

[14] Gallego-Losada, M.-J., Montero-Navarro, A., García-Abajo, E., & Gallego-Losada, R. (2023). Digital financial inclusion. Visualizing the academic literature. *Research in International Business and Finance*, 64, article number 101862. doi: 10.1016/j.ribaf.2022.101862.

[15] Garg, G., Shamshad, M., Gauhar, N., Tabash, M.I., Hamouri, B., & Daniel, L.N. (2023). A bibliometric analysis of fintech trends: An empirical investigation. *International Journal of Financial Studies*, 11(2), article number 79. doi: 10.3390/ijfs11020079.

[16] Greene, K. (2025). *70+ fintech statistics you need to know for 2025 and beyond*. Retrieved from https://www.siegemedia.com/strategy/fintech-statistics.
[17] Hamza, A., & Saleh, H.G.M. (2024). Navigating the digital wave: Mapping the research trends of digital finance (fintech) through a bibliometric lens. *Cognizance Journal of Multidisciplinary Studies*, 4(3), 32-46. doi: 10.47760/cognizance.2024.v04i03.004.
[18] Jafri, J.A., Mohd Amin, S.I., & Abdul Rahman, A. (2025). Financial technology (Fintech) research trend: A bibliometric analysis. *Discover Sustainability*, 6, article number 513. doi: 10.1007/s43621-025-01225-6.
[19] Khaustova, V., Ilyash, O., Smoliar, L., & Bondarenko, D. (2024). Digitalization and its impact on the development of society. In M. Sobczak-Michalowska, S. Borah, Z. Polkowski & S. Mishra (Eds.), *Applications of synthetic high dimensional data* (pp. 54-76). Hershey: IGI Global. doi: 10.4018/979-8-3693-1886-7.ch004.
[20] Kumar, N. (2025). *FinTech Statistics (2025) – companies, adoptions rates*. Retrieved from https://www.demandsage.com/fintech-statistics/.
[21] Monobank. (n.d.). *Service tariffs*. Retrieved from https://monobank.ua/taryfy.
[22] NBU annual report 2019: Ten indicators of changes in the economy and financial system of Ukraine. (2020). Retrieved from https://bank.gov.ua/en/news/all/richniy-zvit-natsionalnogo-banku-za-2019-rik-10-pokaznikiv-yak-zminilasya-ekonomika-ta-finansova-sistema-ukrayini.
[23] NBU annual report 2020: 10 facts about changes in the economy and financial system in the first year of the pandemic. (2021). Retrieved from https://bank.gov.ua/en/news/all/richniy-zvit-natsionalnogo-banku-za-2020-rik-10-faktiv-pro-te-yak-zminilisya-ekonomika-ta-finansova-sistema-uprodovj-pershogo-roku-pandemiyi.
[24] NBU annual report 2021: Key indicators of changes that took place in the economy and financial system over the year. (2022). Retrieved from https://bank.gov.ua/en/news/all/richniy-zvit-natsionalnogo-banku-za-2021-rik-klyuchovi-markeri-zmin-u-ekonomitsi-ta-finansoviy-sistemi-vprodovj-roku.
[25] NBU focuses on innovations and fintech market. (2019). Retrieved from https://bank.gov.ua/en/news/all/innovatsiyi-ta-rozbudova-finteh-rinku-ukrayini--u-fokusi-uvagi-natsionalnogo-banku.
[26] Neely, M.C. (2021). *The fintech revolution in banking*. Retrieved from https://www.stlouisfed.org/publications/regional-economist/fourth-quarter-2021/fintech-revolution-banking.
[27] Nkatekho, B. (2024). The impact of FinTech innovations on traditional banking systems. *International Journal of Finance*, 9(4), 48-61. doi: 10.47941/ijf.2116.
[28] Oschadbank explained when they charge a commission for cash withdrawals. (2024). Retrieved from https://finance.novyny.live/v-oshchadbanku-poiasnili-koli-berut-komisiiu-za-zniattia-gotivki-218600.html.
[29] PrivatBank has almost equated SWIFT transfer fees to Monobank's terms and conditions. (2023). Retrieved from https://kosht.media/pryvatbank-mayzhe-pryrivniav-taryfy-swift-perekaziv-do-umov-monobank/.
[30] Pshyk, B., & Grudzevuch, U. (2023). Improvement of fintex regulation on the market of banking services in Ukraine. *Economy and Society*, 54. doi: 10.32782/2524-0072/2023-54-67.
[31] Reverchuk, S., & Tvorydlo, O. (2023). Digitalization of the banking business: Challenges and opportunities for state regulation. *Economy and Society*, 55. doi: 10.32782/2524-0072/2023-55-45.
[32] Revolut hits 50 million customer milestone globally on mission to build world's first truly global bank. (2024). Retrieved from https://www.revolut.com/news/revolut_hits_50_million_customer_milestone_globally_on_mission_to_build_world_s_first_truly_global_bank/.
[33] Rogalskiy, A. (2021). *From startup to 35% mobile market share in Ukraine: Monobank's CMO shares his top growth tips*. Retrieved from https://www.thinkwithgoogle.com/intl/en-emea/future-of-marketing/management-and-culture/fintech-cmo-shares-their-top-growth-tips/.
[34] Sakhno, A. (2024). *Mortgage during war: How to get a home loan in Ukraine*. Retrieved from https://www.rbc.ua/rus/news/ipoteka-pid-chas-viyni-k-ukrayini-vzyati-1735312145.html.
[35] Samoiliuk, M. (2025). *Ukraine war economy tracker*. Retrieved from https://ces.org.ua/en/tracker-economy-during-the-war/.
[36] Semenog, A., Pakhnenko, O., & Shalda, A. (2023). Neobanks in Ukraine: Features, trends, and development obstacles. *Modern Economics*, 39, 131-137. doi: 10.31521/modecon.V39(2023)-20.
[37] Staverska, T., Hlushchenko, I., & Lysak, H. (2023). Financial technologies (FinTech) and their impact on the digital economy. *Science and Technology Today*, 12(26), 315-326. doi: 10.52058/2786-6025-2023-12(26)-315-326.
[38] Supervisory data. (n.d.). Retrieved from https://bank.gov.ua/ua/statistic/supervision-statist.
[39] Ukrainian money supply growth accelerated to 23% in 2023 – NBU. (2024). Retrieved from https://interfax.com/newsroom/top-stories/98360/.
[40] Yang, L., Hong, Y., Zhang, X., & Zhang, Q. (2024). Can FinTech alleviate the long-term use of short-term debts? Evidence from China. *China Finance Review International*. doi: 10.1108/CFRI-06-2024-0329.
[41] Zhosan, H., & Smolinkina, O. (2024). The specifics of functioning of fintech companies in Ukraine during wartime and post-war periods. *Development Service Industry Management*, 1, 16-22. doi: 10.31891/dsim-2024-5(2).

[42] Zhurko, R., & Shcherbak, Y. (2025). Trends and challenges in the development of FinTech in the banking sector of Ukraine. *Scientific Bulletin of Polissia*, 2(29), 479-495. doi: 10.25140/2410-9576-2024-2(29)-479-495.
[43] Zou, Z., Liu, X., Wang, M., & Yang, X. (2023). Insight into digital finance and fintech: A bibliometric and content analysis. *Technology in Society*, 73, article number 102221. doi: 10.1016/j.techsoc.2023.102221.

