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DIGITAL TRANSFORMATION OF CUSTOMER-ORIENTED PROCESSES IN UKRAINIAN TOURISM ENTERPRISES: CURRENT STATE, TRENDS, AND MANAGEMENT PRIORITIES

ЦИФРОВА ТРАНСФОРМАЦІЯ КЛІЄНТООРІЄНТОВАНИХ ПРОЦЕСІВ ТУРИСТИЧНИХ ПІДПРИЄМСТВ УКРАЇНИ: СУЧАСНИЙ СТАН, ТЕНДЕНЦІЇ ТА УПРАВЛІНСЬКІ ПРІОРИТЕТИ

The article assesses the current state of the digital transformation of customer-oriented processes in Ukrainian tourism enterprises and identifies key trends and managerial priorities. The findings reveal uneven digital transformation: e-commerce, corporate websites, online booking, and social media are widely used, whereas CRM and ERP systems, Big Data analytics, cloud computing services, and artificial intelligence technologies are used considerably less frequently. Digital transformation is considered as a sequential transition from digital presence and customer interaction to integrated information systems, data-driven management, and intelligent managerial decision support. A conceptual model of the phased digital transformation of customer-oriented processes is proposed, integrating digital technologies, implementation stages, managerial outcomes, and customer value creation.

Keywords: digital transformation, tourism enterprises, customer-oriented processes, digital technologies, customer relationship management, Big Data analytics, cloud computing, artificial intelligence, customer experience management.

У статті досліджено сучасний стан цифрової трансформації клієнтоорієнтованих процесів туристичних підприємств України та визначено основні тенденції використання цифрових технологій, управлінські пріоритети їх розвитку й напрями подальшої цифрової модернізації. Метою дослідження є комплексне оцінювання сучасного рівня цифрової трансформації клієнтоорієнтованих процесів туристичних підприємств України, виявлення тенденцій використання цифрових технологій, визначення управлінських пріоритетів цифрового розвитку та розроблення концептуальної моделі поетапної цифрової трансформації клієнтоорієнтованих процесів. Методологічною основою дослідження є методи порівняльного, структурного, статистичного та логічного аналізу, узагальнення і графічного моделювання. Інформаційну базу дослідження становлять офіційні статистичні дані Державної служби статистики України щодо використання інформаційно-комунікаційних технологій підприємствами. У процесі дослідження проаналізовано розвиток електронної торгівлі, цифрової інфраструктури, функціональних можливостей корпоративних вебсайтів, використання соціальних медіа, технологій аналізу великих даних (Big Data), послуг хмарних обчислень та технологій штучного інтелекту туристичними підприємствами. Встановлено, що цифрова трансформація клієнтоорієнтованих процесів має нерівномірний характер: високий рівень поширення характерний для електронної торгівлі, корпоративних вебсайтів, онлайн-бронювання та соціальних медіа, тоді як технології аналізу великих даних (Big Data), послуги хмарних обчислень, системи управління взаємовідносинами з клієнтами



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(CRM), системи управління ресурсами підприємства (ERP) і технології штучного інтелекту використовуються значно рідше. Обґрунтовано, що цифрову трансформацію клієнтоорієнтованих процесів доцільно розглядати як послідовний перехід від цифрової присутності підприємства та онлайн-взаємодії зі споживачами до інтеграції інформаційних систем, управління на основі даних та інтелектуальної підтримки прийняття управлінських рішень. Науковим результатом дослідження є розроблення концептуальної моделі поетапної цифрової трансформації клієнтоорієнтованих процесів туристичних підприємств, яка інтегрує цифрові технології, етапи їх впровадження, управлінські результати та клієнтоорієнтовану цінність у межах єдиної логічної системи. Практичне значення одержаних результатів полягає у можливості використання запропонованої моделі для оцінювання рівня цифрового розвитку туристичних підприємств, визначення пріоритетів впровадження цифрових технологій та формування стратегій модернізації клієнтоорієнтованих процесів.

Ключові слова: цифрова трансформація, туристичні підприємства, клієнтоорієнтовані процеси, цифрові технології, управління взаємовідносинами з клієнтами, технології аналізу великих даних (Big Data), хмарні обчислення, штучний інтелект, управління клієнтським досвідом.

Problem statement. Digital transformation is one of the key factors in enhancing the competitiveness of tourism enterprises in the digital economy. The modern tourism market is characterized by changes in the models of interaction with customers, the active use of digital communication channels, e-commerce, data analytics technologies, cloud computing, and artificial intelligence. Under these conditions, the competitive advantages of tourism enterprises are increasingly determined not only by the quality of tourism products and services but also by the level of digitalization of customer-oriented processes, which ensure service personalization, timely communication, improvement of customer experience, and effective customer relationship management.

