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- інтелектуальні системи управління та аналізу даних;
- використання інформаційних технологій та штучного інтелекту в освіті;
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## MANAGING A COMPANY'S PRODUCT RANGE USING ARTIFICIAL INTELLIGENCE

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*The paper examines contemporary approaches to managing a company's product range using artificial intelligence technologies. It analyses the theoretical foundations of product range policy and outlines the potential of AI in demand forecasting, inventory optimization, personalized recommendations and competitive environment analysis. Practical examples of the application of intelligent systems in retail, e-commerce, manufacturing and logistics are provided. The advantages and risks of implementing AI are identified, as well as the prospects for development in combination with Big Data and IoT technologies. The use of AI provides enterprises with significant competitive advantages and facilitates the transition to proactive product range management.*

In today's market economy, product range management has become one of the key factors in a company's competitiveness. Constant shifts in demand, globalization and intense competition are forcing companies to seek new tools for effective decision-making. One such tool is artificial intelligence (AI), which enables the automation of data analysis, forecasting and the optimization of product range policy. The use of AI facilitates a faster response to market changes and the development of a more flexible growth strategy. This enables companies not only to reduce costs but also to increase customer satisfaction through personalized offers. As a result, AI is becoming a key factor in improving management efficiency and ensuring the long-term stability of a business. A company's product range policy is a key element of its marketing strategy. It determines which products are offered to consumers, in what quantities, and in what combinations. Traditional management methods include statistical sales analysis, ABC and XYZ analysis, as well as forecasting based on historical data and managers' intuition. However, the modern market is highly dynamic, which makes these methods less effective. An important challenge is striking a balance between the breadth of the product range, which ensures variety of choice, and its depth, which allows specific customer needs to be met. Excessive expansion of the product range can lead to increased costs and management complexity, whilst a range that is too narrow limits the company's potential.

AI helps companies not only to respond to changes in product ranges, but also to anticipate them. Thanks to machine learning algorithms, it is possible not only to forecast demand, but also to model various market development scenarios. This enables strategic decisions to be made based on data, rather than just intuition. Furthermore, AI can integrate data from various sources: sales, social media, and macroeconomic indicators. This approach provides comprehensive analysis and allows even subtle signals of changes in consumer behaviors to be considered.

AI opens up new possibilities for product range management, namely: demand forecasting – machine learning algorithms analyses large datasets, taking into account seasonality, trends and external factors; inventory optimization – AI-based systems

minimize storage costs and prevent stock shortages; personalized recommendations – recommendation systems generate tailored suggestions for customers, boosting satisfaction levels; competitive analysis – automated monitoring of competitors' prices and product ranges enables a rapid response to market changes.

In large retail chains, AI is used to automatically generate orders for suppliers, thereby reducing the risk of stock shortages or surpluses. In e-commerce, recommendation system algorithms increase the average customer spend by suggesting products that are most likely to interest them. In manufacturing companies, AI helps determine which products should remain in production and which should be removed from the range due to low demand. In logistics, intelligent systems optimize delivery routes and warehouse stock management.

The main advantage is the ability to process large volumes of data quickly and generate accurate forecasts. This reduces storage costs, minimizes the risk of stock shortages and improves customer satisfaction. At the same time, there are risks: implementing AI requires significant investment, and the quality of the results depends on the accuracy and completeness of the data. Furthermore, there are concerns regarding the protection of personal data.

The active integration of AI with Big Data and IoT technologies enables businesses to access real-time data and make decisions instantly. Generative AI can serve as a tool for creating new products, predicting their success and even modelling consumer behaviors. As a result, product range management is gradually becoming an automated process, where the manager's role lies in strategic oversight and making key decisions.

The use of AI in product range management is not merely a technological innovation, but a strategic necessity for modern businesses. It delivers competitive advantages, boosts efficiency and enables rapid adaptation to market changes. Combining technological solutions with managers' professional expertise creates an optimal management model that promotes long-term stability and business growth.

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