# Digitization Process in a Changing Global Environment

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***Abstract*** **– This article aims to analyze modern technologies' impact on business process management approaches in the context of digitization and innovative management. Drawing on an extensive literature review, the study explores key themes such as the role of digital technologies in transforming traditional business practices, fostering innovation, and addressing market demands. The problem under investigation centers on the evolving nature of business process management in response to rapid technological advancements and the need for innovative strategies. The research is guided by the hypothesis that digitization and innovative management are critical drivers of efficiency, productivity, and competitive advantage in the contemporary business environment. A mixed-methods approach was employed to test this hypothesis, combining statistical data analysis, case studies of leading global and Ukrainian enterprises (including Amazon, Nova Poshta, and SoftServe), and regression modeling. The study sample includes data from eight enterprises and insights from 15 managers representing various industries.**

**The results indicate that adopting digital technologies, such as artificial intelligence, blockchain, and IoT, significantly enhances business process automation, customer interaction, and organizational efficiency. The findings highlight notable growth trends in digital transformation indicators, including profitability, innovation output, and market competitiveness. Companies prioritizing digital innovations experience higher financial performance and adaptability in a dynamic market environment. This study underscores the implications of digitization for business process management, providing actionable insights for managers aiming to develop effective strategies for integrating digital and innovative practices. The research contributes to the theoretical understanding of digital transformation and offers practical applications for businesses seeking sustained growth and competitive advantage.**

***Keywords*** **– Digitization, innovative management, business process management, modern technologies.**

## 1. Introduction

In the contemporary realm of business administration, the convergence of digitization and progressive methodologies stands out as a central catalyst for significant transformations. The emergence of cutting-edge technologies marks an era where conventional approaches to managing business processes are undergoing fundamental restructuring. This scholarly article delves into the intricate dynamics of digitization and forward-thinking management, scrutinizing these technologies' profound influence on the foundational principles of how organizations formulate, implement, and enhance their business procedures.

By examining the nuanced interaction between digitization and forward-thinking management, this research aims to elucidate the evolving landscape and bring attention to the revolutionary changes in business strategies that are molding the future of corporate methodologies.

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In the past decade, the business landscape has witnessed radical transformations propelled by widespread innovations in digital technologies. This literature review systematically examines the findings of leading research studies that uncover the profound dimensions and impact of digital transformation on business process management.

[1] conducted a systematic review of digital transformation literature, revealing its intricate nature shaped by technological advancements, market dynamics, and evolving customer expectations. Their findings underscore the necessity for further investigation into digital transformation's impact on business processes, organizational culture, and employee behavior, setting the stage for exploration in the article "Digitization and Innovative Management: How Modern Technologies are Changing Approaches to Business Process Management." [2] crafted an integrated framework, highlighting four crucial dimensions of digital transformation: technological, organizational, strategic, and cultural. Recognizing digital transformation as an ongoing, adaptive process, their insights pave the way for the discussion on the dynamic nature of digitization and its continuous demand for adaptation and innovation. Plekhanov *et al.* reviewed digital transformation literature, identifying five vital research streams: The impact on business performance, digital technologies' role in business process innovation, challenges, the transformation journey, and its future [3]. These themes form a foundation for the article's exploration of the multifaceted aspects of digital transformation. Oliinyk, M. proposed a unified view of digital innovation, business models, and ecosystems [4]. Acknowledging digital transformation as a catalyst for organizational agility and resilience, their perspective forms the discussion on the critical role of digitization in fostering adaptability. [5] developed a framework addressing challenges in uncertain environments, emphasizing technological uncertainty, organizational inertia, market turbulence, and regulatory uncertainty. Their insights provide a framework for examining challenges in the article and offer recommendations for effective management. [6] scrutinized global trends, specifically highlighting challenges and opportunities for Ukrainian businesses. Their emphasis on the need for investment in digital technologies and adaptation of business processes aligns with the exploration of the transformative potential for businesses in the digital age. [7] delved into theoretical and methodological aspects of digital transformation in business process management, outlining key driving factors and implementation challenges. This analysis complements theoretical insights and methodological considerations described in this article, bringing it to the broader discussion.

[8] explored the pandemic's impact on digital transformation, identifying trends in the post-pandemic economy. Their findings on accelerated technology adoption and new opportunities align with the investigation into how external factors, like the pandemic, shape and drive digital transformation. [9] focused on the theoretical foundations of digital transformation, emphasizing its critical role in Ukraine's economic development. This perspective contributes to the discussion on digital transformation's global and regional implications. [10] analyzed the impact on enterprise competitiveness, highlighting productivity, efficiency, and innovation as outcomes. Their findings contribute to examining the broader implications of digital transformation on business performance. [11] proposed a matrix method for analyzing competitiveness in hospitality through strategization and digital transformation. It brings insights for the discussion on sector-specific applications and benefits of digital transformation. [12] explored digitalization trends in Georgia and Ukraine, revealing common challenges and progress. This comparative analysis highlights regional similarities and differences in the digitalization landscape. These studies offer a comprehensive foundation for this article, providing insights into key themes, challenges, and opportunities in digital transformation and business process management. In the context of this scientific article, exploring various aspects related to management efficiency and innovative development in modern business is relevant. To thoroughly examine these aspects, it is important to consider previous research findings. The study by [13] highlights the significance of applying economic-mathematical methods in agricultural enterprise management. This approach can be a pivotal factor in driving the modernization of business processes across all segments of the economy. The research focuses on priorities of economic-mathematical modeling in agricultural enterprises, potentially influencing approaches to optimizing management processes [18]. The work of [15] concentrates on managerial decisions and analysis methods, shaping principles for decision-making in the context of innovative development. [16] and colleagues' research introduces an economic-mathematical model for profit maximization in sustainable development, which is crucial for studying practical cases of successful innovation implementation. [17] identifies approaches to evaluating the economic performance of enterprises, offering insights for refining management practices. [18], [22] examines international experience in applying innovative financial management strategies and providing initiatives for improving financial planning in the digital transformation era.