At the same time, the digital transformation of customer-oriented processes in tourism enterprises is uneven. Along with the widespread use of basic digital tools, such as websites, e-commerce, and social media, the implementation of advanced information and analytical technologies, including Customer Relationship Management (CRM) systems, Big Data technologies, cloud computing, and artificial intelligence (AI), remains insufficient. This constrains the formation of an integrated digital management system for customer-oriented processes and reduces the ability of tourism enterprises to adapt effectively to the requirements of the modern digital environment.

In this regard, there is a need for a comprehensive study of the current state of the digital transformation of customer-oriented processes in tourism enterprises, the identification of trends in the use of digital technologies, the determination of managerial priorities for their further development, and the substantiation of conceptual approaches to the integration of digital tools into the customer relationship management system.

Analysis of recent research and publications. The issues of enterprise digital transformation, the development of the digital economy, and the implementation of modern digital technologies are actively studied in the works of Ukrainian scholars. The theoretical foundations of enterprise digital transformation, the essence of the digital paradigm, and the peculiarities of digital business functioning are revealed in the works of Yu. Nikitin and O. Kulchytskyi [6]. The development of digital business ecosystems, digital models for coordinating enterprise activities, and the transformation of business processes are investigated by L. Blahodiy [4] and Ye. Pavlivskyi [5].

A significant contribution to the study of digitalization in the tourism sector has been made by N. Venherska, V. Voronkova, L. Beskorovaina, and A. Cherep [2], V. Voronkova [3], and I. Kyrlyuk and N. Barvinok [1], who substantiated the role of digital technologies in the development of tourism activities, identified current trends in the digital transformation of tourism, and determined its importance for enhancing the resilience and competitiveness of tourism enterprises. The strategic development of tourism enterprises under current challenges is considered in the study by V. Hranovska and L. Alieshchenko [7].

At the same time, the analysis of scientific publications shows that researchers mainly focus on the digitalization of the tourism industry in general, the development of digital technologies and business ecosystems, and the strategic adaptation of enterprises. However, the issues of the digital transformation of customer-oriented processes in tourism enterprises remain insufficiently studied, particularly the comprehensive use of digital technologies at all stages of customer interaction, their integration into the enterprise management system, and the identification of managerial priorities for digital development.

The need for a comprehensive study of the digital transformation of customer-oriented processes in tourism enterprises, the assessment of the current level of digital technology use, the identification of development trends, and the substantiation of managerial priorities determined the choice of the research topic.

The purpose of the article. The purpose of the article is to comprehensively study the current state of the digital transformation of customer-oriented processes in tourism enterprises of Ukraine, identify the trends in the use of digital technologies, determine the managerial priorities for their development, and develop a conceptual model of the digital transformation of customer-oriented processes.

Presentation of the main material. Under the conditions of the digital transformation of the economy, the competitiveness of tourism enterprises is increasingly determined by their ability to adapt customer-oriented processes to the modern digital environment. Changes in consumer behaviour, the active use of online interaction channels, and the development of information and communication technologies necessitate the transition of travel agencies and tour operators from traditional service models to integrated digital formats of customer interaction. Under these conditions, e-commerce acquires strategic importance, as it not only ensures the sale of tourism products and services but also creates the prerequisites for service personalization, the expansion of communication channels, the improvement of service efficiency, and the establishment of long-term customer relationships.

The level of e-commerce development is one of the key indicators of the digital transformation of tourism enterprises, as it reflects the degree of integration of digital technologies into the processes of the provision of tourism services and customer interaction. The analysis of the dynamics of the number of enterprises engaged in e-commerce, together with the assessment of the volume of products (goods and services) sold through electronic sales channels, makes it possible to determine the current state of the digitalization of tourism activities, identify trends in the development of customer-oriented processes, and assess the readiness of enterprises to operate under the conditions of the digital economy (Table 1).

The analysis made it possible to establish that the development of e-commerce in the tourism services sector is characterized by mixed trends. On the one hand, the increase in the share of enterprises engaged in e-commerce indicates the gradual strengthening of the role of digital channels in the sale of tourism services. On the other hand, the unstable dynamics of e-commerce sales indicate differences in the level of their use and effectiveness among tourism enterprises. This suggests that the assessment of only general indicators does not make it possible to fully reveal the peculiarities of the digitalization of sales processes and customer interaction.

For a more comprehensive understanding of e-commerce development trends, it is advisable to analyse the structure of digital sales channels. Such an approach makes it possible to determine which methods of selling tourism services are the most widespread, assess their contribution to the volume of e-commerce sales, and identify the peculiarities of the transformation of customer-oriented processes in tourism enterprises (Table 2).