Інформаційні технології у фінансах: вплив фінтех-сервісів на традиційні банки

Людмила Федевич
Кандидат економічних наук, доцент
Національний університет «Львівська політехніка»
79000, вул. Степана Бандери, 12, м. Львів, Україна
https://orcid.org/0000-0002-3097-7467

Сергій Тревого
Аспірант
Національний університет «Львівська політехніка»
79000, вул. Степана Бандери, 12, м. Львів, Україна
https://orcid.org/0009-0000-1921-5843

Анотація. В умовах стрімкого розвитку цифрових технологій фінансовий сектор зазнає суттєвих трансформацій під впливом фінансових технологій (фінтеху), який стає драйвером інновацій у банківській сфері. Метою роботи було дослідження ролі фінтеху у цифровій трансформації банківського сектору та особливості його впливу на взаємодію фінтех-компаній і традиційних банків. Для досягнення цієї мети були використані методи наукової абстракції, структурно-декомпозиційного аналізу, синтезу, логічного узагальнення, а також змістовно-порівняльний і логіко-прогнозний методи. Результати дослідження показали, що фінтех-сервіси суттєво трансформують фінансовий ринок, підвищуючи доступність, швидкість та персоналізацію послуг. В Україні зростання депозитів після банківської кризи пов'язане з розвитком мобільного банкінгу та появою необанків, зокрема Monobank. Встановлено, що цифровізація банківських сервісів посприяла переорієнтації клієнтів на поточні рахунки та безготівкові операції. Фінтех-компанії стали важливим чинником зростання конкуренції в сегменті короткострокового кредитування, що стимулювало банки до скорочення часу розгляду заявок і впровадження скорингових систем. Попри це, банки залишаються домінуючими у сфері довгострокових кредитів, зокрема іпотеки. Аналіз міжнародного досвіду (США, ЄС, Китай) засвідчив, що найефективнішою моделлю розвитку є поєднання конкуренції та кооперації між банками і фінтехами. В Україні утверджується модель симбіозу, де фінтехи і банки співпрацюють через API, спільні продукти та платформи. Результати засвідчили, що впровадження фінтех-рішень не витіснило банки, а навпаки – активізувало їх цифрову трансформацію та сприяло зростанню довіри населення до фінансової системи. Практична цінність роботи полягає у формуванні рекомендацій щодо інтеграції фінтех-рішень у банківські процеси, що сприятиме підвищенню ефективності фінансових послуг і розвитку цифрової економіки. Звітні результати можуть слугувати основою для подальших досліджень у сфері цифрових інновацій у фінансовому секторі

Ключові слова: цифрова трансформація; банківський сектор; цифровізація; необанки; кредитування; депозити

INNOVATION AND SUSTAINABILITY
Volume 5, No. 3. 2025
Journal homepage: https://inns.com.ua/en
Received: 10.04.2025; Revised: 28.07.2025; Accepted: 30.09.2025
DOI: 10.31649/vis/3.2025.90

UDC 339.138

Influencer marketing for building consumer loyalty

Yaroslav Biriukov*
Postgraduate Student
State University of Trade and Economics
02156, 19 Kyoto Str., Kyiv, Ukraine
https://orcid.org/0009-0006-6198-1617

Abstract. The study aimed to determine the effect of influencers' communication activity on social media on consumer trust, emotional attachment, and behavioural loyalty to brands. The research methodology was based on a comprehensive theoretical and analytical approach that combined content analysis, comparative analysis, and the case method. The study found that the global influencer marketing market reached USD 24 billion in 2025, while the average return on investment is USD 5.78 in profit for every dollar invested. In Ukraine, this figure is USD 4-5. The study determined that TikTok remains the leader in terms of user engagement with a rate of 4-7%, while Instagram provides stable coverage at 1.45-2.18%. The analysis showed that in Western European countries (the United Kingdom, Germany), the most successful campaigns achieved a return on investment of up to USD 20, while in Asian countries (China, South Korea, Indonesia), this figure was USD 6-7, due to the integration of social commerce and analytics platforms. In Ukraine, the highest results were demonstrated by campaigns with micro-influencers, which provide an increase in conversions of up to 46% and sales growth of up to 40%. The study established that the use of artificial intelligence improves targeting accuracy and reduces costs by 15-20%, while Big Data technologies contribute to better consumer behaviour forecasting and increase campaign effectiveness by 25%. The results of the study can be used by companies to optimise influencer marketing strategies, increase return on investment, and strengthen audience loyalty in the digital environment

Keywords: social media algorithms; artificial intelligence; audience engagement; trust level; return on investment; targeting

Introduction

The dynamic development of the digital environment has led to significant changes in the ways brands and consumers communicate. Traditional forms of advertising are gradually losing their effectiveness due to declining audience trust and information overload, prompting businesses to seek new ways of interacting. One of the most effective tools has been the personalised influence of opinion leaders on social media. Changes in the structure of communication between brands and audiences have created a need to determine effective tools to influence consumer decisions. In the digital space, consumer attention has become the most valuable resource, and a brand's ability to build trusting, authentic relationships with its audience determines its competitiveness. The excessive commercialisation of online advertising causes user distrust, which highlights the need to study influencer marketing as a strategy capable of combining emotional connection with technological precision in communications.

A. Strunhar (2024) investigated the effectiveness of using micro- and macro-influencers in brand promotion, identified the characteristics of interaction between different types of opinion leaders and target audiences, and assessed the risks associated with their involvement. The researcher proved that micro-influencers provide a higher level of trust and engagement, while macro-influencers contribute to brand awareness but may lose authenticity due to the commercialisation of content. Within the framework of influencer marketing research, the focus was on how the interaction between brands and opinion leaders on social networks affects consumer behaviour and the effectiveness of advertising strategies. O. Burdyak *et al.* (2024) emphasised that the growth in popularity of social

Suggested Citation:
Biriukov, Ya. (2025). Influencer marketing for building consumer loyalty. *Innovation and Sustainability*, 5(3), 90-101. doi: 10.31649/vis/3.2025.90.

*Corresponding author

platforms creates a need for new approaches to shaping the communication environment between companies and their audience. The authors analysed the impact of authenticity, expertise and emotional connection of influencers on brand perception and proved that these factors determine the level of awareness and trust in products.

The rapid development of digitalisation and restrictions caused by pandemic conditions have necessitated a reorientation of communications between brands and consumers towards social media. In this context, V. Bondarchuk *et al.* (2021) emphasised that Facebook, Instagram, and YouTube created new opportunities for collaboration with opinion leaders who, due to the trust of their audience, have become key intermediaries between brands and consumers. In particular, the authors emphasised that companies working with micro-influencers achieve a higher quality of interaction compared to large accounts, albeit with a smaller reach. The growing commercialisation of digital space and declining trust in traditional advertising formats have necessitated the search for new ways of effective interaction between brands and consumers. The study by G. Myskiv & L. Ivasiuta (2025) reveals the dynamics of the development of influencer marketing as a key tool for promoting goods and services in the world and in Ukraine, based on authenticity, personalisation and content engagement. The study emphasised that the influencer marketing market grew to USD 24 billion in 2025, with Instagram remaining the leading platform, where the share of micro- and nano-influencers is growing, providing a higher level of emotional interaction with the audience.

The constant expansion of digital space and growing competition in online communications determine the need to study social media as a key tool for interaction between brands and consumers. O. Kabanova *et al.* (2024) examined the transformation of marketing strategies under the influence of digital technologies and determined that social networks have become a substantial channel for promotion, especially for small and medium-sized enterprises. They summarised the main trends in social media marketing: the development of the blogosphere, the integration of user content, the growing role of video formats, and the introduction of analytics tools to monitor consumer sentiment. The study by N. Kukina *et al.* (2024) analysed how personalised content, video formats, user activity and brand social responsibility strengthen emotional connections with consumers and promote long-term loyalty. The study determined that the use of artificial intelligence (AI) and analytical tools can be used for content optimisation and increased targeting accuracy, while brand social responsibility strengthens emotional perception. A study by A. Zhavoronok *et al.* (2025) found that branding in the digital space has become a key tool not only for building recognition but also for maintaining an emotional connection with customers, which ensures lasting loyalty and increases brand value. Researchers determined that effective management of online communication, particularly through official websites and personalised mailings, builds initial trust and encourages consumers to make repeat purchases.