[19] emphasizes the importance of managing risks in innovative activities within the digital ecosystem, a key aspect amid changes in the digital transformation landscape. [20], [24] defines financial stability as a prerequisite for innovative enterprise development, crucial in analyzing successful management strategies.

**Aims**: This article aims to underscore the transformative impact of digitization on contemporary businesses, focusing on reshaping customer interactions and driving overall success. The article explores and analyzes the influence of key digital technologies, including Generative AI, IoT, and blockchain, on diverse industries. **Objectives**: Investigate the specific ways in which digitization, encompassing Generative AI, IoT, and blockchain, reshapes customer interactions in various sectors. Examine real-world examples illustrating how digitization enhances customer experiences and provides a competitive advantage. Highlight successful strategies employed by companies for the effective implementation of digital innovations, addressing challenges encountered by Ukrainian businesses. Analyze the impact of digitization on the competitiveness, profitability, and strategic relevance of companies, drawing insights from Amazon's financial and innovation indicators. Emphasize the study's broader implications, advocating for the adoption of innovative practices to thrive in the evolving landscape of modern business.

## 2. Methodology Section

The following methods were employed to explore modern technologies' impact on business process management approaches in the context of digitization and innovative management.

**Methods of Analysis and Synthesis**: This method allowed for an overview of existing research in the field and the identification of relevant issues.

**Statistical Data Analysis**: This method assessed the scale and trends in adopting digital technologies in business process management.

**Case Study**: This method enabled examining specific companies' experiences implementing digital technologies in business process management.

**Literature Review**: The literature review provided an opportunity to familiarize oneself with existing studies in the field and identify relevant questions. When conducting a literature review, it is essential to consider the following factors:

Relevance. Research should be current, covering the latest trends in digitization and innovative management development.

Quality. Research should be conducted qualitatively, meaning it should be representative and objective.

Diversity. It is necessary to consider studies conducted by different authors from different countries.

Based on the research, a graph of the interaction and dependency between digitization and innovative management concepts has been constructed (Figure 1).

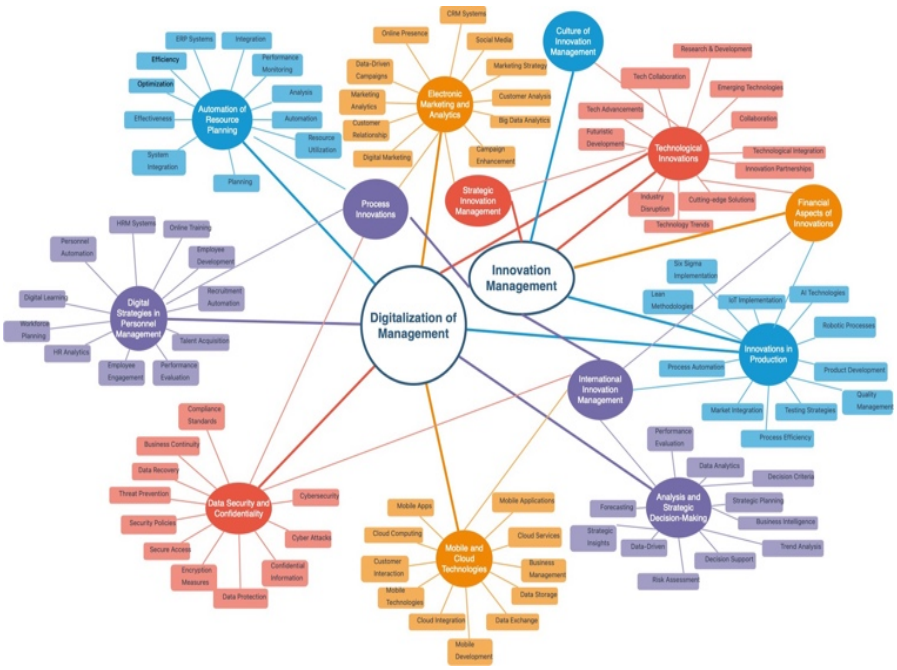


*Figure 1. Graph of the interaction and dependency between the concepts of digitization and innovative management*

For each company, a statistical analysis of the interdependence between variables, which includes the following stages, will be conducted:

Calculation of multiple regression equation -

Apply statistical regression analysis methods to a dataset that includes companies' financial, economic, and innovation indicators.

Obtaining regression coefficients (β0, β1, ..., βn) for each factor (X1, X2, ..., Xn) and the constant term (β0).

Construction of the multiple regression equation in the form $Y = \beta0 + \beta1X1 + \beta2X2 + ... + \betanXn$.

Economic interpretation of model parameters:

Calculate average changes in Y with a one-unit change in each factor.

Determination of the influence of each factor (X1, X2, ..., Xn) on the variation of the dependent variable Y.

Statistical significance and criteria analysis:

Utilization of the coefficient of determination and the Fisher criterion to assess the statistical significance of the equation.

Testing the significance of model parameters and removing non-significant variables.

Detection of multicollinearity:

Analysis of the matrix of pairwise correlation coefficients between factors to identify high correlation relationships ($|r| > 0.7$).

If necessary, exclusion of one of the factors to avoid multicollinearity.

## 3. Results

Digitization has a significant impact on customer interaction methods. It alters how customers purchase, receive support, and engage with brands. Table 1 provides an overview of trending digital technologies crucial in developing contemporary businesses. These technologies set new standards in efficiency, innovation, and customer interaction. The utilization of artificial intelligence (AI), the Internet of Things (IoT), blockchain, augmented reality (AR), data analytics, and interactivity enables enterprises to optimize processes, enhance services, and maintain competitiveness in the digital era. These technological trends serve as key components in development strategies, assisting businesses in adapting to the rapidly changing business environment and ensuring sustainability in the competitive landscape.