The analysis of the structure of e-commerce by sales channels indicates that, in 2023, tourism enterprises made more active use of their own digital channels for the sale of tourism services. The most significant positive trend was observed in sales through enterprises' own websites and web applications, the share of which increased from 31.9% to 39.7%. This confirms that enterprises are increasingly focusing on the development of their own digital

Table 1

Key Indicators of E-commerce Development of Tourism Enterprises in Ukraine

Indicators	Years						2023 as % of 2018
	2018	2019	2020	2021	2022	2023	
As a percentage of the total number of enterprises of the corresponding type of economic activity	57	59	54	55	32	30	52,6
Volume of sales of products (goods and services) through e-commerce, UAH million	30,8	30,6	27,6	28,2	35,9	39,7	-8.9 p.p.
As a percentage of the total volume of sales of products (goods and services) of enterprises of the corresponding type of economic activity	2 644,7	1 142,9	1 557,4	1 938,9	642,8	854,7	32.1
As a percentage of the total number of enterprises of the corresponding type of economic activity	39,8	11,8	33,2	34,1	35,9	31,7	-8.1 p.p.

Source: compiled by the author based on [5]

Table 2

Structure of the Use of E-commerce Channels by Tourism Enterprises in Ukraine

Indicators	Years		Change, 2023 compared with 2022, %
	2022	2023	
Share of enterprises engaged in e-commerce in the total number of enterprises, %			
Individuals	31,3	33,3	+2,0
Legal entities	26,0	33,3	+7,3
Via own website/web application	31,9	39,7	+7,8
Via e-commerce websites/web applications used by several enterprises	12,9	13,3	+0,4
Via EDI messages	2,0	2,7	+0,7
Share of the volume of sales of products (goods and services) generated through e-commerce in the total volume of sales of products (goods and services), %			
Individuals	25,5	20,3	-5,2
Legal entities	9,5	9,1	-0,4
Via own website/web application	30,8	29,1	-1,7
Via e-commerce websites/web applications used by several enterprises	4,2	2,7	-1,5
Via EDI messages	0,9	2,7	+1,8

Source: compiled by the author based on [5]

infrastructure as the main channel of customer interaction. At the same time, the share of enterprises engaged in e-commerce with both legal entities and individuals increased, whereas the use of shared e-commerce platforms and Electronic Data Interchange (EDI) remained less widespread.

At the same time, the analysis of the structure of e-commerce sales volume revealed a different trend. Despite the expansion of the use of most digital sales channels, their contribution to the total volume of tourism services sold in 2023 did not increase proportionally. The most noticeable decline was observed in sales to individuals, while the

share of sales through enterprises' own websites, web applications, and shared e-commerce platforms also decreased slightly. The only exception was Electronic Data Interchange (EDI), the use of which demonstrated positive dynamics, although its share in the structure of e-commerce remained insignificant.

The obtained results suggest that tourism enterprises are increasingly investing in the development of their own digital channels for customer interaction. However, the expansion of e-commerce tools alone does not ensure a corresponding increase in the volume of tourism services sold through these channels. This indicates the need not only to implement digital solutions but also to improve the efficiency of their use, primarily through enhancing the customer experience, personalizing service offerings, and integrating digital services into the customer relationship management system.

The analysis of the geographical structure of e-commerce indicates a gradual expansion in the use of digital channels for customer interaction by tourism enterprises in both domestic and international markets. The largest share of enterprises engaged in e-commerce was traditionally concentrated in the domestic market of Ukraine, confirming its leading role in the sale of tourism services. At the same time, positive dynamics were observed across all the analysed areas, indicating a gradual expansion of the geographical scope of digital customer interaction.

The most intensive development was observed in e-commerce with European Union countries. This segment demonstrated the highest growth rates among all areas of tourism service sales, indicating the strengthening integration of Ukrainian tourism enterprises into the European digital market. A positive trend was also observed in customer interaction with the rest of the world, although the scale of such cooperation remains considerably lower than that of the domestic market and European Union countries.

The obtained results indicate that the development of e-commerce contributes not only to the digitalization of tourism service sales processes but also to the expansion of the geographical scope of customer interaction. At the same time, the increasing focus on European consumers indicates a gradual shift from the use of digital technologies solely as a sales tool to their application as a means of integrating Ukrainian tourism enterprises into the international tourism market.

The further digitalization of customer-oriented processes largely depends on the level of digital readiness of enterprises. The effective functioning of e-commerce, online booking, corporate websites, CRM systems, and other digital services is impossible without an appropriate information and communication infrastructure. In this context, Internet access is a key prerequisite for the digital development of tourism enterprises, which necessitates a further analysis of the relevant indicators (Table 4).