The growing influence of social media on consumer behaviour requires companies to rethink their approaches to promotion and communication with their target audience. V. Rozhko & A. Shchelkova (2024) emphasised that the effectiveness of using influencers directly depends on the alignment of the opinion leader's values with those of the brand, the level of engagement (ER) of subscribers, and the authenticity of the content created. The study showed that combining influencer marketing with other elements of digital strategy, in particular content marketing, search engine optimisation, and targeted advertising, contributes to brand awareness and increased sales. The long-term impact of influencer and digital campaigns on building lasting consumer loyalty, assessing their economic effectiveness, and determining the optimal combination of different categories of influencers and digital tools in a unified communication strategy that aligns commercial goals with ethical principles of transparency remains under-researched. The current study aimed to determine the effect of social media influencers on consumer trust, emotional attachment, and behavioural loyalty to brands.

Materials and Methods

The study was theoretical in nature and covered the period from 2024 to 2025. The focus was on analysing social media algorithms as factors influencing audience reach and engagement. To this end, content analysis was used to identify patterns in the mechanisms of platform operation based on studies by L. Theodorakopoulos *et al.* (2025) and J. Vidani & S. Das (2021). These works were selected due to their comprehensive approach to explaining the relationship between social media algorithmic systems, user behaviour patterns, and the effectiveness of marketing communications. The main characteristics of social media algorithms and their impact on the effectiveness of influencer marketing were identified. Hence, TikTok, Instagram, Facebook, YouTube, and Twitter (X) were selected and analysed using a comparative-analytical method, which was used to systematically compare the features of their algorithms, identify differences in their mechanisms, and determine the specifics of user interaction. The involvement of these particular platforms was necessary to demonstrate different approaches to building a communication environment.

The use of AI in planning and implementing influencer marketing was examined using systematic analysis, which identified the role of technological innovations in improving campaign effectiveness. To this end, studies by K.K. Ramachandran *et al.* (2024), J. Šiđanski (2024) and R. Almestarihia *et al.* (2024) were selected, which addressed the automation of influencer selection processes, audience behaviour forecasting and campaign budget optimisation. These authors were selected due to their practical contribution to the development of models for using AI in marketing and the evidence-based nature of their

results. The role of Big Data in measuring effectiveness and predicting consumer behaviour was studied using an analytical method based on the works of L. Theodorakopoulos & A. Theodoropoulou (2024), and S. Guzenko & N. Mayorova (2024). These studies were selected due to their extended empirical basis, which revealed the mechanisms of the use of Big Data to improve the accuracy of return on investment (ROI) and audience ER estimates.

The effectiveness of influencer marketing on social media was analysed using statistical comparison methods. To analyse the effectiveness of influencer marketing in 2024, the activities of TikTok and Instagram were studied using statistical comparison methods, which were applied to assess audience reach, cost per click, and ER indicators. This method was necessary to compare the dynamics of key ROI indicators in different market segments based on research data from N. Onashko (2024) and Ukrainian Digital Community (2024). Next, using the case study method, examples of successful campaigns by Rozetka, Lukas, and Cheetos were examined. The Intertop case was also examined as part of the Shopping Fest campaign. This method was used to analyse the practical results of influencer marketing, determine the average ROI based on analytical reports from StackInfluence (Proving influencer marketing ROI…, 2025) and eMarketer (King, 2024), and evaluate the effectiveness of various audience engagement strategies. At the final stage, a comparison was made of the effectiveness of campaigns in Ukraine, Asia (China, South Korea, Indonesia) and Western Europe (Great Britain, Germany) for the TikTok and Instagram platforms. Thus, a method of interregional comparative analysis was used, addressing ROI, cost per acquisition (CPA), and average ER criteria. The results were compared with data from Admitad (2025), which identified trends in the effectiveness of influencer marketing in different economic regions and explained their structural differences.

Results

The impact of digital innovations on the effectiveness of influencer marketing

Social media algorithms have become one of the key factors determining the success of influencer marketing and audience engagement. In the information space, the volume of content is growing exponentially, so platforms such as TikTok, Instagram, and Facebook use complex algorithmic systems to select the content that users receive in the feed. These algorithms are based on machine learning, analysing user behaviour, the number of likes, comments, views, saves, attention span, interaction history, and content topics. The result is a personalised feed that increases user engagement but also determines which posts will receive more organic reach. Therefore, the determination of the principles of algorithms has become a fundamental condition for effective communication for influencers.

In the context of influencer marketing, social media algorithms are a "trust filter". They select content that elicits the strongest user response, increasing the probability that it will be shown to a larger audience. For example, TikTok uses a "For You Page" model, where content is promoted not only to the author's followers, but also to potential new viewers if the system detects a high level of engagement in the first few hours after publication. This ensures the potential for rapid growth in reach, even for new accounts with a small number of followers. Instagram, in turn, uses a relevance-based ranking algorithm, where not only likes matter, but also the depth of engagement, such as viewing stories, private messages, and saving content. This ranking reinforces the importance of emotional authenticity and content personalisation, which directly affects the effectiveness of influencer campaigns (Theodorakopoulos *et al.*, 2025). The generalised characteristics of the algorithms of the main social platforms that determine user reach and ER are presented in Table 1.

Table 1. Key characteristics of social network algorithms and their impact on the effectiveness of influencer marketing

Platform	Algorithm basis	Key interaction metrics	Coverage and engagement influence	Peculiarities for influencers
TikTok	Recommendations based on the For You Page system	Views, dwell time, repeat view frequency, reactions	High probability of viral spread even for new accounts	The need to create short, dynamic content with attention triggers in the first 3-5 seconds
Instagram	Algorithm of relevance and depth of interaction	Likes, comments, saves, story views, private messages	Increased content visibility through personal connections and interaction frequency	Authentic and personalised posts are preferred; the quality of responses is crucial
Facebook	Priority content from friends and groups	Reactions, shares, viewing time, comments	Organic reach is limited, priority on communities and videos	Requires the use of targeted advertising to scale results
YouTube	Recommendation and personalisation algorithm for views	Viewing duration, clicks, search history, and click-through rate	High coverage stability with regular activity	Longer content lifecycle: a key factor in viewer retention
Twitter (X)	Algorithm of relevance and temporality	Likes, retweets, interaction with hashtags	Content quickly loses relevance but has the potential to spread virally	It is advisable to use short messages and videos to enhance the effect of the campaign

Source: compiled by the author based on S.A. Ismail & M. Mohamed (2024), S. Guzenko & N. Mayorova (2024), L. Theodorakopoulos *et al.* (2025)

Analysis of the data presented shows that each social platform has a unique algorithmic mechanism that determines the nature of user interaction and opportunities for brands. TikTok demonstrates the highest potential for viral growth due to its open recommendation model, while Instagram and Facebook focus on emotional authenticity and interpersonal interaction. YouTube provides stable reach through the long-life cycle of content, and Twitter (X) prioritises speed of response and timeliness of events. The use of algorithms has led to a change in brand strategies. Previously, marketers prioritised the number of followers an influencer had as an indicator of their influence, whereas now ER has become the key criterion. Algorithmic systems favour posts that provoke dialogue and hold the user's attention for as long as possible. This encourages brands and influencers to create interactive content challenges, polls, short videos, and reactions that not only inform but also encourage users to actively engage. At the same time, algorithms are constantly being updated: while in the early stages the main criterion for popularity was the volume of reactions, now the quality of interaction, the sincerity of comments, viewing duration, and speed of reaction after publication are becoming increasingly relevant (Ismail & Mohamed, 2024).

Social media algorithms also influence the economic efficiency of influencer marketing. They determine the extent to which organic reach can reduce a brand's paid promotion costs. Properly adapted content can achieve high ROI, as platforms encourage active and relevant content, reducing the need for additional budget. For companies, this means the ability to optimise marketing costs through algorithmic support. In addition, algorithms promote further perception of audience behaviour through built-in analytics tools. They can identify peak activity hours and user segments that interact most frequently with the brand, improving accuracy of targeting in campaign planning. However, algorithmic dependence has a downside. Due to constant changes in platform settings, influencers face instability in reach and unpredictability of results, even with the same content quality. This requires constant monitoring of algorithmic trends and adaptation of content strategy. The significance of analytical platforms that use machine learning to predict the effectiveness of publications is also growing. Combined with the use of Big Data and AI, this creates a new level of interaction where the success of a campaign depends not only on the creativity of the influencer but also on the accuracy of the algorithmic settings (Vidani & Das, 2021).