*Table 1. An overview of trending digital technologies for business development*

| Technology | Trend | Description |
|---|---|---|
| Artificial Intelligence | Growth | Utilizing AI for data analysis, personalization, and process automation. |
| Internet of Things | Expansion | Connecting various devices for data collection and exchange, enhancing business process efficiency. |
| Blockchain | Innovation | Ensuring security and transparency in finance, logistics, and other industries. |
| Augmented Reality | Enhancement | Using AR to improve interaction with customers and provide innovative services. |
| Data Analytics | Optimization | Employing advanced analytics to gain valuable insights and make informed decisions. |
| Interactivity | Customer Engagement | Creating interactive elements to capture customer attention and enhance interaction. |

The development of each technology separately is examined as follows. In 2022, the global market size for Generative AI reached an estimated USD 10.79 billion, with a projected increase to approximately USD 118.06 billion by 2032.

This represents a compound annual growth rate (CAGR) of 27.02% during the forecast period from 2023 to 2032. The U.S. Generative AI market alone was valued at USD 2.7 billion in 2022 (Figure 2).


*Figure 2. Projected values of the generative artificial intelligence market size, 2022-2032 (USD billion)*

The end-user segment encompasses media and entertainment, healthcare, business and financial services, IT and telecom, and automotive and transportation. Smaller segments include security, aerospace, and defense. Media and entertainment contributed over 34% of revenue in 2022, surpassing USD 1.5 billion, with Generative AI-enhancing advertisement campaigns (Figure 3). Generative AI, employing machine learning algorithms, has significantly impacted industries such as banking and healthcare, generating new data and content.

This technological advancement has sparked innovation and novel literature, music, and art forms.

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Furthermore, Generative AI is crucial in developing innovative medications and therapies, analyzing medical imagery, and assisting in diagnostics. It is also used to create new financial services and products, analyze financial data, and forecast market trends. Moreover, Generative AI enables the analysis of audience data and the production of personalized content.

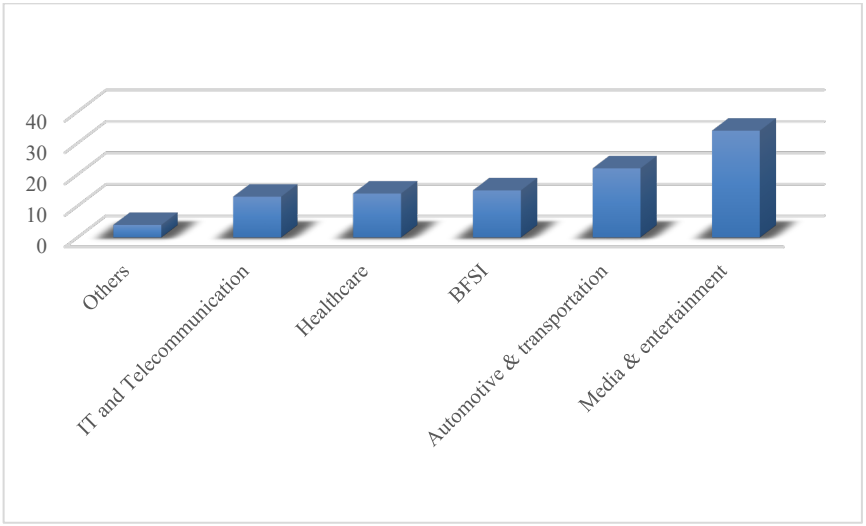


*Figure 3. Generative AI market share, by end-use, 2022 (%)*

Digitization has led to a surge in online sales. Customers increasingly prefer making purchases online due to the convenience, speed, and accessibility it offers. Online sales empower companies to reach a broader audience and provide customers with various products and services.

The global count of Internet of Things (IoT) devices is expected to nearly double, increasing from 15.1 billion in 2020 to surpass 29 billion by 2030.

By 2030, China is anticipated to host the most significant quantity of IoT devices, reaching approximately 8 billion consumer devices.

These IoT devices find applications across various industry verticals and consumer markets, with the consumer segment constituting about 60 percent of all connected IoT.

Devices in 2020. Projections suggest that this percentage will remain consistent over the next decade.

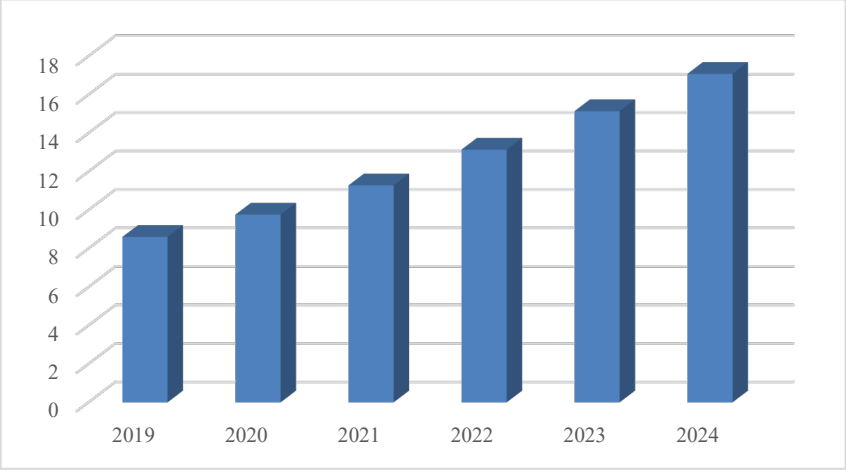


*Figure 4. Number of IoT-connected devices worldwide from 2019 to 2023, with forecasts from 2022 to 2030 (in billions)*

Digitization has transformed the way customer support is provided. Customers now frequently seek assistance online through websites, email, social media, and chatbots. This enables companies to deliver faster and more efficient support.

The global IoT market is forecasted to be valued at approximately $336 billion in 2024.

It is projected to increase to over $621 billion by 2030, tripling its revenue over a decade. Also, the number of IoT-connected devices worldwide is expected to triple during this timeframe as well (Figure 5).