The analysis of the indicators characterizing Internet access among tourism enterprises reveals uneven trends in the digital development of the industry. On the one hand, the absolute number of enterprises using the Internet in their business activities, as well as the number of employees with Internet access, decreased significantly. This was primarily due to the decline in the number of business entities and employees in the tourism sector under the impact of the COVID-19 pandemic and the subsequent consequences of the full-scale

Table 3

Geographical Structure of E-commerce of Tourism Enterprises in Ukraine [8]

Indicators	Years			Change, 2023 compared with 2021, %
	2021	2022	2023	
Ukraine	29,0	35,9	39,7	+10,7
European Union countries	8,3	15,1	19,2	+10,9
Rest of the world	6,7	9,2	12,8	+6,1

Source: compiled by the author based on [5]

Table 4

Digital Infrastructure Indicators of Tourism Enterprises*

Indicators	Years						2024 as % of 2018
	2018	2019	2021	2022	2023	2024	
Number of enterprises with Internet access, total (NACE Rev. 2 Code 79)	162	166	153	149	75	68	42,0
As a percentage of the total number of enterprises	86,0	72,8	78,1	76,4	79,6	90,9	+4,9 в. п.
Number of employees with Internet access, persons	4408	4708	4401	2876	2325	2366	53,7
As a percentage of the total number of employees of enterprises of the corresponding type of economic activity	82,8	85,7	91,1	75,0	80,6	89,9	+7,1 в.п.

* Data for 2020 were not collected or calculated in accordance with the updated approved statistical methodology, which incorporates the requirements of Commission Implementing Regulation (EU) 2019/1910 of 7 November 2019 concerning the use of ICT and e-commerce. Pursuant to this Regulation, the collection, compilation, and dissemination of selected indicators on the use of ICT by enterprises are carried out only for the year in which the corresponding official statistical survey was conducted.

Source: compiled by the author based on [5]

war. On the other hand, the relative indicators demonstrate the opposite trend, indicating an increase in the level of digital readiness among enterprises that continue to operate.

As of 2024, more than 90% of tourism enterprises had Internet access, while the share of employees using the Internet for professional purposes also approached this level. This confirms that digital infrastructure has become an integral component of the operation of tourism enterprises and provides the necessary foundation for the implementation of modern digital services, the development of e-commerce, and the improvement of customer interaction.

At the same time, the analysis shows that a high level of Internet access does not necessarily imply the full utilization of digital technologies. In 2024, only 12.8% of tourism enterprises used their own mobile applications for customer interaction. This indicates that mobile services have not yet become a widely adopted tool for digital customer interaction, despite their considerable potential to support personalized communication, provide prompt access to tourism services, and enhance the customer experience.

The obtained results suggest that, at the current stage of the digital development of tourism enterprises, the key challenge lies not so much in ensuring technical access to the digital environment as in making effective use of its capabilities to improve customer-oriented processes. Therefore, the next stage of the study focuses on assessing the functional capabilities of corporate web resources, which currently serve as the primary platform for digital interaction between tourism enterprises and their customers (Table 5).

The analysis indicates that corporate websites have already become an integral component of the digital infrastructure of tourism enterprises. Throughout the study period, their level of adoption remained consistently high, covering more than two-thirds of enterprises in 2024. This suggests that, at the current stage of digital development, competitive advantages are determined not so much by the mere presence of a corporate website as by its functional capabilities and its ability to ensure effective interaction with customers.

The analysis of the functional capabilities of corporate web resources shows that most enterprises primarily use them to provide customers with information on tourism services and prices. At the same time, almost half of the websites offer online booking facilities, indicating a gradual transition from an informational to a transactional model of customer interaction. However, services aimed at personalization and customer support remain less widespread. In particular, order tracking, personalized website content, and online customization of tourism services have so far been implemented only by a limited number of enterprises.

Table 5

Functional Capabilities of Corporate Websites of Tourism Enterprises

Indicators	Years				Change, 2024 compared with 2018, %
	2018	2019	2021	2024	
Share of enterprises with a website in the total number of enterprises of the corresponding type of economic activity, %	66,5	66,3	64,3	66,7	+ 0,2
Description of products or services and information on their prices	...	...	54,4	54,7	–
Online ordering or booking facilities	49,7	46,1	46,3	48,7	-1,0
Possibility for website visitors to customize or design products or services online	...	...	19,2	21,3	–
Tracking or checking the status of placed orders	44,3	40,4	40,4	40,4	-3,9
Personalized website content for regular customers	37,3	32,1	32,1	33,3	-4,0
Electronic links to the enterprise's social media profiles	50,8	46,6	46,6	...	–
Customer support chat service (chatbot, virtual assistant, or live chat)	...	...	...	38,4	–
Job vacancies or online job application	...	...	...	32,0	–
Website content available in at least two languages	...	...	...	65,7	–

Source: compiled by the author based on [5]

At the same time, the research results indicate the gradual transformation of corporate web resources into multifunctional digital platforms. The introduction of customer support chat services, multilingual websites, and online tourism product customization tools confirms the intention of enterprises to improve the quality of digital services and adapt them to the needs of different customer groups. This reflects a gradual transition from one-way customer information provision to the creation of an interactive digital environment for customer engagement.