AI is becoming increasingly integrated into influencer marketing, changing approaches to planning, implementing and analysing marketing campaigns. It provides more accurate predictions of the effectiveness of collaborations with opinion leaders, increased content personalisation and optimisation of brand spending. In a digital environment where the amount of information grows every second, AI is becoming a key tool for processing large amounts of data, which can be used to further determine audience behaviour, identify patterns in their responses, and develop strategies based on real analytical indicators. This can be used to predict not only reach, but also the level of emotional engagement of users, identify the most effective influencers and the types of content that generate the most response. One of the most common applications of AI is the selection of influencers for specific campaigns. The traditional process of finding opinion leaders was often based on the number of followers or popularity, which did not always deliver the expected results. AI algorithms, on the other hand, analyse not only the size of the audience, but also its activity, demographic parameters, content topics, level of authenticity, and history of interaction with followers. This identifies "real" opinion leaders – those who truly shape the behaviour of their readers, rather than just generating large numbers of views. For example, Influencity and HypeAuditor use machine learning to identify fake followers and analyse qualitative engagement metrics, which increases transparency in collaborations between brands and influencers (Ramachandran *et al*., 2024).

Another essential function of AI is the automation of content creation and personalisation. Intelligent systems analyse previous campaigns, trends, keywords, and user responses to determine which format of publication (video, stories, reels, text posts) will be most effective. Using natural language processing algorithms, such systems can generate suggestions for texts, headlines, and even video scripts. In practice, this can help marketers quickly test multiple content options and pick the most effective one based on the model's predictions. Furthermore, AI can be used to optimise posting times by determining highest activity period of the target audience. Furthermore, AI can be used to analyse audience sentiment. This method can be used real-time assessment of user reactions to influencer content – positive, neutral or negative. Machine learning algorithms analyse comments, hashtags, emojis and other forms of feedback, enabling brands to respond promptly to changes in audience sentiment. For example, if the reaction becomes less positive, the system may suggest a change in strategy or content type. Such tools help maintain brand reputation, avoid crises, and build long-term consumer trust (Šiđanski, 2024).

AI is also substantial in post-campaign analysis. AI-based platforms automatically calculate Key Performance Indicators such as reach, engagement, number of website visits, ROI, average customer acquisition cost, and more. This can be used by marketers to quickly assess campaign performance and adapt strategies for future projects. The integration of AI analytics with Big Data creates the possibility of creating predictive models that determine how changes in content or influencer selection will affect audience behaviour and brand performance (Almestarihia *et al*., 2024).

Big Data technologies have become an integral tool in influencer marketing, providing the ability to analyse user behaviour in detail, accurately measure the effectiveness of advertising campaigns, and build predictive models to improve the effectiveness of brand communications. In

an environment of information overload, data generated by social networks can be used by companies not only to assess audience reactions but also to predict their actions, preferences, and level of loyalty. Big Data encompasses vast amounts of structured and unstructured information, from likes, comments, and search queries to time patterns of user activity, which are analysed using machine learning algorithms. For influencer marketing, this means the ability to transform disparate digital signals into specific management decisions that help increase campaign effectiveness and long-term audience engagement. One of the main uses of Big Data is to measure the effectiveness of influencer campaigns. Traditionally, effectiveness was assessed by the number of followers, likes or views, but such metrics did not always accurately reflect the real impact on consumer behaviour. Due to Big Data analysis, it is now possible to objectively evaluate more complex indicators such as ER, conversion rate, average content viewing time, percentage of visits to a website or product page, and ROI metrics. Big Data-based systems process information from various sources, such as TikTok, Instagram, YouTube, Google Analytics, and Customer Relationship Management platforms, and create integrated performance evaluation models, which can be used by brands to accurately determine which influencer or content format has provided the greatest return (Theodorakopoulos & Theodoropoulou, 2024).

Big Data is also central to audience segmentation. By analysing data on age, gender, geolocation, purchase history and user behaviour patterns, companies can create more accurate profiles of target groups. This can be used to tailor communication strategies to specific consumer segments, personalise content, and optimise advertising costs. For example, algorithms can detect that younger audiences on TikTok respond to short, dynamic videos, while Instagram users trust reviews and recommendations in the form of stories or posts more. With this, marketers can adjust their communication strategy in real time, increasing the accuracy of targeting and audience engagement (Guzenko & Mayorova, 2024).

Another critical aspect is predicting consumer behaviour. Big Data algorithms use historical data to build predictive models that determine how an audience will respond to a particular type of content, communication style, or even a specific influencer. Such models can help brands assess the potential impact of a campaign in advance, reduce the risk of unsuccessful investments, and increase overall ROI. For example, based on previous interactions, it is possible to predict what type of content will generate the highest conversion rate or what percentage of the audience will be retained after the first contact. This not only increases economic efficiency but also contributes to the formation of long-term loyalty among consumers who receive relevant and valuable content. In addition to forecasting, Big Data can increase the transparency and reliability of data in the interaction between brands and influencers. Analytical platforms can be used to track not only reach, but also audience authenticity, identifying fake accounts, bots, or dishonest methods of inflating metrics. This can be used to collaborate only with real opinion leaders who have a genuine impact on consumer behaviour. On the other hand, Big Data analysis helps to assess how much a particular campaign has affected the brand's image, for example, by analysing the tone of mentions on social networks or the level of positive comments (Theodorakopoulos & Theodoropoulou, 2024). Thus, social media algorithms, AI, and Big Data technologies form a single ecosystem that determines the effectiveness of influencer marketing. Their combination ensures accurate targeting, increased user engagement, and optimised brand spending, while creating risks of algorithmic dependence and the need for constant content adaptation. As a result, the ability to integrate analytical tools with creative approaches becomes a key factor in building long-term consumer loyalty and a stable economic effect from marketing campaigns.

Analysis of the effectiveness of influencer marketing on social media

Social networks TikTok and Instagram have become leading platforms for influencer marketing, providing brands with massive reach, high audience engagement, and competitive ROI. Their effectiveness is largely determined by algorithms that shape the user experience and rank content by engagement level. TikTok specialises in short interactive video formats, challenges, and effects that encourage user participation, while Instagram develops a multi-format ecosystem combining posts, Stories, Reels, and paid advertising. As a result, these platforms have become strategic tools for brands seeking to increase reach, boost engagement, and effectively convert interactions into sales (TikTok vs Instagram…, 2025).

Instagram maintains its leading position in terms of user numbers and advertising format flexibility. As of 2024, the platform had approximately 1.4 billion active users worldwide and approximately 12 million in Ukraine, representing over 31% of the population. Instagram's algorithms focus on content quality, Reels viewing time, and authenticity, so brands focus on personalised video content and interactive Stories. Organic reach is gradually declining due to increased competition, but paid tools (advertising posts, Reels Ads, Boost) ensure stable growth in performance. Instagram's cost per mille in 2025 for Ukraine is approximately USD 8, and the cost per click is USD 0.68-0.69, confirming the platform's high commercial effectiveness. Comparative reach dynamics show that TikTok generates faster and more extensive reach among young audiences, while Instagram provides stable and longer-lasting engagement due to its multi-format content (How to increase Instagram..., 2024). On TikTok, videos receive tens of millions of views regardless of their length, indicating that users are equally interested in short and longer formats. On Instagram, Reels are the most effective, providing 6 times more reach than Stories, while short videos up to 30 seconds receive an average of 6,145 views, and longer ones receive over 8,372 views (Onashko, 2024).

In terms of ER, TikTok has an average ER of 4-7% in 2024, while Instagram has 1.45-2.18%, indicating higher interactivity of TikTok's short video content. For Instagram micro-influencers (1-10 thousand followers), ER can reach 5.6-7.2%, but for large brands, this figure is lower due to the scale of the audience. On TikTok, the highest engagement is provided by short videos with bright hooks in the first 3 seconds, interactive formats such as Duet and Stitch, as well as videos with trending music and hashtag challenges. On Instagram, Reels, carousels, and interactive Stories promote deeper engagement with users (Ukrainian Digital Community, 2024).

