

DOI: 10.15276/EJ.03.2025.6
DOI: 10.5281/zenodo.17148463
UDC: 65. 011.3:658
JEL: M15, O33, G32, G34

DIGITAL SUPPORT FOR EXTERNAL RISK MANAGEMENT IN ENTERPRISES

ДИДЖИТАЛ ПІДТРИМКА УПРАВЛІННЯ ЗОВНІШНІМИ РИЗИКАМИ ПІДПРИЄМСТВ

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Received 09.07.2025

Kovtunenکو K.V., Kalabina V.O., Minzhyrian N.I. Діджитал підтримка управління зовнішніми ризиками підприємств. Науково-методична стаття.

У статті проаналізовано важливість впровадження цифрових технологій у процес управління зовнішніми ризиками підприємств. Акцент зроблено на використанні інноваційних інструментів, таких як аналітика великих даних, штучний інтелект, хмарні сервіси та блокчейн, які дозволяють своєчасно ідентифікувати ризики, оцінювати їхній вплив та створювати адаптивні стратегії. Цифрові рішення сприяють оптимізації процесів, підвищенню точності прогнозування та зменшенню адміністративного навантаження. Також досліджено основні переваги цифровізації, зокрема автоматизацію моніторингу зовнішнього середовища, покращення прозорості прийняття рішень і мінімізацію впливу людського фактора. Розглянуто виклики, з якими стикаються підприємства під час переходу на нові технології, зокрема потребу в підготовці кваліфікованих кадрів і забезпеченні кібербезпеки. Впровадження діджитал-рішень підкреслює значущість інновацій для формування стійкості бізнесу до зовнішніх загроз та підвищення його конкурентоспроможності.

Ключові слова: ризики, управління, цифрові технології, кібербезпека, діджитал, штучний інтелект, хмарні середовища, блокчейн, моніторинг, прогнозування

Kovtunenکو K.V., Kalabina V.O., Minzhyrian N.I. Digital Support for External Risk Management in Enterprises. Scientific and methodical article.

The article analyzes the importance of implementing digital technologies in the process of managing external risks faced by enterprises. Emphasis is placed on the use of innovative tools such as big data analytics, artificial intelligence, cloud services, and blockchain, which enable timely risk identification, assessment of their impact, and the development of adaptive strategies. Digital solutions contribute to process optimization, enhance forecasting accuracy, and reduce administrative burden. The study also explores the main advantages of digitalization, particularly the automation of external environment monitoring, improved decision-making transparency, and the minimization of the human factor's influence. Challenges encountered by enterprises during the transition to new technologies are examined, including the need for training qualified personnel and ensuring cybersecurity. The implementation of digital solutions underscores the significance of innovation in building business resilience to external threats and enhancing competitiveness.

Keywords: risks, management, digital technologies, cybersecurity, digitalization, artificial intelligence, cloud environments, blockchain, monitoring, forecasting

In today's dynamic environment, where external risks are becoming increasingly complex and unpredictable, enterprises are confronted with the need to adapt to new challenges. Geopolitical crises, economic fluctuations, climate disasters, and cyber threats significantly affect business stability. Traditional approaches to risk management often fail to deliver the required speed of response and forecasting accuracy, creating the need for the implementation of innovative solutions.

Digital technologies open new opportunities for effective external risk management. The use of big data, artificial intelligence, and automated systems enables enterprises to analyze large volumes of information in real time, forecast potential threats, and make timely strategic decisions. Digitalization also contributes to increased transparency, cost reduction, and minimization of the human factor's influence. All these tools form the digital support system for managing external risks in enterprises.

The implementation of digital support in risk management has become a vital element of enterprises' long-term development strategies, especially in the context of global digitalization. It ensures business competitiveness and contributes to building resilience to external challenges, which confirms the relevance of the research topic.

Analysis of recent researches and publications

Digital support for enterprise risk management attracts the attention of many researchers, including T. Aven, V. Baida, S. Budova, O. Tarasenko, P. Hopkin, V. Tsyupak, A. Bodnar, and A. Romaniuk. Their works highlight the implementation of digital technologies such as Big Data, artificial intelligence, and blockchain for threat forecasting and adaptation to external challenges. However, issues related to the integration of digital solutions into business processes and their impact on the strategic resilience of enterprises remain unresolved. Studying international experience for its adaptation to Ukrainian realities is also relevant, especially in the context of increasing cyber threats and economic instability.