The obtained results suggest that the further digitalization of tourism enterprises is primarily associated with the qualitative improvement of corporate web resources. The expansion of their functional capabilities, the integration of personalization services, digital customer support, and interactive communication tools will determine the effectiveness of customer-oriented processes in the near future.

Social media represent a logical continuation of the digital interaction between tourism enterprises and customers. While corporate websites mainly perform informational, service, and transactional functions, social media provide continuous two-way communication, strengthen brand trust, enhance customer loyalty, and promote tourism services in the digital environment. Therefore, the next stage of the study is to assess the characteristics of social media use by tourism enterprises and their role in the development of customer-oriented processes (Table 6).

The data presented in Table 6 indicate that social media remain one of the most widely used tools for digital communication between tourism enterprises and their customers. In 2024, they were used by 62.0% of enterprises, which was only 0.7 percentage points lower than in 2018. This indicates that social media continue to play an important role in the activities of tourism enterprises and remain a key tool for digital customer interaction.

Social networking platforms remain the most widely used social media tool, being employed by 59.3% of tourism enterprises in 2024. Despite a slight decrease compared with 2018 (0.8 percentage points), they continue to play a leading role in digital communication with customers. At the same time, the use of other digital communication tools has increased. In particular, the share of enterprises using blogs and microblogs increased from 25.4% to 28.0%,

Table 6

Use of Social Media by Tourism Enterprises [9]

Indicators	Years				Change, 2024 compared with 2018
	2018	2019	2022	2024	
Share of enterprises using social media in the total number of enterprises of the corresponding type of economic activity, %	62,7	60,6	60,1	62,0	-0,7
including social networking platforms	61,1	58,0	57,9	59,3	-0,8
enterprise blogs or microblogs	25,4	21,2	21,2	28,0	+2,6
websites or web applications for sharing multimedia content	27,0	28,5	27,1	34,4	+7,4
Wiki-based knowledge-sharing tools	22,2	19,7	21,8	...	–

Source: compiled by the author based on [5]

while the share using websites and web applications for sharing multimedia content increased from 27.0% to 34.4%, representing the largest increase among all types of social media analysed.

The obtained results indicate a gradual diversification of digital communication channels used by tourism enterprises. Alongside the traditional use of social networking platforms, the increasing adoption of multimedia content-sharing tools and corporate blogs expands the opportunities for customer interaction and contributes to the development of a more comprehensive system of digital communications in the tourism sector.

The next stage of the digital transformation of customer-oriented processes involves the use of data analytics to support managerial decision-making. Unlike digital communication channels, which primarily facilitate customer interaction, Big Data technologies enable enterprises to collect and analyse customer information, assess consumer behaviour, identify customer preferences, and forecast demand for tourism services. The application of these technologies contributes to the personalization of tourism products, improves the effectiveness of marketing activities, and enhances customer relationship management processes. Therefore, the next stage of the study is to analyse the use of Big Data analytics by tourism enterprises in Ukraine (Table 7).

Table 7

Areas of Big Data Analytics Use by Tourism Enterprises

Indicators	Share of enterprises, %
Total	22,4
Including, by data source:	
Transaction data analytics (e.g., sales records and payment records)	11,2
Customer data analytics (e.g., customer purchases, location, preferences, feedback, and search queries)	13,6
Social media analytics, including data from enterprises' own social media profiles	20,0
Web analytics	15,2
Location data analytics using portable devices or vehicles	6,4
Smart device or sensor data analytics	6,4
Open government data analytics	6,4
Satellite data analytics	6,4
By method of analysis, %	
Conducted by enterprise employees	22,4
Conducted by other enterprises or organizations	17,6

Source: compiled by the author based on [5]

The conducted analysis revealed that Big Data analytics technologies have not yet become widely adopted among tourism enterprises in Ukraine. In 2024, they were used by only 22.4% of enterprises, indicating that most tourism enterprises have not yet progressed from the use of digital customer interaction channels to data-driven management of customer-oriented processes. Thus, although substantial volumes of digital information are being accumulated, they are not yet fully utilized as a strategic resource for managerial decision-making.

The most widespread area of application is social media analytics, highlighting the growing importance of digital communications as a source of information on customer behaviour, interests, and preferences. At the same time, considerably fewer enterprises use web analytics, customer data analytics, or transaction data analytics. This distribution suggests that tourism enterprises primarily analyse customers' external behaviour, whereas the potential of internal data for personalizing tourism services, forecasting demand, and improving customer relationship management is only partially realized.

Particular attention should be paid to the very limited use of spatial and technology-based data sources, including location data, data generated by smart devices, open government data, and satellite data. This indicates that the advanced analytical capabilities widely employed in the global tourism industry for predicting customer behaviour, optimizing tourism routes, and improving service quality are still used only to a limited extent by Ukrainian tourism enterprises.

