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Approaches to improve the effectiveness of state regulation of e-commerce in Uzbekistan

Abstract

Main Problem: The rapid growth of e-commerce in Uzbekistan presents challenges in business management, regulatory oversight, and the development of new operational models. Traditional regulatory and decision-making approaches are often inefficient in addressing the complexities of the digital economy. To enhance governance and improve market efficiency, the introduction of artificial intelligence (AI) is essential.

Objective: This article examines the potential of AI in Uzbekistan's e-commerce sector to optimize business management, create innovative models, and enhance government regulation. The study focuses on developing mathematical models for predicting trends and generating alternative management decisions using a knowledge base and principles of product logic.

Methods: The research employs mathematical modeling techniques to design AI-driven predictive tools. These models utilize a knowledge base and product logic principles to support automated decision-making. Additionally, AI applications in state regulation are analyzed to evaluate their impact on market monitoring, violation detection, and administrative efficiency.

Results and Their Significance: The study highlights that integrating AI into e-commerce regulation can significantly enhance market oversight, improve the detection and prevention of violations, and streamline administrative procedures. The implementation of a knowledge base and product logic principles enables automation, leading to more accurate and efficient decision-making. Ultimately, the study proposes modern e-commerce management methods that strengthen governance, support strategic development, and enhance regulatory effectiveness. These advancements contribute to the growth of Uzbekistan's digital economy, creating a more favorable environment for businesses and consumers.

Keywords: Public administration, management, E-commerce, digital economy, Uzbekistan, artificial intelligence, mathematical rules, digital technologies, management methods.

Introduction

The global e-commerce industry, which is an integral part of the digital economy, is adopting new regulations and policies to regulate, improve infrastructure and ensure widespread access to the Internet. The sector is expected to generate revenue of \$4198.5 trillion by 2025. China has taken the lead in the e-commerce market and will maintain its leadership until 2025. However, there are challenges such as data security, cybercrime, taxation, and consumer rights. Therefore, it is crucial to ensure flexibility in e-commerce management by adapting to changes in the technological and economic space [1].

Research is underway in the global academic environment to improve e-commerce governance, cybersecurity regulation, standards development, infrastructure and consumer behavior. These efforts are aimed at improving the e-commerce environment, including taxation, customs procedures, intellectual property protection and data security [2].

In recent years, Uzbekistan has implemented reforms aimed at enhancing e-commerce, digital economy, cybersecurity, and consumer data protection. The country's president has proposed expanding partnerships under the "Economic Cooperation Organization - 2025" program, emphasizing the importance of strengthening trade relations through the adoption of digital technologies and e-commerce. Thus, there is a need to adopt a systemic approach to e-commerce management, optimize solutions, develop effective strategies, and improve management mechanisms using digital technologies [3].

Various aspects of the digital economy and its management are covered in the works of various authors, including Yuzhakova, Talapin, Dobrolyubova, Kamolov and Artyomov. Works by

Kobelev, Pirogov, Bystrova and others consider certain aspects of e-commerce. Works by Dobrolyubova, Yuzhakova and Aleksandrov deal with issues of public administration [4]. Methods for assessing the effectiveness of digital technologies are presented in the works of Kuzovkova, Kuznetsova and Vorobyova. Studies of the development of international trade and economic relations are conducted by Islamov, Karimov and others. Examples of econometric analysis in the field of ICT are presented in the works of Chepelev, Bobokhuzhayev and others [5]. Mathematical modeling in public administration is covered in the works of Kabulov and other researchers.

Methods and materials

Scholars have done little research on the mechanisms of public administration in e-commerce in the transition to a digital economy. This includes the lack of management systems using digital technologies for strategic planning, control and adjustment, as well as methods for assessing the effectiveness of management decisions and information collection systems for monitoring the development of e-commerce. The lack of research served as the basis for choosing the research topic, defining the goals and objectives of the study.

In the period of digitalization of society, it is necessary to consider "state management of e-commerce" as a unified system of planning, coordination and control of activities in this sphere using digital technologies. World experience shows that the inclusion of standardization, licensing, certification, insurance and innovative management methods in the system of e-commerce regulation is important to create favorable conditions for all economic actors. Uzbekistan has its own peculiarities in the management system related to historical and cultural conditions, as well as the active use of ICT. The use of artificial intelligence technologies can improve regulatory mechanisms and facilitate the development of managerial decisions in the sphere of e-commerce.