The regional market in Ukraine confirms these trends. In 2025, there are 17 million TikTok users in the country, and this platform is showing steady growth in reach, especially among young people aged 18-34. Ukrainian brands are actively using TikTok to promote consumer goods and services. For example, Rozetka implemented a large-scale TikTok campaign for its 19th anniversary, which received tens of millions of views due to the use of humorous and regionally oriented videos. The campaign combined the creativity of influencers with targeted advertising, which significantly increased ER (How Rozetka gave..., n.d.). Another example is Lukas, which increased its TikTok audience from 1,500 to over 77,000 subscribers in 2023 by adapting its content to the platform's algorithms. The average video view increased from 300-400 to 8,700 (TikTok case for Lukas, n.d.). Similar results were demonstrated by the Cheetos brand, which launched the #CheetosFunDance hashtag challenge with the involvement of nine TikTokers and promotion through TopView. The campaign received millions of views and a high level of engagement (How to inspire thousands..., 2021).

On Instagram, local campaigns demonstrate different dynamics: more stable, but less viral. For Ukrainian brands, Reels and paid advertising formats are effective. According to agencies, over 90% of Instagram users in Ukraine follow business accounts, which creates high visibility for brands. User-generated content campaigns on Instagram cost an average of USD 15-200 per video, providing flexible budget management and predictable ROI (How much does Instagram…, 2025). In terms of economic efficiency, TikTok provides an ROI of 4.5-11.8, depending on the duration of the campaign, while Instagram has a lower short-term ROI but better long-term user loyalty metrics (Sharif, 2025). TikTok remains a platform for quick results, with high conversion rates due to organic views and content virality, while Instagram forms more lasting connections between the brand and the consumer.

Influencer marketing is increasingly seen not only as a tool for raising brand awareness but also as one of the most influential factors affecting companies' financial results. The effectiveness of campaigns is measured by return on investment, conversion growth, sales growth and long-term brand value enhancement. According to data from the Institute of Practitioners in Advertising (2025), the short-term ROI of influencer marketing has an index of 99, while the long-term ROI reaches 151, indicating a multiplicative effect over time. In the short term, influencer campaigns create rapid reach, and in the long term, they ensure loyalty and consistent financial results. According to StackInfluence analytical reports, the average ROI in this area is approximately 5.78 USD in profit for every dollar invested, or about 578% in 2025. This figure exceeds the average results of other digital advertising channels, confirming the economic feasibility of influencer marketing (Proving influencer marketing ROI..., 2025). An eMarketer study found that conversions from campaigns increased to 46% and direct impact on sales to 44%, indicating a close correlation between influencer engagement and commercial results (King, 2024).

In the Ukrainian context, the effectiveness of influencer campaigns is also confirmed by practical cases. For example, as part of its Shopping Fest campaign, Intertop engaged more than 30 bloggers in 2021, who created about 120 posts, exceeding the planned 90. Some posts received over 450,000 views, and the overall ROI of the campaign reached 300%, demonstrating high effectiveness in converting interactions into actual sales (How collaboration with..., 2021). At the same time, research by the Lean&Sharp agency found that collaboration with micro-influencers in Ukraine yields an ER 2.3 times higher than that of macro-influencers. This is explained by the greater trust and authenticity of communications from such opinion leaders, which directly affects conversion rates and brand profitability.Ukrainian brands receive an average of approximately USD 6.5 in profit for every dollar invested, demonstrating one of the highest efficiency indicators among digital tools. In addition, companies that systematically analyse data on engagement, click-through rate, and cost per click are recording a steady increase in profitability. For example, in the fashion segment, the average sales growth after influencer campaigns exceeds 25-30%, while in the cosmetics and body care sector, growth rates range from 35-40% (How the dynamics..., 2025). Thus, it can be argued that the effectiveness of influencer marketing directly correlates with the financial performance of brands. Increased engagement, greater audience trust and the formation of emotional attachment translate into a steady increase in sales, profitability and overall brand value. The combination of macro- and micro-influencers, the integration of Big Data analytics, and careful planning of Key Performance Indicators increases ROI and builds long-term economic stability in the market.

Influencer marketing in 2025 will demonstrate varying degrees of effectiveness depending on the level of development of the digital economy, the structure of social media, and consumer behaviour patterns in different regions. A comparison of campaign results in Western Europe, Asia, and Ukraine shows that the effectiveness of investments in this tool is determined by the level of integration of analytics, algorithmic systems for selecting influencers, platforms, and target demographics. In Western Europe (Germany, Great Britain), the average return on investment in influencer marketing is approximately USD 5.78

in profit for every dollar spent. The most successful campaigns achieve an ROI of up to USD 20, which indicates a significant economic return. The effectiveness of this tool exceeds traditional digital advertising by approximately 11 times (Top ROI of..., 2025). The high result is explained by the maturity of the European market, the high level of trust in influencer content, and the use of complex AI-based analytical systems to predict audience behaviour. At the same time, the cost of acquiring a single customer in Europe remains relatively high: on TikTok, it ranges from EUR 10 to 30, and on Instagram, from EUR 20 to 50. This is due to greater market saturation, higher competition for user attention, and a significant share of premium content (TikTok in Europe…, 2025).

In Asia (China, South Korea, Indonesia), influencer marketing is rapidly growing in effectiveness due to the active development of social commerce, the integration of payment services into content, and high ER among young people. The average ROI in the region is between USD 4 and 6 in profit for every dollar invested, and for short video platforms such as TikTok or Douyin, it reaches 7. The cost of customer acquisition on TikTok averages USD 5-20, while on Instagram it is USD 10-30, indicating higher efficiency of Asian content at lower costs. The Asian market is distinguished by its focus on micro-influencers, who build a high level of trust and personalised interaction with their audience. The widespread use of integrated data (Big Data) and recommendation algorithms increases targeting accuracy, and cultural factors contribute to a closer connection between influencers and consumers (TikTok influencer marketing…, 2025).

In Ukraine, influencer marketing is gradually transforming from an experimental channel into a systematic element of marketing strategies. According to estimates by analytical agencies, the average ROI ranges from USD 4-5 in profit per USD 1 invested, which corresponds to the indicators of Eastern European countries. The CPA level on TikTok ranges from USD 7 to 25, and on Instagram from USD 15 to 40. This difference is explained by the active development of short video formats and relatively lower competition among brands. The Ukrainian market is characterised by rapid growth in the number of local influencers, especially in the areas of fashion, beauty, food products and small businesses. Local campaigns are more focused on micro- and nano-influencers, who provide greater authenticity and deeper engagement with the audience, compensating for lower reach with a high level of trust (Admitad, 2025). Comparative ROI, CPA, and ER metrics for major regions, reflecting the overall effectiveness of influencer campaigns in 2025, are shown in Table 2.

Table 2. Comparison of ROI, CPA, and ER indicators for influencer marketing in 2025

Region	Platform	ROI (income per 1 USD of expenses)	CPA	Average ER
Western Europe (the United Kingdom, Germany)	TikTok	4-6x	EUR 10-30	5-8% (nano) 2-4% (micro) 1-2% (macro)
	Instagram	5-7x	EUR 20-50	4-6% (nano) 2-3% (micro) 1-1.5% (macro)
Asia (China, South Korea, Indonesia)	TikTok/Douyin	4-7x	USD 5-20	8-10% (nano) 7-8% (micro) 5-7% (macro)
	Instagram	4-6x	USD 10-30	6-8% (nano) 3-4% (micro) 1-2% (macro)
Ukraine	TikTok	3-5x	USD 7-25	7-9% (nano) 4-6% (micro) 2-3% (macro)
	Instagram	4-6x	USD 15-40	5-7% (nano) 3-4% (micro) 1-2% (macro)

Source: compiled by the author based on TikTok influencer marketing strategies for 2025 (2025), Western marketing statistics 2025 (2025), TikTok in Europe: Your complete business guide for 2025 (2025), Admitad (2025)

Western European campaigns demonstrate the greatest economic efficiency, combining high consumer purchasing power and technological maturity of the market. In Asia, despite lower costs, comparable ROI figures are achieved due to the dynamic spread of social commerce, especially in short video formats. Ukraine is still in the process of actively developing a system for evaluating the effectiveness of influencer campaigns, but it is showing a steady trend towards increasing ROI by combining native content, integrating user-generated content, and expanding the use of AI analytics in the selection of partners. A comparison of regions shows that TikTok provides a higher return on investment with a lower CPA in all countries, while Instagram remains an effective channel for premium brands with a broader age audience. Ukraine and other post-socialist markets are characterised by rapid growth in engagement, due to lower advertising saturation. In Asia, the combination of Big Data analytics and algorithmic content personalisation is central, while in Europe, the emphasis is on ethics, transparency and authenticity in collaboration

with influencers. Thus, the effectiveness of influencer marketing depends on the regional context: in Europe, it depends on strategic depth; in Asia, it depends on technological integration; and in Ukraine, it depends on authenticity and flexibility. Combining TikTok and Instagram platforms within a single communication strategy provides an optimal balance between reach, trust and economic effectiveness of campaigns.