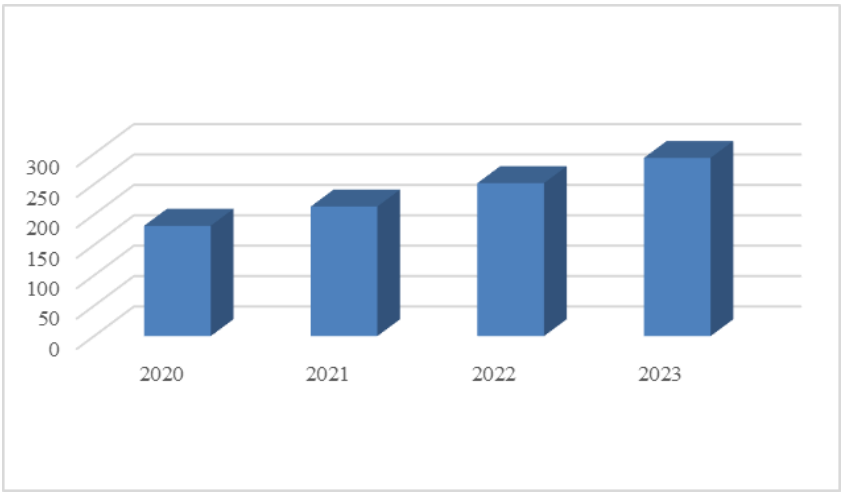


*Figure 5. IoT total annual revenue worldwide from 2020 to 2030 (in billion U.S. dollars)*

Digitization allows companies to apply personalized approaches to consumers. This means that companies can offer each customer individualized recommendations, proposals, and experiences. Personalization can help companies enhance customer satisfaction, boost sales, and improve customer loyalty.

The blockchain market has consistently grown over the years, with its value rising from $4.19 billion in 2020 to $19.36 billion in 2023.

It is intriguing that, despite being utilized by only 3.9% of the global population, the blockchain industry holds a market worth in the billions. The count of blockchain wallet users has experienced substantial growth in recent years. In 2016, there were merely 10 million users of blockchain wallets, surging to 80 million by 2021.

This marks an increase of 70 million blockchain wallet users within just 5 years (Figure 6).

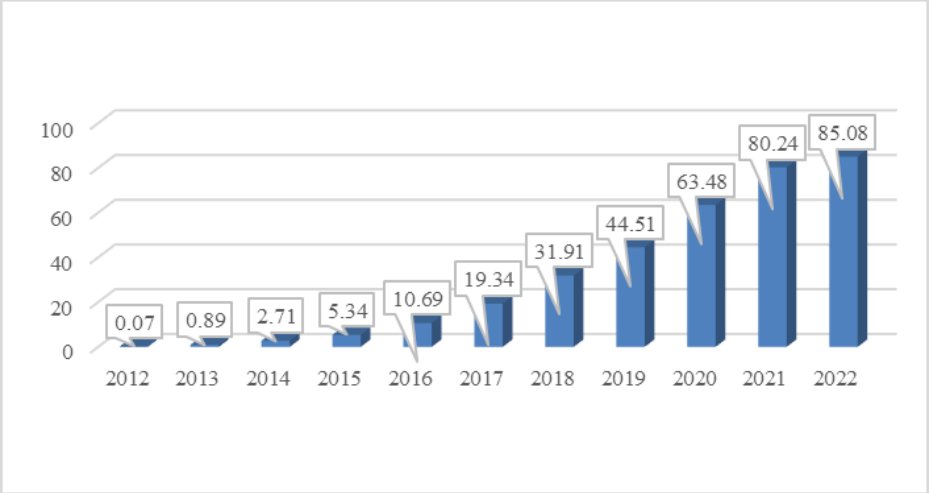


*Figure 6. Number of blockchain wallet users, billions of $*

The blockchain market is expected to achieve a value of $162.84 billion by the conclusion of 2027, with the current valuation standing at over $32 billion. This anticipates a growth of $143.48 billion within a mere four-year timeframe.

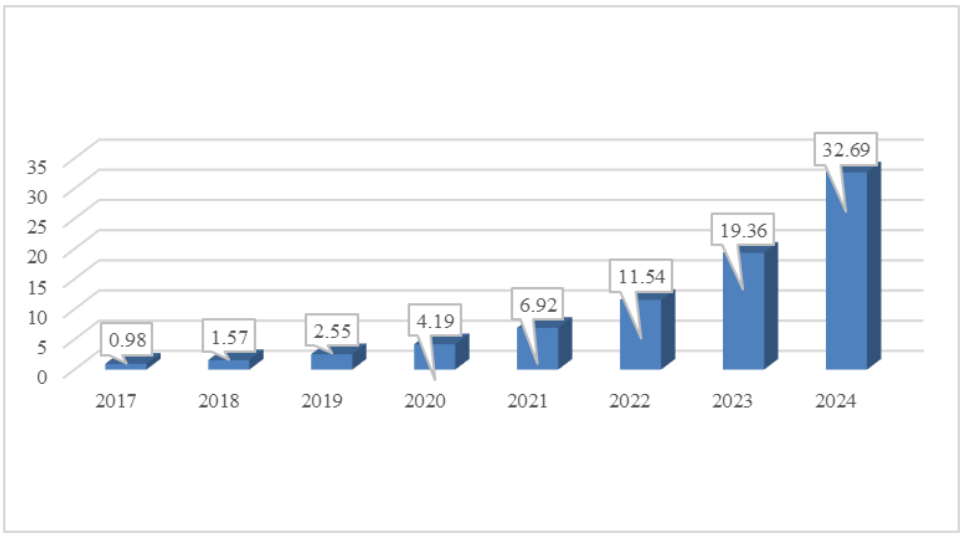


*Figure 7. The market size of blockchain technology, billions of $*

Here are some specific examples of how digitization is impacting customer interaction methods:

Innovative stores utilize cameras, sensors, and artificial intelligence to understand customers' needs better. This enables stores to provide a more personalized shopping experience.

Chatbots offer real-time support to customers, answering questions, resolving issues, and providing information.

