Prospects of implementation of artificial intelligence technologies in the quality management system of ukrainian enterprises

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In the context of globalization and the rapid progress of science and technology, especially in the field of artificial intelligence (AI), attempts for management also requires a lot of changes and optimization. There are a lot of innovations that makes business process much easier and automatic. However, sphere of application of AI for QMS proses management is still not well developed in Ukraine. Advanced AI products, open new prospects for optimization of management processes, allowing to expand managers' capabilities, intensify the decision making process, etc.

This study is intended to analyze the potential of AI-systems for integration in management, particularly to identify the advantages and potential limitations of using AI in the field of quality system management, as well as to develop recommendations for the effective use of AI assistants for the Ukrainan enterprices.

Nowadays Ukraine strives to be up today with all worldwide progress in IT sphere. Therefore the Concept of Artificial intelligence development was adopted by the Cabinet of Ministers of Ukraine at 2020. Thus AI is going to become one of the priorities in the field of science and technology research [1].

Regardless of war and its profound impact on the Ukrainian market, as well as the strained capabilities of local enterprises, businesses in Ukraine continue to evolve, adapt, and grow. New companies are emerging, finding innovative ways to navigate the challenges they face. One of the critical factors for this progress is the implementation of a robust Quality Management System (QMS), which serves as a cornerstone for ensuring efficiency, effectiveness, and global recognition. A well-structured QMS is not merely a regulatory requirement but a strategic framework that enables organizations to consistently meet customer expectations while fostering continual improvement.

In Ukraine, the foundational standard for Quality Management Systems is the DSTU ISO 9001. This standard provides a comprehensive set of guidelines and principles aimed at ensuring quality across all levels of an organization. It emphasizes a process-oriented approach, which encourages businesses to identify, manage, and optimize their processes. The standard encompasses a broad array of processes

including, but not limited to, leadership commitment, risk-based thinking, resource management, and continual improvement through internal audits and feedback mechanisms [2].

However, in the era of rapid technological advancement, the landscape of QMS is undergoing significant transformation, particularly with the introduction of artificial intelligence (AI) technologies. The integration of AI into Enterprise Resource Planning (ERP) systems has demonstrated substantial potential in revolutionizing QMS processes. Following an extensive review of relevant literature and analysis of global best practices, several promising prospects for AI applications in QMS within Ukrainian enterprises have emerged [3].

One of the most significant advantages of AI integration into QMS is the automation of routine and repetitive tasks within business process management. This shift not only accelerates operations but also reduces the likelihood of human error, leading to more consistent outcomes. Additionally, the automation of tasks frees up valuable human resources, allowing personnel to focus on higher-level decision-making and strategic initiatives. As a result, organizations can achieve enhanced operational efficiency and better resource allocation [4].

Moreover, AI can play a pivotal role in predictive analytics, providing real-time insights into potential bottlenecks or quality issues before they escalate into more significant problems. By leveraging vast amounts of data, AI systems can detect patterns and anomalies that might otherwise go unnoticed, enabling businesses to make proactive adjustments and maintain high-quality standards[3].

Yet, the adoption of AI-based systems is not without its challenges. The most prominent limitation is the necessity for a sufficient amount of high-quality data to train AI algorithms. Without access to reliable, clean data, the effectiveness of AI systems can be compromised, leading to inaccurate results or system failures. Furthermore, the integration of AI with existing legacy systems often presents technical difficulties. Many Ukrainian enterprises rely on outdated infrastructures, making seamless integration a complex and resource-intensive task[4].

In addition, the successful implementation of AI technologies demands substantial modernization efforts. This often entails upgrading hardware and software, as well as re-engineering business processes to align with the capabilities of AI. Alongside this, there is a pressing need for specialized personnel training. Employees must be equipped with the skills to operate and manage AI systems, which may require investment in new training programs and knowledge-building initiatives [3,4].

Based on the findings of the present review and the outcomes of the conducted research, the following conclusions can be drawn: Despite the challenges outlined above, the transformative potential of Artificial Intelligence (AI) in Quality Management Systems (QMS) is indisputable. By adopting AI-driven innovations, Ukrainian enterprises have the opportunity to optimize their operations and strengthen their competitive position in an increasingly globalized marketplace. The future trajectory of QMS in Ukraine, therefore, depends on the capacity of businesses to effectively leverage AI technologies while addressing the complexities associated

with data management, system integration, and workforce development.

Ключові слова: Quality management system; AI technologies; management.

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