The analysis of approaches to Big Data analytics also demonstrates the predominance of an in-house model of data processing. Enterprises applying Big Data technologies are more likely to analyse data using their own employees than to outsource these activities to specialized organizations. This may reflect their intention to retain control over customer information and analytical processes. However, given the overall low level of Big Data adoption, this situation may also result from insufficient analytical competencies, limited financial resources, or the relatively low level of integration of digital solutions into enterprise management systems.

The obtained results indicate that tourism enterprises have already accumulated substantial volumes of digital customer data; however, the potential of these data to support managerial decision-making has been only partially realized. Therefore, the next stage of digital transformation involves the development of a modern digital infrastructure capable of supporting the collection, integration, and secure use of data. Such a foundation is provided by cloud computing technologies, which enable centralized data storage, support the operation of digital services, and create the prerequisites for the further implementation of analytical and intelligent technologies in the management of customer-oriented processes (Table 8).

The analysis indicates that the use of cloud computing technologies by tourism enterprises is gradually expanding; however, their level of adoption still falls short of the requirements of modern digital management. In 2024, cloud computing services were used by only about one-quarter of tourism enterprises, indicating that the digital infrastructure required for the integration of information resources, support of customer-oriented processes, and effective use of data in enterprise management has not yet been fully developed.

The structure of cloud computing service use suggests that enterprises primarily focus on meeting basic information needs. The most widely used services include e-mail, computing capacity for running software applications, office software, as well as solutions for data storage and accounting support. This confirms that cloud technologies are still used mainly to support operational activities rather than as a strategic management tool.

At the same time, specialized cloud-based solutions directly related to customer relationship management and business process integration remain relatively uncommon. The low level of adoption of CRM and ERP software, together with cloud platforms for application development and deployment, indicates that most tourism enterprises have not

Table 8

Use of Cloud Computing Services by Tourism Enterprises

Indicators	Years					Change, 2024 compared with 2018
	2018	2019	2021	2022	2024	
Share of enterprises purchasing cloud computing services, %	22,7	23,8	22,8	22,0	25,6	+2,9
Including, by type of cloud computing service, %						
E-mail services	11,4	15,5	12,4	6,6	25,6	+14,2
Office software	7,6	13,0	10,4	8,3	12,8	+5,2
Database hosting services	10,8	14,5	14,5	6,6	12,8	+2,0
File storage services	10,3	10,4	13,5	6,6	12,8	+2,5
Accounting and financial software applications	10,8	12,4	11,4	7,4	12,8	+2,0
Customer Relationship Management (CRM) software	9,2	7,8	8,3	6,6	6,8	-2,4
Enterprise Resource Planning (ERP) software	...	...	...	–	6,4	–
Computing capacity for running enterprise software	9,2	9,8	9,7	2,4	19,2	–
Security software (e.g., antivirus software, network access control)	...	...	...	6,6	12,8	–
Cloud platform for application development, testing, or deployment	...	...	...	1,7	6,4	–

Source: compiled by the author based on [5]

yet established an integrated digital environment in which customer data, business processes, and managerial decisions operate as interconnected elements of a unified system.

The obtained results indicate that, at the current stage of development, tourism enterprises primarily use cloud computing technologies as a tool to support operational activities, while their potential for integrating digital services, centralized data management, and personalized customer interaction has been only partially realized. The establishment of an integrated digital infrastructure therefore creates the necessary foundation for the next stage of digital transformation – the adoption of artificial intelligence technologies.

Artificial intelligence technologies represent the logical continuation of the digital evolution of customer-oriented processes, as they enable enterprises not only to collect and integrate information but also to transform it into a tool for forecasting, automation, and managerial decision support. Unlike previous stages of digitalization, artificial intelligence enables real-time analysis of customer behaviour, personalization of tourism offerings, automation of customer communication, and improvement of business process efficiency. Therefore, the next stage of the study is to assess the level of adoption of artificial intelligence technologies by tourism enterprises and identify the main areas of their practical application (Table 9).

The adoption of artificial intelligence technologies by tourism enterprises in Ukraine remains extremely limited. In 2024, only 6.4% of enterprises reported using artificial intelligence technologies, which is almost unchanged compared with 2022. The absence of significant growth indicates that the integration of intelligent digital solutions into the activities of tourism enterprises is still at an early stage and has not yet become systematic.

The structure of AI technologies in use is dominated by solutions aimed at workflow automation and decision support. Machine learning for data analysis and natural language processing technologies are used less frequently, while speech recognition, natural language generation, and image recognition technologies remain limited to isolated applications.