Machine learning analyzes customer data to understand their needs and interests. This information can be used to create personalized recommendations and offers.

Digitization continues to transform the ways companies interact with customers. Companies not adopting digital technologies risk falling behind competitors and losing customers.

Digitization is one of the most crucial trends in contemporary business. It is changing all aspects of company operations, including products, processes, and business models. Implementing digital innovations is key for companies to succeed in the digital world.

There are several strategies for implementing digital innovations. One of the most common strategies is to create a separate department or team responsible for implementing digital innovations. This team may develop its digital products and services or collaborate with other departments within the company.

Another prevalent strategy is to leverage external companies specializing in digital innovations. These companies can offer various services, such as developing digital products and services, data analysis, and managing digital channels.

Companies can also use internal and external resources to implement digital innovations. This may be the most effective approach for companies with limited internal resources or those seeking access to cutting-edge technologies and expertise.

Successful implementation of digital innovations depends on several key factors. One of the most critical factors is the presence of strong leadership. Company leaders must understand the importance of digital innovations and be willing to invest in them.

Another crucial factor is the existence of an innovation culture. Companies should encourage their employees to experiment and take risks.

Companies also need to have a clear understanding of their goals and objectives in the realm of digital innovations. They should identify which digital innovations are necessary to achieve their business goals.

To identify challenges in implementing digital innovations in contemporary companies, as well as to provide insights for companies that aim to adopt digital innovations successfully, a survey was conducted by the authors with 15 managers at various levels of management from Ukrainian companies such as PrivatBank, Nova Poshta, Rozetka, and Soft Serve. The results are presented below.

The survey results indicate that implementing digital innovations is a complex process for many companies. Many managers identified the following key factors:

Lack of Experience and Knowledge: 40% of respondents noted that a lack of experience in implementing digital innovations makes it challenging to determine where to start and how to achieve success.

Financial Costs: 30% indicated that implementing digital innovations can be expensive, and companies must be prepared to invest in new technologies, equipment, and personnel.

Cultural Changes: 30% of respondents highlighted that implementing digital innovations may lead to cultural changes within the company, and companies must be ready for their employees to learn new things and adapt to changes.

The survey results indicate that companies aiming to implement digital innovations successfully identify the following key factors -

Development of a Digital Innovation Strategy: 30% of managers emphasized crafting a strategy that defines goals, tasks, and approaches for implementing digital innovations.

Creation of an Innovation Culture: 25% highlighted the need to foster a company culture that encourages employee experimentation and risk-taking.

Investment in Digital Technologies and Equipment: 20% recognized the significance of having access to necessary technologies and equipment to implement digital innovations successfully.

Employee Preparedness for Changes: 25% noted that companies should train employees on new technologies and work methods to facilitate successful adaptation.

This breakdown reflects the priorities and emphasis managers attribute to implementing digital innovations in their companies.

Companies that follow these recommendations can enhance their competitiveness in the digital world. According to the McKinsey Global Institute, companies implementing digital innovations may achieve 20-25% higher profitability than those that do not. A study by Capgemini revealed that 60% of companies consider implementing digital innovations their most important strategic priority.

For the study of Financial and Technological Performance, calculation of Indicators of Financial and Economic Development and Innovation, as well as the construction of an Economic model depicting the impact of innovation development indicators on financial and economic indicators, the following global companies have been chosen by the authors: Amazon (ranked 2nd in the Top 100 Technology Leaders of 2023).

*Table 2. Financial and technological performance of Amazon: 2013-2022*

| Year | Annual net sales revenue, billion $ | Use of Digital Technologies | Other Productivity Indicators |
|---|---|---|---|
| 2013 | 74.452 | Development of e-commerce, optimization of logistic processes | Number of active users, Expansion of product assortment |
| 2014 | 88.988 | Expansion of AWS network, implementation of robots in warehouses | Increase in marketing expenses, Number of items |
| 2015 | 107.006 | Implementation of artificial intelligence technologies in sales | Reduction in delivery time, Innovations in products |
| 2016 | 135.987 | Development of voice technologies (Alexa), expansion of AWS | Number of Amazon Prime subscribers, Number of employees |
| 2017 | 177.866 | Implementation of facial recognition technologies, expansion of AI | Number of orders, Growth in stock value |
| 2018 | 232.887 | Expansion of machine learning usage in recommendations | Advertising expenses to sales ratio |
| 2019 | 280.522 | Implementation of automated robots in warehouses, expansion of AWS | Increase in net profit, Growth in international influence |
| 2020 | 386.064 | Strengthening the use of analytics and personalization in sales | Number of new users, Reduction in delivery expenses |
| 2021 | 469.820 | Integration of drone technologies in delivery, development of Amazon Go | Increase in environmental responsibility, Number of claims |
| 2022 | 513.98 | Integration of drone technologies in delivery, development of Amazon Go | Increase in environmental responsibility, Number of claims |

Amazon is one of the largest and most successful online retailers globally. The company actively implements digital technologies to optimize its business processes and enhance productivity. An example includes using machine learning to personalize product recommendations for customers. Amazon utilizes customer purchase data and their behavior on the website and mobile app to create tailored recommendations that align with each customer's interests, increasing sales and customer satisfaction.

Another example is the use of artificial intelligence to automate logistics tasks. Amazon employs robots to sort goods in warehouses and deliver products to customers, improving logistics efficiency and reducing costs.

Digital technologies can effectively optimize business processes and increase productivity for various companies, including Amazon. In the modern business environment, using digital technologies is a key factor for optimizing business processes, enhancing efficiency, and ensuring customer satisfaction.

A notable example of the successful implementation of digital solutions is the company Amazon.

The company actively leverages digital technologies to optimize its supply chain. It implements innovative solutions for logistics management and efficient inventory control, ensuring an optimal flow of goods from suppliers to end consumers.

Similarly, Amazon employs algorithms and artificial intelligence to create personalized customer offerings. The company provides individually tailored proposals by analyzing data on purchases and customer behavior, improving the overall customer experience.