Unsolved aspects of the problem

Despite the active development of digital technologies, many aspects of their application in the field of external risk management remain unresolved. One of the key issues is the insufficient integration of digital tools into the overall business processes of enterprises, which limits their effective utilization. Moreover, the implementation of such technologies requires substantial financial resources, creating barriers for small and medium-sized enterprises that often lack access to advanced solutions. Additionally, companies face challenges due to a shortage of qualified personnel capable of working with cutting-edge technologies, as well as due to the rapid changes in the regulatory framework, which complicate long-term planning. Cybersecurity and data protection also remain critically important issues, as the risks of unauthorized access to information increase alongside digitalization. These factors significantly hinder the large-scale implementation of digital technologies for external risk management and require a comprehensive solution.

The aim of the article is to analyze the potential of digitalization for managing external risks faced by enterprises. The focus of the study is on the role of innovative technologies in building resilient business models capable of adapting to complex and volatile external environments. The article is intended to identify key digital support tools that help businesses respond rapidly to threats, reduce costs, and ensure crisis resilience.

The article also examines the prospects for the development of digital technologies in the field of external risk management, emphasizing the need to adapt business processes to contemporary challenges. In particular, it highlights the importance of training qualified specialists capable of implementing innovative technologies such as Big Data, artificial intelligence, and blockchain to enhance risk management and ensure enterprise resilience to external threats.

The main part

Risk management is a process that encompasses the identification, assessment, monitoring, and control of potential threats and uncertainties that may negatively impact a company's operations. Its goal is to respond to these threats in a timely manner to minimize losses and enhance the likelihood of achieving strategic objectives. It represents a complex, multi-level approach aimed not only at minimizing damage but also at identifying and leveraging new opportunities that may emerge during the risk management process. Risk management is a dynamic process that integrates into all aspects of a company's operations. It is important to note that effective risk management goes beyond simply avoiding adverse consequences – it also contributes to creating conditions for maximizing potential opportunities in the market environment.

In the current context of market turbulence, the issue of effective risk resilience has become particularly relevant. Economic, political, and financial instability, coupled with market imperfections, create a high likelihood of crises in enterprise operations. This increases the demand for specialized management of organizations that takes into account the impact of external risks [1].

In addition to the pandemic and global economic instability, the war in Ukraine has had a profound impact on the risk management of Ukrainian enterprises. This factor introduces significant adjustments to company operations due to:

- ongoing disruptions in the supply of raw materials and products;
- destruction of infrastructure;
- migration of the labor force;
- uncertainty in international markets;
- increased costs for security and logistics;
- limited access to financial resources.

The war also amplifies the need for enterprises to rapidly adapt to a changing environment. In such conditions, the use of digital technologies becomes not just an advantage but a necessity. Automated systems allow businesses to effectively monitor risks, model their development scenarios, and ensure business continuity even in emergencies.

An important aspect is risk management in the context of business strategy. To determine its risk appetite, a company must first define its business goals, target markets, regions, products, revenues, and profits. Then, the risks associated with this strategy and the acceptable level of risk are assessed. These external risks may include:

- liquidity risks;

- strategic and reputational risks;
- regulatory and legislative challenges;
- financial risks [1].

Effectively managing these risks requires the use of digital solutions. Modern risk management systems enable the automation of external factor monitoring, real-time risk forecasting, and optimization of decision-making processes, which is crucial for enterprise adaptation in an unstable environment.

One of the most significant technologies supporting risk management includes Big Data, cloud services, blockchain, and artificial intelligence. Each of these technologies performs a unique function and contributes to a comprehensive approach to risk management. The following table presents the key characteristics of these technologies and their areas of application (see Table 1).

As shown in the table, integrating modern digital solutions into external risk management processes allows enterprises to achieve new levels of efficiency, transparency, and resilience, providing them with a competitive advantage even under the most challenging conditions.