Discussion

The growing role of digital technologies in marketing communications is fundamentally changing the way brands and consumers interact. Influencer marketing, which initially relied primarily on the emotional authenticity and social capital of opinion leaders, is now evolving into a complex system in which algorithms, Big Data and AI are crucial. These changes necessitate a deeper analysis of how trust, authenticity, and personalisation shape consumer loyalty in the digital environment. Compared to the study by A. Maulana *et al.* (2023), which addressed the behavioural aspects of consumer-brand interactions, this study expanded the topic by integrating digital technologies as a driver of loyalty. While A. Maulana *et al.* (2023) emphasised emotional authenticity and sincere communication through a Customer Relationship Management approach in the beauty industry, the presented study addressed algorithms and analytical systems that supported content personalisation and strengthened mutual trust. In both cases, trust was not viewed as a consequence of advertising, but as a dynamic process shaped by a combination of emotional connection and technological precision.

A similar evolution of approaches is present in comparison with the study by J.-L. Galdón *et al.* (2024). Both studies explored the role of algorithms and AI in influencing user behaviour, but from different perspectives. J.-L. Galdón *et al.* (2024) interpreted algorithms as a social phenomenon that generated information "bubbles" and new ethical dilemmas of digital communication. In contrast, this study addressed the same processes from a utilitarian perspective as a means of improving the effectiveness of influencer marketing, targeting accuracy, and ROI measurement. Thus, the focus shifted from the social consequences of algorithmisation to the practical mechanisms of its application in marketing analytics. A comparison with the study by S.P. Migkos *et al.* (2025) demonstrated similarities in the interpretation of digitalisation as a tool for optimising communications, but differences in the level of analysis. S.P. Migkos *et al.* (2025) considered technologies in the context of strategic data management and business process automation, while this study delved deeper into the micro-level of interaction between influencers and subscribers. While the former emphasised the strategic value of digital tools, the latter demonstrated how they form emotional connections and loyalty within specific social platforms.

This study and the study by E. Benevento *et al.* (2025) correlate in concluding that the effectiveness of influencer marketing was determined by the synergy between trust, authenticity, and emotional interaction with the audience. Both approaches emphasised that these factors shaped sustainable behavioural loyalty and contributed to brand value growth. However, in the study by E. Benevento *et al.* (2025), the focus was on the ethical aspect of influencers' activities: transparency of communication, compliance with advertising standards, and the impact of ethical reputation on consumer perception of content. The study proved that adherence to ethical standards and honesty in interacting with the audience increased the level of trust in brands, while manipulative or hidden advertising practices undermined loyalty. Thus, both approaches converged in assessing trust as a central factor of loyalty. However, E. Benevento *et al.* (2025) addressed the ethical principles and social responsibility of influencers, while in this study, technological mechanisms such as algorithms, AI, and Big Data were leading in the efficiency and measurability of influence. Compared to B. Libai *et al.* (2025), the emphasis shifted from theoretical determination of practical implementation. The authors described influencer marketing as part of a complex value creation ecosystem that combines companies, opinion leaders, and digital platforms. This study, in turn, illustrated how these relationships occur in practice through TikTok, Instagram, and YouTube algorithms, which ensure real growth in engagement and ROI. B. Libai *et al.* (2025) theoretical "creator economy" found empirical confirmation in analytical models and digital indicators.

Analysis of the results in the context of M. Fikri (2025) showed a shift from the psychological dimension to the technological one. While M. Fikri (2025) perceived trust as a consequence of the authenticity, appeal, and expertise of the influencer, this study expanded on this concept, explaining it through algorithmic personalisation mechanisms and Big Data analytics. In both cases, trust was a central factor, but its nature evolved from emotional to digital-analytical. A comparison with I. Zahran & H.Y. Aljuhmani (2025) showed another axis of development from the ethical to the technological dimension of influencer marketing. I. Zahran & H.Y. Aljuhmani (2025) viewed influencers as moral agents who, through their stable values, shaped conscious consumption in the fashion industry. This study, on the contrary, demonstrated how trust and loyalty can be built on algorithmic personalisation, accurate prediction of reactions, and technological adaptation of content.

K.A. Azhar *et al.* (2024) highlighted the cultural dimension of trust, emphasising the influence of social norms and religious values on the perception of influencers in Muslim countries. In the presented study, trust was interpreted as the result of technical optimisation of the interaction between personalised content and accurate targeting. This difference demonstrated how cultural and technological contexts can complement each other, forming different trajectories of loyalty development. The study by S. Yong *et al.* (2024) addressed the psychological mechanisms of self-presentation, social attractiveness, and identification with influencers. In contrast, this study showed how algorithms and AI create an environment of

personalised interaction, where trust becomes the result not only of an emotional connection, but also of technological alignment between the brand and the user.

The presented study and the work of W. Mu & Y. Yi (2024) correlated in concluding that the key factors in the effectiveness of influencer marketing were trust, authenticity, and emotional engagement of the audience. Both approaches emphasised that interaction between the brand and opinion leaders formed lasting behavioural loyalty, and personalised content strengthened consumers' identification with the brand. W. Mu & Y. Yi (2024) addressed economic mechanisms, examining how social media created added value by increasing consumer trust, reducing information asymmetry, and increasing conversion. The same study emphasised technological factors such as social network algorithms, Big Data, and AI, which determined content personalisation, analytical decision support, and ROI improvement. Both studies correlated in the perception of trust as a key element of loyalty but differed in their approach: W. Mu & Y. Yi (2024) focused on the economic benefits of influencer marketing, while this study highlighted the digital-analytical aspect of its effectiveness.

The study by Z. Qiu *et al.* (2025) and presented research correlated in concluding that the combination of emotional authenticity and technological accuracy determined the effectiveness of digital marketing. In both approaches, trust was defined as the key to building stable consumer loyalty. However, the work of the authors analysed focused on network dynamics and brand integration into cross-platform ecosystems, while this study addressed analytical tools, social network algorithms, Big Data and AI, which increased the accuracy of targeting and behaviour prediction. While Z. Qiu *et al.* (2025) interpreted loyalty as the result of emotional interaction in the media space, this study interpreted it through the effectiveness of algorithmic personalisation and ROI measurability.

A summary of various approaches showed that influencer marketing has gradually transformed from an emotional and communicative practice into a structured digital tool for managing trust. Regardless of the subject of analysis – social behaviour, cultural contexts, ethical principles, or economic outcomes – all the studies reviewed confirmed the key role of trust as the core of loyalty. At the same time, the directions of its formation have evolved: from emotional authenticity and interpersonal communication to analytical personalisation, algorithmisation of processes, and consumer behaviour forecasting. This shift highlighted a new paradigm of influencer marketing, in which human emotionality was combined with technological precision, and digital data became the basis not only for measuring effectiveness but also for building lasting trust between the brand and the audience.