It is proposed to introduce a set of artificial intelligence systems into the existing systems of e-government and e-commerce aimed at optimizing the management of business processes and the development of new organizational models, which will lead to better government regulation in the field of e-commerce. The use of artificial intelligence will allow to create effective mechanisms of management and generation of recommendations of management decisions, contributing to the development of e-commerce and improving the quality of state regulation [6].

Results

Digitalization and implementation of artificial intelligence in the state management of e-commerce can accelerate the growth rate of commerce and GDP of the country. The use of a set of artificial intelligence systems for management and formation of data-based management tools reduces the cost of collecting and analyzing information, provides access to relevant data and promotes informed management decisions.

The conceptual scheme of using artificial intelligence to support managerial decisions in e-commerce is proposed. It consists of three blocks: criteria processing, decision making and decision support. The criteria processing block defines problems, identifies objectives and criteria, and creates lists of alternative criteria. In the decision-making block, a problem is developed, a solution method is selected, and alternative solutions are evaluated. If the result is positive, the solution is passed to the support unit where it is verified and accepted and executed. If the result is negative, the process moves to revise the problem and change the model. The entire process involves identifying implementers, setting deadlines and resources, evaluating intermediate results, and adjusting implementers, deadlines, and resources.

It is proposed to include decision adequacy checking at the stage of criteria processing and decision support, which helps to avoid incorrect decisions and optimize management decisions with the help of mathematical models.

In government structures, data are used for decision making, evaluating effects and identifying hidden relationships. Data analysis, including the use of neural networks, helps to formulate hypotheses and propose solutions for consideration by relevant officials.

Discussion

Mathematical models for forecasting and development of managerial decision-making options based on knowledge base and production logic are developed. Productive logic includes variables, factors and target values, where successfully tested mathematical models are used to solve problems.

An information system using artificial intelligence is able to use logical formulas from the knowledge base such as conjunction, disjunction, consequence, equivalence, depending on the tasks at hand. This allows it to select inference rules for different scenarios and build an optimal strategy aligned to the main objective. While executing the strategy, the system evaluates the results and

corrects the actions to eliminate errors. The application of artificial intelligence helps to optimize the use of resources and time, which leads to an increase in the efficiency of problem solving [7].

The application of artificial intelligence at various levels of government contributes to better coordination and control in the sphere of e-commerce. The success of management decisions is assessed by the growth of key indicators of e-commerce, which reflects the effectiveness of government structures in achieving their goals.

In order to build an effective system of public administration of the e-commerce system in the Republic of Uzbekistan, modern management methods are proposed, including [8]:

1. Conducting a comprehensive analysis of existing management mechanisms, identification of key factors affecting the effectiveness of activities in this area.

2. Implementation of an adaptive management method that takes into account external and internal factors of impact on business processes in e-commerce.

3. Regulating the fulfillment of target indicators for flexibility in making management decisions.

4. Systematic accounting and analysis of changes in e-commerce.

5. Optimizing the coordination of business processes, taking into account innovative management methods and adaptation to changes [9].

6. Training of personnel in new methods of management and adaptability to changes.

7. Realization of feedback with the subjects of electronic commerce for efficiency and effectiveness of the made decisions.

8. Monitoring and evaluation of the effectiveness of changes, with subsequent operational correction [10].

The use of artificial intelligence in e-commerce management is of significant importance as it is capable of processing large amounts of data, forecasting changes in this sphere, proposing effective development strategies, monitoring the fulfillment of plans and ensuring security. This leads to the optimization of business processes and more efficient use of resources [11].

Conclusion

Thus, effective management of the e-commerce system in the Republic of Uzbekistan can be accomplished through regulation and legal support, provision of technical infrastructure, development of economic support and financing mechanisms, and data analysis and management. Artificial intelligence can help in each of these aspects, improving the evaluation and timeliness of processes.

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Подходы к повышению эффективности государственного регулирования электронной коммерции в Узбекистане

Быстрый рост электронной коммерции в Узбекистане создает вызовы в управлении бизнесом, государственном регулировании и разработке новых операционных моделей. Традиционные подходы к регулированию и принятию решений часто оказываются неэффективными в условиях цифровой экономики. Для повышения качества государственного управления и эффективности рынка необходимо внедрение искусственного интеллекта (ИИ).