Table 1. Digital Support Tools for Managing External Risks

Technology	Definition	Areas of Application	Practical Significance
Big Data	Analysis of large volumes of data from diverse sources to identify patterns, trends, and anomalies.	Economic risk forecasting Fraud detection Consumer behavior analysis Market trend assessment	Big Data enables the analysis of vast datasets from various sources, revealing trends, anomalies, and patterns [2]. It facilitates environmental forecasting, fraud detection, and risk minimization.
Cloud Services	Technologies that allow data storage and processing in remote data centers with real-time access.	Monitoring global risks Supply chain management Backup data storage	Cloud technologies provide real-time access to information, enabling rapid responses to environmental changes and informed decision-making [3].
Blockchain	A decentralized technology for recording transactions as an immutable ledger with high security.	Fraud prevention Supply chain transparency Smart contract management	The use of blockchain increases transaction transparency and security, reducing the likelihood of fraud and ensuring supply chain reliability [4].
Artificial Intelligence (AI)	Intelligent systems capable of analyzing data, identifying risks, and making decisions based on algorithms or learning.	Natural disaster forecasting Risk assessment automation Monitoring external environment changes	AI and machine learning enable the forecasting of potential threats by analyzing large datasets and uncovering hidden patterns, thereby supporting timely response strategies [2].

Source: compiled by authors on materials [2-4]

Automation of risk management processes reduces the impact of the human factor, increasing the accuracy and effectiveness of decision-making. This enables enterprises to focus on strategic tasks while delegating routine operations to technology [5].

There is a wide variety of software available for external risk management, each offering unique functionalities. Among the most popular platforms are RSA Archer SaaS, MetricStream, LogicManager, SAP GRC, and Riskconnect. These solutions provide a comprehensive approach to risk management, including monitoring, assessment, reporting, and process automation [5].

RSA Archer SaaS is an advanced enterprise risk management platform focused on cyber risk, enabling automation of business processes, optimization of workflows, and easy integration with external data analysis systems. It can be deployed either on-premises or through a Software-as-a-Service (SaaS) model, offering flexibility based on enterprise needs. The platform significantly reduces the time and resources typically spent on local updates, patches, and maintenance. As a result, companies can concentrate on strategic initiatives such as developing and expanding integrated risk management programs [6].

RSA Archer SaaS also proves to be highly effective in managing external risks. It provides continuous monitoring of external threats, including cyber risks, regulatory changes, and geopolitical disruptions, enabling enterprises to respond promptly to environmental shifts. Integration with external information sources allows for in-depth data analysis, which supports the forecasting of potential threats and the development of mitigation strategies. The automation capabilities of the platform significantly reduce the risk of human error and enhance adaptability to emerging challenges. Moreover, RSA Archer SaaS ensures transparency and comprehensive risk reporting, facilitating strategic decision-making and regulatory compliance. Thanks to its scalability, the platform can be easily expanded in line with growing enterprise needs, making it a versatile tool for managing both cyber and external risks.

MetricStream is a leading platform for Governance, Risk, and Compliance (GRC) management. It equips enterprises with tools to effectively monitor, assess, and control various types of risks, ensuring regulatory compliance and enhancing overall business resilience [7].

MetricStream is widely used in the field of external risk management and helps organizations identify, evaluate, and control threats arising from changes in economic, political, or regulatory environments. The platform

aggregates data from market reports, analytical resources, and regulatory updates, allowing for the detection of risks, modeling of impact scenarios, and consequence assessment. Its analytical capabilities contribute to threat forecasting and preparedness, while process automation reduces response time and costs. The platform's flexibility allows for customization according to specific organizational needs, and its transparent reporting supports executive-level decision-making. Using MetricStream helps minimize the impact of external risks and increases a company's capacity to adapt to change.

LogicManager is an advanced risk management platform that provides enterprises with tools to efficiently identify, assess, and mitigate risks. One of its key features is the user-friendly, customizable dashboards, which offer convenient access to critical information and analytics. These dashboards visually present risk data, enabling quick assessments of the current status and identification of potential threats. Users can tailor their dashboards to display only the most relevant information for their roles and responsibilities. Real-time updates ensure that the information remains current and supports timely decision-making. Additionally, the platform allows for in-depth analysis of specific risks and their underlying factors [8].

