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Possibilities of Implementing Digital Technologies in Post Office Enterprises

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Annotation
This study includes an analysis of digital technologies to be introduced to post office enterprises. Modern digital technologies make mail services more efficient and fast. During the study, the main digital technologies used in postal Enterprises, their advantages and areas of application were studied. The results showed the importance of digital technology in the modernization of postal services.

Keywords: Postal Communication, Digital Technology, Postal enterprises, modernization, efficiency.

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INTRODUCTION

Today, as a result of the rapid development of digital technologies, postal services are also adapting to modern requirements and introducing new technologies.Postal communication is considered one of the most ancient and reliable means of communication in the history of mankind.These changes serve to make the activities of postal enterprises more efficient and fast, provide quality customer service and increase competitiveness [1].

The introduction of digital technology into the field of Postal Communication offers a number of advantages. In particular, the speed of the provision of services increases, costs decrease, the quality of service improves, and new opportunities are created for customers [2]. At the same time, the process of introducing digital technologies also presents specific difficulties and problems, such as retraining employees, ensuring data security and requiring large amounts of investment [3].

The purpose of this study is to identify key digital technologies to be introduced to postal enterprises, analyze their advantages and areas of application, and study the impact of these technologies on the effectiveness of postal services.

LITERATURE ANALYSIS

There has been much research on digital technologies to be introduced to post office enterprises. This section analyzes the main literature on the topic.

Jang et al (2020) studied the process of digitizing postal services in their research [4]. The authors identified key digital technologies used in postal enterprises and evaluated their effectiveness. According to the results of the study, artificial intelligence, big data analysis and cloud technologies are the most promising directions in the modernization of postal services.

Lee and Howe (2021) have researched the importance of digital transformation in the field of postal communication [5]. They conclude that the introduction of digital technologies significantly increases the competitiveness of postal enterprises and makes it possible to create new types of services.

Smirnov (2022) in his work studied the main problems and difficulties in the process of introducing digital technologies in postal enterprises [6]. The author paid special attention to the issues of re-education of employees, ensuring data security and large-scale investments.

Andersen et al (2023) evaluated the economic effectiveness of digitalization of postal services [7]. According to the results of the study, the implementation of digital technologies led to an average decrease in operating costs of postal enterprises by 15-20%, while the speed of Service increased by 30-40%.

Chen et al (2022) researched the role of artificial intelligence technologies in postal services [9]. The authors analyzed the capabilities of artificial intelligence to automate address detection, dispatch sorting, and customer service processes.

Kumar and Sharma (2023) studied the prospects for the application of blockchain technology in postal Enterprises [10]. Researchers have noted the importance of the blockchain in ensuring the security of mails and increasing transaction transparency.

METHODOLOGY

This study uses the following methodology to study digital technologies to be introduced to postal enterprises:

Literature analysis: scientific articles, books and reports on the topic are studied in depth. Through this, the main digital technologies used in the field of Postal Communication, their advantages and areas of application are identified.

Systematic analysis: the activities of Postal enterprises are studied on the basis of a systematic approach. Through this approach, the impact of digital technologies on various branches of postal services is analyzed in a complex way.

Statistical data analysis: statistical data on the performance indicators of Postal enterprises, the dynamics of the introduction of digital technologies and their effectiveness are collected and analyzed.

Case study: the experience of postal enterprises that have successfully introduced digital technologies is studied. Through this, best practices and innovative approaches are identified.

Comparative analysis: the experience of postal enterprises in different countries with the introduction of digital technologies is studied in a comparative way. Through this, international trends and best practices are identified.

Forecasting: based on the data collected, future development trends of digital technologies in the field of postal communication are forecast.

Through the application of this methodology, digital technologies that are introduced to postal enterprises are studied comprehensively and in depth. This makes it possible to achieve research goals and draw reasonable conclusions.

RESULTS AND DISCUSSION

In the course of the study, the main digital technologies that are being introduced to postal enterprises were identified and their impact was analyzed.

Robotics and automation:

Robotics systems are significantly increasing the operational efficiency of postal enterprises. The following table lists the main indicators of the introduction of robotics:

Table 1. The main indicators of the introduction of robotics[11]

Score	Traditional method	When robotics is applied
Dispatch sorting speed	8,000 p/h	30,000 p/h
Number of errors	1-2%	Less than 0.1%
Operating costs	Base	Decrease by 30-40%
Productivity	Base	3-4 equal increases

Developed by the author.

The above results show that the introduction of digital technologies makes it possible to significantly increase the efficiency of postal enterprises. However, this process also causes specific difficulties and problems:

Re-education of employees: it takes time and resources to master new technologies.

Data security: the need arises to strengthen cybersecurity measures.

Large investments: in order to introduce technologies, it is necessary to attract financial resources.

Legal issues: it is necessary to improve the legal framework related to new technologies.

The introduction of digital technologies into Postal Enterprises makes it possible not only to increase operational efficiency, but also to change the entire business model. According to the results of the study, the following additional trends and results were identified.

The creation of digital platforms and ecosystems is becoming an important direction in the activities of postal enterprises. Now they are forming ecosystems that combine different services, transforming from simple shipping companies to digital platforms. These ecosystems include e-commerce platforms, payment systems, logistics services, and digital identification and authentication systems. Such an approach allows postal enterprises to create new sources of income and offer additional value for customers.

Significant innovation is also observed in the field of last mile delivery. This is the most expensive and complex part of postal services, and digital technologies are also making significant changes in this area. While autonomous vehicles allow automation of some of the delivery, drones are providing fast delivery to remote and difficult areas. New approaches are also being introduced, such as predictive delivery (predictive delivery), which uses artificial intelligence to predict the customer's time to stay at home[12].

Significant changes are also observed in the field of international cooperation and standardization. Digital technologies are taking international cooperation between postal enterprises to a new level. Priority in this process is the development of Universal Postal data exchange (UPU) standards, the creation of blockchain-based international dispatch tracking systems and the formation of cooperation platforms for the development of cross-border e-commerce.

Focusing on environmental sustainability issues is also an important result of the introduction of digital technologies[13]. Postal enterprises are actively using digital technologies to reduce the environmental impact of their activities. Measures such as reducing fuel consumption, developing

recyclable and environmentally friendly packaging materials and introducing "green" logistics concepts are being implemented in this direction by optimizing delivery routes.

CONCLUSIONS

Digital technologies are radically changing the activities of postal enterprises and increasing their efficiency.

AI, IoT, Blockchain, Big Data Analysis and robotics are playing a key role in the modernization of postal services.

As a result of the introduction of digital technologies, operating costs are decreasing, the speed and quality of Service is increasing, new types of services are emerging.

For the successful implementation of digital technologies, a systematic approach is necessary, including re-education of employees, ensuring data security and improving the legal framework.

In the future, artificial intelligence, robotics and blockchain technologies are expected to play a decisive role in the further development of postal services.

In general, the introduction of digital technologies is not only a necessity for postal enterprises, but also a key factor in future success. By effectively managing this process, postal enterprises will be able to take their activities to a new level and provide services that meet modern requirements.

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