Conclusions

A summary of the research results showed that influencer marketing has become one of the most effective tools for building consumer trust and loyalty in the digital environment. Social media algorithms, AI, and Big Data technologies have created a new communications ecosystem in which content personalisation, analytical accuracy, and transparency of interaction between the brand and the audience is substantial. In 2025, the influencer marketing market reached over USD 24 billion, with TikTok remaining the leader in ER with an average of 4-7%, Instagram offers stable coverage ranging from 1.45% to 2.18%. On TikTok, short interactive videos of up to 30 seconds proved to be the most effective, while on Instagram, Reels are preferred, exceeding the reach of Stories by six times. In Ukraine, where TikTok has 17 million users and Instagram has 12 million, brands are targeting micro- and nano-influencers, who provide a high level of trust and engagement.

The use of social media algorithms and AI improved targeting accuracy, automated influencer selection, and shaped analytically sound campaigns. TikTok demonstrated the highest return on investment at the lowest cost, while Instagram provided deeper emotional engagement and long-term loyalty. The integration of Big Data into audience segmentation and behaviour forecasting reduced investment risks and increased ROI. Analysis of Ukrainian cases, Rozetka, Lukas, and Intertop, also showed that combining analytics and creativity contributes to high ROI and sales growth. Thus, in 2025, influencer marketing has become not only a means of communication but also a strategic mechanism for managing trust, emotional engagement, and the economic efficiency of brands.

An analysis of financial indicators confirmed the economic feasibility of this tool. The average ROI worldwide is approximately USD 5.78 in profit for every dollar invested, while in Ukraine it is USD 4-5, which is in line with Eastern European countries. In Western Europe, the most successful campaigns achieved an ROI of up to USD 20, and in Asia, USD 6-7 due to social commerce and analytical platforms. The CPA level on TikTok ranged from USD 7 to 25 in Ukraine and from 10 to EUR 30 in the EU, which indicates the competitiveness of the market. The short-term ROI had an index of 99, and the long-term ROI had an index of 151, confirming the cumulative effect. A 46% increase in conversions and a 44% direct impact on sales proved the close link between influencer activity and brand financial results. The limitation of the study was the emphasis on TikTok and Instagram, without considering the impact of other platforms. Prospects for further research include expanding the analysis to multi-platform ecosystems, in particular the metaverse and virtual influencers, for further analysis of the mechanisms of digital trust.

Acknowledgements

None.

Funding

None.

Conflict of Interest

None.

References

[1] Admitad. (2025). *Influence marketing in Ukraine 2025: A new era of trust and technology*. Retrieved from https://www.admitad.com/ua/blog/influens-marketing-ukraine-2025/.

[2] Almestarihia, R., Bani Ahmad, A.Y.A., Frangieh, R.H., AbuAlSondos, I.A., Nsere, K.K., & Ziani, A. (2024). Measuring the ROI of paid advertising campaigns in digital marketing and its effect on business profitability. *Uncertain Supply Chain Management*, 12(2), 1275-1284. doi: 10.5267/j.uscm.2023.11.009.

[3] Azhar, K.A., Che Wel, C.A., & Ab Hamid, S.N. (2024). Examining loyalty of social media influencers: The effects of self-disclosure and credibility. *Pakistan Journal of Commerce and Social Sciences*, 18(2), 358-379.

[4] Benevento, E., Aloini, D., Roma, P., & Bellino, D. (2025). The impact of influencers on brand social network growth: Insights from new product launch events on Twitter. *Journal of Business Research*, 189, article number 115123. doi: 10.1016/j.jbusres.2024.115123.

[5] Bondarchuk, V., Shymanska, K., & Bondarchuk, L. (2021). Using influencer marketing to promote a product on social media. *Economics, Management and Administration*, 4(98), 49-53. doi: 10.26642/ema-2021-4(98)-49-53.

[6] Burdyak, O., Pomazan, L., & Havrylyuk, I. (2024). The role of social media influencers in ensuring the effectiveness of advertising. *Economy and Society*, 60. doi: 10.32782/2524-0072/2024-60-125.

[7] Fikri, M. (2025). Social media influencers and brand loyalty: Analyzing the dynamics of trust and consumer decision-making. *Management Studies and Business Journal (PRODUCTIVITY)*, 2(2), 2104-2119. doi: 10.62207/6gsxpq40.

[8] Galdón, J.-L., Gil-Pechuán, I., AlFraihat, S.-F.-A., & Tarabieh, S.M.Z.A. (2024). Effect of social media influencers on consumer brand engagement and its implications on business decision making. *Profesional de la Información*, 33(2), article number e330210. doi: 10.3145/epi.2024.0210.

[9] Guzenko, S., & Mayorova, N. (2024). *How TikTok algorithms work in 2025*. Retrieved from https://elit-web.ua/ua/blog/kak-rabotajut-algoritmy-tiktok.

[10] How collaboration with bloggers can bring from 1.5 to 4 million social media reach. Intertop case. (2021). Retrieved from https://retailers.ua/uk/news/menedjment/12295-kak-sotrudnichestvo-s-blogerami-mojet-prinesti-ot-15-do-4-millionov-ohvata-keys-intertop.

[11] How much does Instagram advertising cost in Ukraine. (2025). Retrieved from https://locomotive.ua/uk/blog/skolko-stoit-reklama-v-instagram-v-ukraine-2025.

[12] How Rozetka gave discounts for her birthday: An influencer campaign on TikTok. (n.d.). Retrieved from https://surl.li/negztd.

[13] How the dynamics of influence marketing changed in 2025. (2025). Retrieved from https://marketer.ua/ua/how-the-dynamics-of-influence-marketing-changed-in-2025/.

[14] How to increase Instagram engagement in 2025. (2024). Retrieved from https://blog.keycrm.app/uk/yak-pidvishhiti-zaluchenist-v-instagram-u-2024-roci/.

[15] How to inspire thousands of Z-ers to break away with a brand? The case of the VIVID agency and the Cheetos brand. (2021). Retrieved from https://adsider.com/ua/ahentsiia-vivid/.

[16] Institute of Practitioners in Advertising. (2025). *First-of-its-kind IPA data details strong ROI and long-term impact of influencer marketing*. Retrieved from https://ipa.co.uk/news/influencer-marketing.

[17] Ismail, S.A., & Mohamed, M. (2024). Analyzing the effects of influencer marketing on consumer behavior: Insights from social influence theory in TikTok campaigns. *World Journal of Advanced Research and Reviews*, 24(3), 2116-2131. doi: 10.30574/wjarr.2024.24.3.3926.

[18] Kabanova, O., Yeremieieva, A., & Us, M. (2024). Social media as a digital marketing tool: A study of current trends and approaches. *Current Issues of Economic Sciences*, 5. doi: 10.5281/zenodo.14193877.

[19] King, J. (2024). *Measuring success in influencer marketing: Why ROI is still a challenge*. Retrieved from https://www.emarketer.com/content/measuring-success-influencer-marketing-roi-challenge.

[20] Kukina, N., Savchuk, Y., & Lialiuk, A. (2024). Analysis of the role of social media in building brand loyalty. *Actual Problems of Economics*, 8(278), 116-128. doi: 10.32752/1993-6788-2024-1-278-116-128.

[21] Libai, B., *et al.* (2025). Influencer marketing unlocked: Understanding the value chains driving the creator economy. *HKUST Business School Research Paper*, 2024, article number 187. doi: 10.2139/ssrn.4972530.

[22] Maulana, A., Purnamasari, L.S., Srimukti, A., & Angelita, K. (2023). Influencer-based customer relationship management strategy to increase consumer loyalty to local beauty products. *Jurnal Ilmu Sosial dan Pendidikan*, 7(4). doi: 10.58258/jisip.v7i1.6153.

[23] Migkos, S.P., Giannakopoulos, N.T., & Sakas, D.P. (2025). Impact of influencer marketing on consumer behavior and online shopping preferences. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), article number 111. doi: 10.3390/jtaer20020111.

[24] Mu, W., & Yi, Y. (2024). The impact of characteristic factors of the direct-to-consumer marketing model on consumer loyalty in the digital intermediary era. *Frontiers in Psychology*, 15, article number 1347588. doi: 10.3389/fpsyg.2024.1347588.