Данная статья рассматривает потенциал использования ИИ в сфере электронной коммерции Узбекистана для оптимизации управления бизнесом, создания инновационных моделей и повышения эффективности государственного регулирования. В исследовании разрабатываются математические модели, направленные на прогнозирование тенденций и формирование альтернативных управленческих решений с использованием базы знаний и принципов продукционной логики.

В исследовании применяются методы математического моделирования для создания прогнозных инструментов на основе ИИ. Разработанные модели используют базу знаний и принципы продукционной логики для автоматизации процесса принятия решений. Также анализируются приложения ИИ в государственном регулировании с целью оценки их влияния на мониторинг рынка, выявление нарушений и повышение эффективности административных процедур.

Исследование показывает, что интеграция ИИ в государственное регулирование электронной коммерции может существенно улучшить контроль за рынком, повысить выявление и предотвращение нарушений, а также повысить эффективность административных процедур. Использование базы знаний и принципов продукционной логики позволяет автоматизировать процессы принятия решений, что делает их более точными и эффективными. В заключение предлагаются современные методы управления электронной коммерцией, которые способствуют совершенствованию государственного регулирования, поддержке стратегического развития и повышению его эффективности. Эти меры способствуют развитию цифровой экономики Узбекистана, создавая благоприятные условия для бизнеса и потребителей.

Ключевые слова: Государственное управление, менеджмент, электронная коммерция, цифровая экономика, Узбекистан, искусственный интеллект, математические модели, цифровые технологии, методы управления.

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Өзбекстандағы электрондық коммерцияны мемлекеттік реттеудің тиімділігін арттыру тәсілдері

Өзбекстандағы электрондық коммерцияның қарқынды өсуі бизнес басқару, мемлекеттік реттеу және жаңа операциялық модельдерді әзірлеу салаларында қиындықтар тудырады. Дәстүрлі реттеу және шешім қабылдау тәсілдері цифрлық экономиканың күрделілігін шешуде көбіне тиімсіз. Мемлекеттік басқаруды жетілдіру және нарықтың тиімділігін арттыру үшін жасанды интеллектті (ЖИ) енгізу қажет.

Бұл мақалада ЖИ-дің Өзбекстандағы электрондық коммерция саласына енгізу мүмкіндіктері қарастырылады. Ол бизнес басқаруды оңтайландыруға, инновациялық модельдерді құруға және мемлекеттік реттеуді жақсартуға бағытталған. Зерттеу барысында трендтерді болжау және балама басқарушылық шешімдерді әзірлеуге арналған математикалық модельдер жасалды. Олар білім базасы мен өндірістік логика қағидаттарын қолданады.

Зерттеу барысында жасанды интеллектке негізделген болжамды құралдарды жасау үшін математикалық модельдеу әдістері қолданылды. Бұл модельдер шешім қабылдау процестерін автоматтандыру үшін білім базасы мен өндірістік логиканы пайдаланады. Сондай-ақ, ЖИ-дің

мемлекеттік реттеу саласындағы қолданылуы нарықты бақылау, заңбұзушылықтарды анықтау және әкімшілік рәсімдердің тиімділігін арттыру тұрғысынан талданды.

Зерттеу нәтижелері көрсеткендей, электрондық коммерцияны мемлекеттік реттеуге ЖИ енгізу нарықтық бақылауды жақсартуға, заңбұзушылықтарды анықтау мен алдын алуды күшейтуге және әкімшілік рәсімдердің тиімділігін арттыруға айтарлықтай ықпал ете алады. Білім базасы мен өндірістік логика қағидаттарын қолдану шешім қабылдау процестерін автоматтандыруға мүмкіндік береді, бұл олардың дәлдігі мен тиімділігін арттырады. Қорытындысында электрондық коммерцияны басқарудың заманауи әдістері ұсынылады. Бұл әдістер мемлекеттік басқаруды жетілдіруге, стратегиялық дамуды қолдауға және реттеудің тиімділігін арттыруға мүмкіндік береді. Осылайша, бұл шаралар Өзбекстанның цифрлық экономикасын дамытуға, бизнес пен тұтынушылар үшін қолайлы жағдайлар жасауға ықпал етеді.

Түйінді сөздер: Мемлекеттік басқару, менеджмент, электрондық коммерция, цифрлық экономика, Өзбекстан, жасанды интеллект, математикалық модельдер, цифрлық технологиялар, басқару әдістері.

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