These practices illustrate how Amazon utilizes advanced digital technologies to enhance its efficiency and create individualized and personalized interactions with customers, showcasing its high level of innovation in the business sector. Analyzing the use of digital technologies in the company Amazon highlights their significance in two key aspects: supply chain optimization and creating a personalized customer experience.

This underscores that companies integrating digital innovations can achieve improvements in operational efficiency and ensure a higher level of customer satisfaction. Amazon is a successful example of utilizing digital technologies to attain these goals, reaffirming their importance in modern business.

These examples demonstrate that digital technologies can effectively optimize business processes and improve productivity. Companies that implement digital technologies can gain several advantages, such as:

Increased efficiency and productivity: Digital technologies can automate tasks previously done manually, leading to increased efficiency and productivity.

Improved customer service quality: Digital technologies can help companies provide more personalized and efficient customer service.

Cost reduction: Digital technologies can assist companies in reducing operational and management costs.

Companies that want to remain competitive in the digital world must adopt digital technologies.

Let's consider how changes in innovation development impact financial and economic indicators and how this is reflected in their financial position and market success. Understanding this interaction becomes a key factor for business leaders aiming to achieve sustainable growth and high competitiveness in their industry.

The following table presents Amazon's financial and economic indicators over the years and key innovation development indicators such as the number of patents, R&D expenses, and the percentage of R&D expenditure to revenue.

*Table 3. Indicators of financial and economic development and innovation for foreign and Ukrainian companies*

| Year | Revenue, billion $ (Y) | Net Income, billion $ (X1) | Assets, billion $ (X2) | Market Capitalization, billion $ (X3) | Number of Patents (X4) | R&D Expenses, billion $ (million $ for Ukrainian companies) (X5) | R&D Expenditure as a Percentage of Revenue, % (X6) | Number of New Products/Services (X7) |
|---|---|---|---|---|---|---|---|---|
| | Financial and Economic Indicators | | | Innovation Development Indicators | | | | |
| Amazon | | | | | | | | |
| 2013 | 74,5 | 0,27 | 40,2 | 145 | 586 | 6,6 | 8,9% | 3 |
| 2014 | 88,9 | -0,24 | 54,5 | 150 | 678 | 9,1 | 10,2% | 4 |
| 2015 | 107,0 | 0,59 | 69,4 | 295 | 722 | 12,5 | 11,7% | 6 |
| 2016 | 136,0 | 2,37 | 83,4 | 393 | 1208 | 16,1 | 11,8% | 8 |
| 2017 | 177,9 | 3,03 | 131,3 | 565 | 1949 | 22,6 | 12,7% | 11 |
| 2018 | 232,9 | 10,07 | 162,6 | 797 | 2365 | 28,3 | 12,2% | 15 |
| 2019 | 280,5 | 11,58 | 220,0 | 917 | 2928 | 35,9 | 12,8% | 18 |
| 2020 | 386,1 | 21,33 | 321,2 | 1601 | 3622 | 42,8 | 11,1% | 23 |
| 2021 | 469,8 | 33,36 | 470,0 | 1469 | 5989 | 57,0 | 12,1% | 31 |
| 2022 | 504,0 | 27,68 | 579,5 | 1204 | 6782 | 73,1 | 14,5% | 37 |
| 2023 | 585,0 | 37,28 | 692,3 | 1394 | 7456 | 89,7 | 15,3% | 42 |

**General Findings:*

*Revenue Growth: All companies experienced substantial revenue growth over the years, indicating the positive impact of innovation on financial performance.*

*Profitability: Net income for most companies increased, reflecting the successful implementation of innovative strategies.*

*Asset Expansion: The companies' assets grew consistently, highlighting their ability to leverage innovation for business expansion.*

*Market Capitalization: Market capitalization generally surged, indicating investor confidence in the companies' innovative initiatives.*

*R&D Investment: Increased R&D expenses suggest a commitment to innovation, contributing to developing new products and services.*

*Patent Acquisition: The rising number of patents showcases a focus on intellectual property, contributing to technological leadership.*

*R&D Efficiency: The percentage of R&D expenses to revenue indicates how efficiently companies allocate resources for innovation.*

*New Products/Services: The growth in the number of new products/services underscores companies' adaptability and responsiveness to market demands.*

The table provides a comprehensive overview of the financial performance of major companies, including Amazon, over the years. It delves into key innovation indicators, offering valuable insights into the dynamic interplay between innovation, financial well-being, and market success.

The overarching theme is one of positive growth and profitability. All companies showcased impressive revenue growth over the years, underscoring the constructive influence of innovation on expanding business operations. The increasing net incomes for most companies further highlight the profitability of effective innovation strategies.

Additionally, the consistent asset growth across companies signals a strategic approach to leverage innovation for sustainable business development. The surge in market capitalization reflects investor confidence in the companies' innovative initiatives, contributing to an enhanced market position.

The commitment to innovation is evident through increased research and development (R&D) expenses, emphasizing dedication to staying at the forefront of technological advancements. The rising number of patents acquired by these companies positions them as leaders in technology and innovation, highlighting a focus on intellectual property.

Efficient resource allocation is indicated by the percentage of R&D expenses to revenue, which indicates how companies optimally allocate resources for innovation, ensuring optimal returns. The growth in new products and services these companies introduce demonstrates their agility and responsiveness to evolving market demands.

In synthesis, the positive correlation between innovation development and financial success underscores innovation's pivotal role in shaping modern businesses' financial and economic landscape.

Companies that significantly invest in R&D, acquire patents, and introduce new products and services are better positioned for revenue growth, profitability, and overall market competitiveness. Intellectual property leadership, reflected in the acquisition of patents, contributes to establishing technological dominance and sustaining a competitive edge in the market.

The implications for business strategy are clear. The findings emphasize that companies must prioritize and invest in innovation, as it directly influences financial performance and market capitalization. Continuous commitment to R&D and the acquisition of patents is crucial for maintaining a cutting-edge position in the industry.