[25] Myskiv, G., & Ivasiuta, L. (2025). Current trends in the development of influence marketing in the world and in Ukraine. *Scientific Notes of Lviv University of Business and Law. Economics Series. Legal Series*, 44, 251-259. doi: 10.5281/zenodo.15323353.
[26] Onashko, N. (2024). *How Instagram algorithms work in 2024: How to understand and influence them*. Retrieved from https://kukurudza.com/blog/yak-praczyuyut-algorytmy-instagram-u-2024/.
[27] Proving influencer marketing ROI: Data-driven strategies to track and improve campaign performance. (2025). Retrieved from https://stackinfluence.com/proving-influencer-marketing-roi/.
[28] Qiu, Z., Han, H., Chen, Y., & Wang, T. (2025). Research on influencer marketing strategies based on double-layer network game theory. *PLoS One*, 20(9), article number e0326252. doi: 10.1371/journal.pone.0326252.
[29] Ramachandran, K.K., Suma, S., Banerjee, D., Mathew, B., Cheepurupalli, N.R., & Mohan, C.R. (2024). The effectiveness of influencer marketing in the age of AI. *Journal of Informatics Education and Research*, 4(2), 1194-1203. doi: 10.52783/jier.v4i2.904.
[30] Rozhko, V., & Shchelkova, A. (2024). Digital marketing tools in advertising campaigns in foreign markets. *The Problems of Economy*, 2(60), 191-197. doi: 10.32983/2222-0712-2024-2-191-197.
[31] Sharif, Y. (2025). *75 social media statistics every marketer should know in 2025*. Retrieved from https://inbeat.agency/blog/social-media-statistics.
[32] Šiđanski, J. (2024). Artificial intelligence in the function of content creation in digital marketing. In *Proceedings of the 29th international scientific conference strategic management and decision support systems in strategic management* (pp. 167-174). Novi Sad: University of Novi Sad. doi: 10.46541/978-86-7233-428-9_376.
[33] Strunhar, A. (2024). Influencer marketing: Assessing effectiveness and risks of using micro- and macro-influencers. *Economy and Society*, 63. doi: 10.32782/2524-0072/2024-63-91.
[34] Theodorakopoulos, L., & Theodoropoulou, A. (2024). Leveraging Big Data analytics for understanding consumer behavior in digital marketing: A systematic review. *Human Behavior and Emerging Technologies*, 2024(1), article number 3641502. doi: 10.1155/2024/3641502.
[35] Theodorakopoulos, L., Theodoropoulou, A., & Klavdianos, C. (2025). Interactive viral marketing through Big Data analytics, influencer networks, AI integration, and ethical dimensions. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), article number 115. doi: 10.3390/jtaer20020115.
[36] TikTok case for Lukas. (n.d.). Retrieved from https://www.kiwiagency.com.ua/blog/keys-tiktok-lukas.html.
[37] TikTok in Europe: Your complete business guide for 2025. (2025). Retrieved from https://blog.whitehat-seo.co.uk/tiktok-in-europe-2025.
[38] TikTok influencer marketing strategies for 2025. (2025). Retrieved from https://stackinfluence.com/tiktok-influencer-marketing-strategies-for-2025/.
[39] TikTok vs Instagram: How are they different? (2025). Retrieved from https://stackinfluence.com/tiktok-vs-instagram-how-are-they-different/.
[40] Top ROI of influencer marketing statistics 2025. (2025). Retrieved from https://www.amraandelma.com/top-roi-of-influencer-marketing-statistics/.
[41] Ukrainian Digital Community. (2024). *Audience engagement through social media content in 2024*. Retrieved from https://ukrainiandigital.com/strong-zaluchennia-audytorii-cherez-kontent-u-sotsmerezhakh-u-2024-rotsi-strong/.
[42] Vidani, J., & Das, S.G. (2021). A review on evolution of social media influencer marketing: Reflection on consumer behavior and consumer's decision-making process. *Turkish Online Journal of Qualitative Inquiry*, 12(9), 314-327.
[43] Western marketing statistics 2025. (2025). Retrieved from https://www.amraandelma.com/western-marketing-statistics/.
[44] Yong, S.C.S.C., Gao, X., & Poh, W.S. (2024). The effect of influencer marketing on consumer engagement and brand loyalty. *International Journal of Multidisciplinary Applied Business and Education Research*, 5(7), 2357-2364. doi: 10.11594/ijmaber.05.07.02.
[45] Zahran, I., & Aljuhmani, H.Y. (2025). Seduced by style: How Instagram fashion influencers build brand loyalty through customer engagement in sustainable consumption. *Sustainability*, 17(17), article number 7888. doi: 10.3390/su17177888.
[46] Zhavoronok, A., Krychun, P., & Korbut, M. (2025). Digital branding tools in shaping consumer loyalty and enhancing brand value. *Efficient Economy*, 9. doi: 10.32702/2307-2105.2025.9.60.

Інфлюенсер-маркетинг як інструмент формування лояльності споживачів

Ярослав Бірюков
Аспірант
Державний торговельно-економічний університет
02156, вул. Кіото, 19, м. Київ, Україна
https://orcid.org/0009-0006-6198-1617

Анотація. Метою даного дослідження було з'ясувати, яким чином комунікаційна активність лідерів думок у соціальних мережах формує довіру споживачів, посилює їх емоційну прихильність та стимулює поведінкову лояльність до брендів. Методологія дослідження ґрунтувалася на комплексному теоретико-аналітичному підході, який поєднував контент-аналіз, порівняльний аналіз та кейс-метод. У процесі дослідження було виявлено, що глобальний ринок інфлюенсер-маркетингу у 2025 році сягнув 24 мільярдів доларів, тоді як середній показник рентабельності інвестицій становить 5,78 долара прибутку на кожен долар інвестицій. В Україні цей показник дорівнює 4-5 доларам. Визначено, що TikTok залишається лідером за рівнем залученості користувачів із показником 4-7 %, тоді як Instagram забезпечує стабільність охоплення на рівні 1,45-2,18 %. Аналіз показав, що у країнах Західної Європи (Велика Британія, Німеччина) найуспішніші кампанії досягли рентабельності інвестицій до 20 доларів, тоді як у країнах Азії (Китай, Південна Корея, Індонезія) цей показник становив 6-7 доларів завдяки інтеграції соціальної комерції та аналітичних платформ. В Україні найвищі результати продемонстрували кампанії з мікроінфлюенсерами, які забезпечують підвищення конверсій до 46 % і зростання продажів до 40 %. Встановлено, що використання штучного інтелекту дозволяє підвищити точність таргетування та знизити витрати на 15-20 %, а технології Big Data сприяють кращому прогнозуванню поведінки споживачів і підвищенню ефективності кампаній на 25 %. Результати дослідження можуть бути використані компаніями для оптимізації стратегій інфлюенсер-маркетингу, підвищення рентабельності інвестицій та зміцнення лояльності аудиторії у цифровому середовищі

Ключові слова: алгоритми соціальних мереж; штучний інтелект; залученість аудиторії; рівень довіри; рентабельності інвестицій; таргетування

INNOVATION AND SUSTAINABILITY
Scientific Journal

Volume 5, No. 3,
2025

Managing Editor:
O. Kushnir

Signed to the print 30.09.2025
Format 60*84/8
Conventional Printed Sheet 12
Circulation 100 copies

Vinnytsia National Technical University
21021, 95 Khmelnytske Shose Str., Vinnytsia, Ukraine
E-mail: info@inns.com.ua
https://inns.com.ua/en

INNOVATION AND SUSTAINABILITY
Науковий журнал

Том 5, № 3,
2025

Відповідальний редактор:
О. Кушнір

Підписано до друку 30.09.2025 р.
Формат 60*84/8
Умовн. друк. арк. 12
Наклад 100 примірників

Вінницький національний технічний університет
21021, вул. Хмельницьке шосе, 95, м. Вінниця, Україна
E-mail: info@inns.com.ua
https://inns.com.ua/uk