Table 9

Use of Artificial Intelligence Technologies by Tourism Enterprises

Indicators	Years		Change, 2024 compared with 2022
	2022	2024	
Total	6,6	6,4	-0,2
Including, by type of artificial intelligence technology:			
Natural language processing technologies (text analysis)	3,3	3,2	-0,1
Speech recognition technologies	1,7	1,6	-0,1
Natural language generation technologies (text or speech generation)	1,7	1,6	-0,1
Image recognition technologies for identifying objects or persons	1,7	1,6	-0,1
Machine learning for data analysis	3,3	3,2	-0,1
AI technologies for workflow automation and decision support	5,0	4,7	-0,3
Autonomous technologies enabling machines to move based on observations of the surrounding environment	—	—	—

Source: compiled by the author based on [5]

This distribution indicates that artificial intelligence is currently employed primarily for operational purposes, including information processing and the automation of specific tasks, rather than for the comprehensive management of customer experience.

Therefore, tourism enterprises continue to adopt artificial intelligence in a fragmented manner, without its full integration into interconnected managerial and customer-oriented processes. While the presented data characterize the types of AI technologies in use, they do not reveal the functional areas in which these technologies are actually applied.

Accordingly, the next stage of the analysis focuses on the purposes of artificial intelligence application in the activities of tourism enterprises. This makes it possible to identify the areas of its practical integration into marketing, administrative, operational, and other managerial processes, as well as to assess its role in the development of a customer-oriented management model (Table 10).

Table 10

Areas of Artificial Intelligence Application by Tourism Enterprises

Indicators	Years		Change, 2024 compared with 2022
	2022	2024	
Total	6,6	6,4	-0,2
Including, by purpose of AI use:			
Marketing and sales	5,0	4,7	-0,3
Operational processes	1,7	1,6	-0,1
Business administration	3,3	3,2	-0,1
Enterprise management	3,3	...	—
Logistics	—	—	—
ICT security	1,7	1,6	-0,1
Human resource management and recruitment	3,3	...	+
Accounting, controlling, and financial management	...	1,3	—
Research and development (R&D) or innovation activities (excluding AI research)	...	1,3	—

Source: compiled by the author based on [5]

The analysis of the functional areas of artificial intelligence application revealed that, in 2024, AI technologies were used most frequently in marketing and sales. This confirms that tourism enterprises primarily introduce intelligent solutions into service promotion, customer communication, and sales support activities. The application of artificial intelligence in business administration, operational processes, and ICT security remained considerably less widespread. The isolated use of AI solutions in accounting, financial management, research, and innovation activities indicates a gradual expansion of their practical application; however, it does not yet justify considering artificial intelligence as a systematic component of tourism enterprise management.

The absence of published data for 2024 on the use of artificial intelligence in enterprise management and human resource management prevents a comprehensive assessment of trends in these areas. At the same time, the absence of AI application in logistics and its limited use across most other functional areas further confirms the selective nature of the integration of intelligent technologies into the activities of tourism enterprises.

The synthesis of the results presented in Tables 9 and 10 indicates that the adoption of artificial intelligence in the Ukrainian tourism sector remains at an early stage. Existing AI solutions are used primarily for the automation of individual operations, information processing, and support of marketing activities. By contrast, the potential of artificial intelligence for the personalization of tourism services, prediction of customer behaviour, automation of customer service, and comprehensive customer experience management has so far been only partially realized.

Overall, the findings of the study demonstrate the uneven digital development of customer-oriented processes in Ukrainian tourism enterprises. The greatest progress has been achieved in the adoption of technologies that ensure the digital presence of enterprises and support direct customer interaction, including e-commerce, corporate websites, and social media. In contrast, customer relationship management and enterprise resource planning systems, Big Data analytics, cloud computing solutions, and artificial intelligence technologies remain significantly less widespread. This asymmetry indicates that the digital transformation of tourism enterprises is still primarily focused on external communication and sales channels, whereas the integration of digital technologies into internal managerial processes remains insufficient.

The identified patterns provide grounds for considering digital transformation not as a set of isolated technological solutions but as a sequential process of transition from digital presence and customer interaction to integrated data management, business process integration, and customer experience management. Based on this approach, a conceptual model of the phased digital transformation of customer-oriented processes in tourism enterprises was developed (Figure 1).

The proposed model integrates digital technologies, the stages of their implementation, the corresponding managerial outcomes, and the ultimate result in the form of customer value creation. It illustrates the sequential transition from establishing the digital presence of an enterprise and developing online customer interaction to the integration of information systems, data-driven management, and the application of intelligent technologies for managerial decision support. This approach makes it possible to trace how the implementation of individual digital tools gradually evolves into an integrated management system focused on the personalization of tourism services, enhancement of customer experience, and strengthening of customer loyalty.

The practical significance of the proposed model lies in its potential to serve as a framework for assessing the current level of digital development of tourism enterprises, identifying priority areas for the adoption of digital solutions, and designing a consistent strategy for the modernization of customer-oriented processes. In addition, the model facilitates the alignment of technological solutions with expected managerial outcomes and the value created for customers.