The ability to introduce new products and services signifies adaptability and responsiveness to market dynamics, fostering sustained growth.

The comprehensive analysis reinforces the strategic significance of innovation in achieving and sustaining financial success. Companies that strategically integrate innovation into their business models experience robust revenue growth and profitability and establish themselves as leaders in their respective industries, positively impacting market capitalization and overall market success.

The authors analyzed financial, economic, and innovation development indicators for each researched enterprise from 2013 to 2023. An example of the initial data for the entire company is presented in Table 11.

Based on the provided data, the authors analyzed the interdependence and correlation between financial-economic and innovation development indicators. Also, they constructed an econometric model (the notations for variables Y and X1-7 are indicated in Table 11):

$$Y = 95.6162 + 0.4639X\,1 + 0.01553X\,2 + 0.0734X\,3 + 0.01256X\,4 + 2.5211X\,5 - 613.985 \quad (1)$$

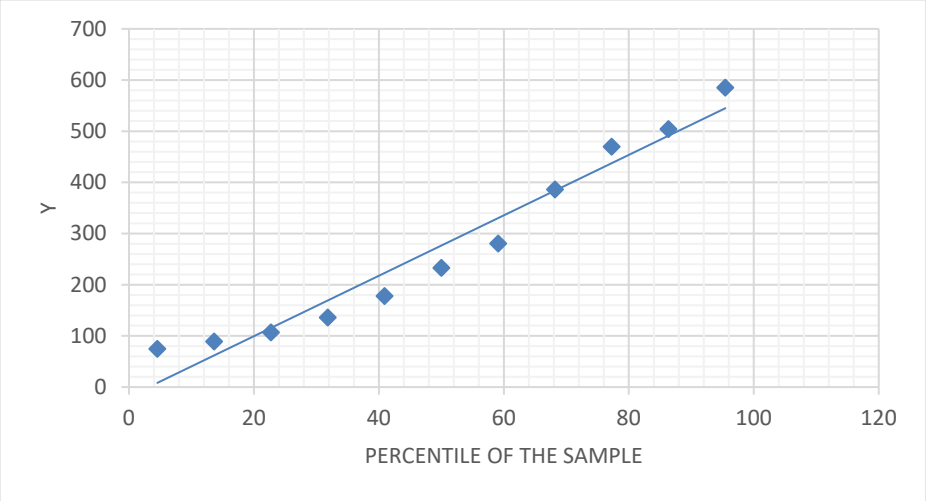


*Figure 8. The graph of the normal distribution for Amazon*

Increasing X1 by 1 unit leads to an average increase in Y by 0.464 units. Increasing X2 by 1 unit leads to an average increase in Y by 0.0155 units.

Increasing X3 by 1 unit leads to an average increase in Y by 0.0734 units.

Increasing X4 by 1 unit leads to an average increase in Y by 0.0126 units. Increasing X5 by 1 unit leads to an average increase in Y by 2.521 units.

Increasing X6 by 1 unit leads to an average decrease in Y by 613.685 units. Increasing X7 by 1 unit leads to an average increase in Y by 3.179 units.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | r(x1x2) | r(x1x3) | r(x1x4) | r(x1x5), | | r(x1x7) |
| r(x1x2) | 1 | r(x2x3) | r(x2x4) | r(x2x5) | r(x2x6) | r(x2x7) |
| r(x1x3) | r(x2x3) | 1 | r(x3x4) | r(x3x5) | | r(x3x7) |
| r(x1x4) | r(x2x4) | r(x3x4) | 1 | r(x4x5) | r(x4x6) | r(x4x7) |
| r(x1x5), | r(x2x5) | r(x3x5) | r(x4x5) | 1 | r(x5x6) | r(x5x7) |
| | r(x2x6) | | r(x4x6) | r(x5x6) | 1 | r(x6x7) |
| r(x1x7) | r(x2x7) | r(x3x7) | r(x4x7) | r(x5x7) | r(x6x7) | 1 |

(2)

Based on the maximum coefficient $\beta 5 = 0.382$, it is concluded that the factor X5 has the most significant impact on the outcome Y. The statistical significance of the equation is verified using the coefficient of determination and the Fisher criterion. It is established that in the investigated situation, 99.99% of the total variability of Y is explained by the variation in factors Xj. It is also found that one or more parameters of the model are statistically insignificant. The most significant impact on the dependent variable is attributed to factor X7 ($r = 0.9944$); therefore, when constructing the model, it enters the regression equation first. According to the pairwise correlation coefficient matrix with $|r|>0.7$, it indicates multicollinearity among factors and the need to exclude one of them from further analysis.

The economic models presented for the selected companies (Amazon, Siemens, Tesla, Microsoft, PrivatBank, Nova Poshta, Rozetka, SoftServe) [14] aim to quantify the impact of innovation development indicators on their respective financial and economic indicators. Each model provides a set of coefficients representing the average change in the dependent variable (Y) for a one-unit increase in each independent variable (X).

For Amazon, the model suggests that the factor X5 has the most significant impact on Y, with a coefficient of 2.5211. The statistical significance of the equation is supported by a coefficient of determination indicating that the variation in the Xj factors explains 99.99% of the total variability of Y. However, the need to address statistically insignificant parameters and multicollinearity among factors, particularly X7, is highlighted.

In summary, while these economic models provide valuable insights into the relationships between innovation development indicators and financial/economic outcomes for the respective companies, carefully considering statistically insignificant parameters and multicollinearity is crucial for robust and reliable interpretations. Further refinement and validation of these models may be necessary to represent the complex interactions involved accurately.

## 4. Discussion

This study analyzes the impact of digital transformation on business process management in various economic sectors. Quantitative and qualitative methods were applied to collect and process data from eight enterprises: Four global brands and four Ukrainian companies. The findings were compared with previous studies conducted in other countries and regions [21], [23].