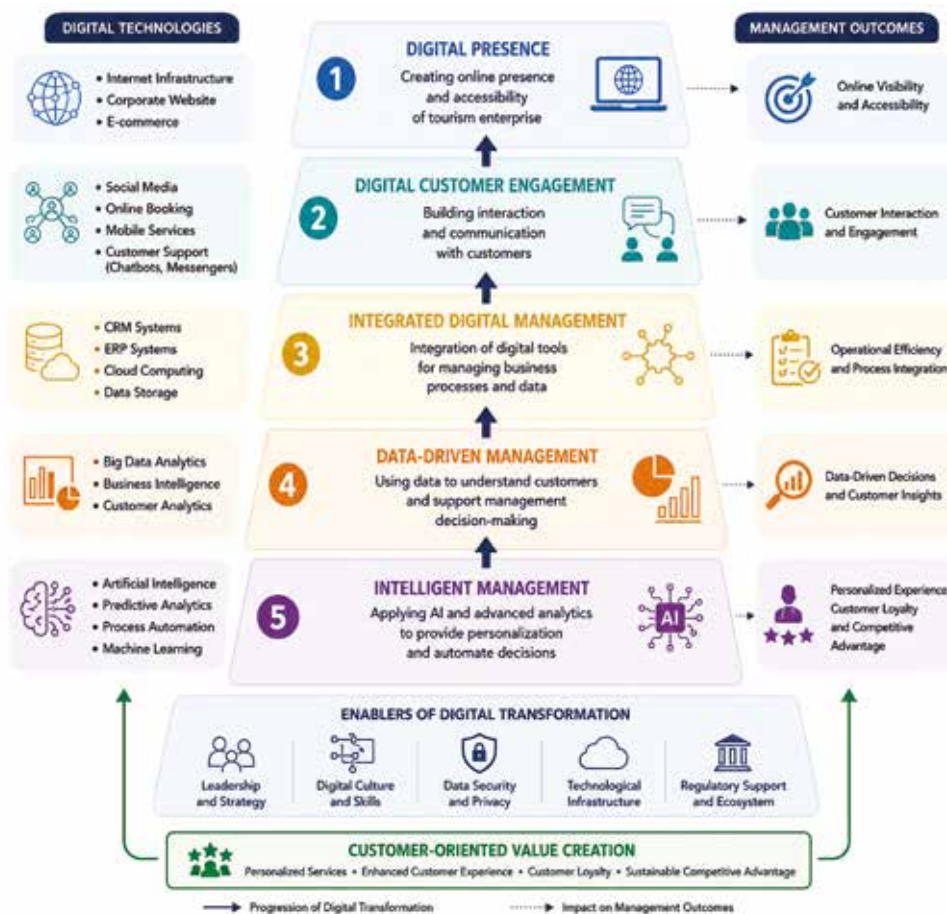


Figure 1. Conceptual model of the phased digital transformation of customer-oriented processes in tourism enterprises

Source: developed by the author

Conclusions. The study has demonstrated that the digitalization of customer-oriented processes in Ukrainian tourism enterprises remains uneven. The highest level of adoption has been observed for e-commerce, corporate websites, online booking, and social media, which ensure the digital presence of enterprises, facilitate the delivery of tourism services, and support customer communication. In contrast, customer relationship management (CRM) systems, enterprise resource planning (ERP) systems, Big Data analytics, cloud computing solutions, and artificial intelligence technologies remain significantly less widespread. These findings indicate that tourism enterprises primarily focus on the digitalization of external customer interaction channels, while the integration of digital technologies into internal managerial processes remains insufficient.

The identified trends provide grounds for considering digital transformation as a sequential transition from establishing digital presence and online customer interaction to the integration of information systems, data-driven management, and the application of intelligent technologies for managerial decision support. Priority directions for the further digital development of tourism enterprises should include the expansion of the functional

capabilities of web resources and mobile services, the implementation of customer relationship management systems, the integration of cloud computing infrastructure, the development of customer data analytics, and the adoption of artificial intelligence technologies for service personalization, communication automation, and customer experience management.

The principal scientific contribution of the study is the development of a conceptual model of the digital transformation of customer-oriented processes in tourism enterprises. Unlike existing approaches, the proposed model integrates digital technologies, the stages of their implementation, managerial outcomes, and customer value creation within a unified conceptual framework. The model illustrates the transition from the digital presence of an enterprise to data-driven management and intelligent managerial decision support. Its practical value lies in its potential to serve as a framework for assessing the current level of digital development of tourism enterprises, identifying priorities for the adoption of digital solutions, and designing a consistent strategy for the modernization of customer-oriented processes.

Future research should focus on the development of a system of indicators for assessing the digital maturity of customer-oriented processes, the evaluation of the impact of individual digital technologies on customer experience quality, and the empirical validation of the proposed conceptual model across tourism enterprises of different organizational types and sizes.

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