Results demonstrated that digital transformation significantly impacts business process management, enhancing efficiency, quality, innovation, and enterprise competitiveness. This analysis revealed that digital transformation necessitates companies to adapt to evolving external environments, develop novel strategies and business models, implement new technologies and platforms, cultivate new competencies and skills, and effectively engage and retain customers and employees. Furthermore, the study identified various challenges and risks associated with digital transformation, including data security breaches, ethical dilemmas, resistance to change within the organization, market instability, resource inadequacy, and infrastructure limitations.

These findings align with previous research, confirming that digital transformation is a crucial success factor for modern enterprises. For instance, Gupta, H *et al.* [1], [25] defined digital transformation as using digital technologies to create new or modify existing value for customers, partners, and employees. Bharadwaj *et al.* [2], [26] proposed an integrated perspective on digital transformation, considering the role of digital capabilities, platforms, ecosystems, and culture. Plekhanov *et al.* [3] viewed digital transformation as using digital technologies to create new or enhance existing products, processes, strategies, and business models. Oliinyk, M. [4] examined digital transformation as using digital technologies to develop new or modify existing interactions, transactions, networks, and ecosystems. Florek-Paszkowska *et al.* [5] developed a conceptual framework for understanding and managing the challenges of digital transformation in a complex and uncertain environment.

The results also complement previous research focusing on the peculiarities of digital transformation in Ukraine and Georgia. For example, Pimonenko, Serhii, *et al.* [6] analyzed global trends and prospects of digitizing business process management and identified significant issues and ways to address them in Ukraine. Pimonenko [6] explored the theoretical and methodological aspects of digitizing business process management, identifying its main advantages and disadvantages. Ha, L. T *et al.* [8] examined the digitalization of business process management in the post-pandemic economy and identified key enterprise challenges and opportunities. Kharazishvili *et al* [9] investigated theoretical foundations, global trends, and prospects of digitizing business process management in Ukraine. Vedernikov [10] explored the digitization of business process management as a factor in enhancing the competitiveness of enterprises.

The article has practical significance as it can assist enterprises in developing and implementing effective strategies for digital transformation, providing them with a competitive advantage in a dynamic and unpredictable market environment. The research also holds theoretical value as it expands the scientific understanding of digital transformation's essence, factors, mechanisms, and consequences for business process management.

## 5. Conclusion

In conclusion, digitization is pivotal in reshaping customer interaction methods and significantly influences contemporary business operations. As detailed in Table 1, integrating diverse digital technologies establishes new benchmarks for efficiency, innovation, and customer engagement, driving competitiveness in the digital era.

Analyzing the development of specific technologies reveals their substantial impact on diverse industries. Generative AI, for instance, demonstrates remarkable growth, with a projected market size reaching USD 118.06 billion by 2032. This technology finds extensive applications in media and entertainment, healthcare, and business and financial services. Additionally, the surge in online sales, propelled by digitization, showcases customers' preference for convenient and accessible online purchasing.

The proliferation of IoT devices, expected to surpass 29 billion by 2030, underlines the expansion of this technology and its transformative effect across industry verticals. Similarly, the projected growth of the global IoT market to over $621 billion by 2030 emphasizes its integral role in the evolving digital landscape.

With its consistent growth, blockchain technology is anticipated to reach a value of $162.84 billion by 2027. Despite being utilized by a relatively small percentage of the global population, the blockchain industry holds significant market worth, indicating its widespread adoption and impact.

The provided examples illustrate how digitization influences customer interaction, leading to personalized shopping experiences, real-time support through chatbots, and the analysis of customer data for personalized recommendations. Companies that embrace digital technologies gain a competitive edge, with the potential for higher profitability and strategic importance.

To successfully implement digital innovations, companies should consider strategies such as creating dedicated teams, leveraging external expertise, or combining internal and external resources. Strong leadership, an innovation culture, and a clear understanding of goals are crucial for success.

Survey results from Ukrainian companies highlight challenges such as a lack of experience, financial costs, and potential cultural changes during digital innovation implementation. Conversely, successful companies prioritize strategies, innovation culture, investment in digital technologies, and employee readiness for changes.

In the rapidly evolving digital landscape, companies strategically implementing digital innovations are positioned for enhanced competitiveness, profitability, and strategic relevance. The findings underscore the transformative power of digitization in modern business practices, making it a crucial focus for companies seeking sustained success in a dynamic environment.

Implementing digital technologies significantly transforms customer interaction methods, influencing purchasing processes, support, and brand engagement.

Key digital technologies such as artificial intelligence, the IoT, blockchain, augmented reality, data analytics, and interaction set new standards for efficiency, innovation, and customer engagement. Companies leveraging these technologies optimize processes, enhance services, and maintain competitiveness in the digital era.

However, each company adopts an individualized approach to technology implementation, reflecting the specificity of its industry and business model. Analysis of Amazon's financial and technological indicators indicates a steady increase in profits associated with the strategic implementation of digital technologies.

Global market development trends indicate significant growth in artificial intelligence, the IoT, and blockchain technologies. Surveys of Ukrainian companies underscore the importance of developing strategies, fostering a culture of innovation, and investing in technologies to successfully implement digital innovations.

Integrating digital technologies becomes a key strategy for enterprises striving to thrive in the digital age. The choice and implementation of specific technologies depend on industry dynamics, business models, and strategic objectives. Companies must actively address challenges and promote an innovation culture to harness the full potential of digitization.

The article presents a comprehensive analysis of Amazon's financial and innovation development indicators. The authors utilized statistical methods and econometric models to investigate the interdependence and correlation between various factors influencing the companies' performance.

The study supports the significance of innovation in driving financial and economic success for various companies. It positively impacts business expansion, profitability, asset growth, market capitalization, and other aspects. Companies emphasizing innovation, patent acquisition, and product introduction are more likely to achieve revenue growth, profitability, and market competitiveness. Investing in research and development and prioritizing intellectual property helps organizations establish themselves as technological leaders, ensuring a sustained competitive advantage in the marketplace.

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