LogicManager delivers a modern approach to external risk management, offering tools that enable proactive responses to dynamic challenges. The platform integrates information from various external sources – such as economic indicators and regulatory updates – and helps monitor the impact of these factors on business operations. For example, in the event of supply chain disruptions due to geopolitical tensions, LogicManager enables the assessment of vulnerable departments and suggests mitigation strategies, such as identifying alternative suppliers. Through intuitive dashboards, managers receive real-time data on risk exposure, supporting rapid and informed decisions. The platform also automates reporting, facilitating communication between internal teams and external stakeholders. In cases of regulatory change, LogicManager supports the development of adaptive strategies to ensure compliance, minimize risks, and maintain business continuity.

SAP GRC (Governance, Risk and Compliance) is a risk and compliance management tool that provides an integrated solution for handling risks, regulatory compliance, and security. It features a centralized repository for storing and managing risk-related data, along with advanced reporting and analytical capabilities [9].

External risk management using SAP GRC is implemented through the integration of various modules that enable the identification, assessment, and response to threats originating outside the organization. The platform ensures continuous monitoring of the external environment, including economic, political, and regulatory changes that may affect business operations. Utilizing its analytical tools, SAP GRC supports forecasting potential threats and developing mitigation strategies. This enhances the enterprise's resilience to external challenges and ensures compliance with regulatory requirements across different jurisdictions.

Riskconnect is a comprehensive risk management platform that provides enterprises with tools for identifying, assessing, and monitoring risks in real time. The platform integrates various aspects of risk management, including incident management, insurance, compliance, and safety, enabling a holistic view of risk and its impact on the business. Through integration with other systems and data sources, Riskconnect ensures process transparency and facilitates informed decision-making [10].

In the context of external risk management, Riskconnect enables enterprises to proactively respond to changes in the external environment. The platform allows for the tracking of economic, political, and regulatory factors that may affect company operations. With its analytical and forecasting tools, Riskconnect supports the development of strategies to mitigate the negative impacts of external threats. This contributes to greater business resilience and adaptability in a dynamic global environment.

Table 2. Managing External Risks Using Software Solutions

Software Solution	Risk Monitoring	Threat Forecasting	Response and Adaptation
RSA Archer SaaS	Tracks cyber threats, regulatory changes, and geopolitical risks through integration with external systems.	In-depth analysis of external data sources to assess potential risks.	Automated response, compliance assurance, and development of risk mitigation strategies.
Metric Stream	Monitors economic, political, and regulatory shifts through data integration from market reports and regulatory updates.	Models risk impact scenarios on business and evaluates consequences.	Develops adaptive plans, optimizes processes, and reduces exposure to external threats.
Logic Manager	Monitors economic indicators, geopolitical shifts, and their effects on key business processes.	Uses analytical dashboards for real-time assessment of current and potential threats.	Interactive reporting and strategic recommendations for business adaptation to external challenges.
SAP GRC	Continuous monitoring of political, economic, and regulatory factors on a global scale.	Integrates modules to analyze threat impact and develop mitigation scenarios.	Ensures legal compliance and formulates long-term strategies for external risk response.
Ris kconnect	Tracks regulatory changes, economic trends, and other external factors via integrated data sources.	Applies analytics to forecast risks and identify critical impact areas.	Develops adaptive strategies to reduce risk impact and increase business resilience.

Source: compiled by authors on materials [6-10]

External risk management is a complex and multi-layered process that requires a proactive approach and the use of modern technologies. Each of the software solutions discussed offers unique capabilities for monitoring, forecasting, and responding to threats associated with changes in the economic, political, or regulatory landscape.

To facilitate comparison, Table 2 below summarizes how these platforms support effective external risk management across the key stages of monitoring, forecasting, and response (see Table 2).

Thus, the choice of specific software depends on a company’s needs and the nature of the external risks it faces. The use of these solutions enables enterprises not only to protect their operations from threats but also to turn risks into new opportunities for growth. This underscores the importance of integrating modern technologies into the risk management system to ensure long-term competitiveness.

In addition to the mentioned platforms, there are several other software products that support enterprises in managing external risks effectively (see Figure 1).

Enablon	<ul style="list-style-type: none"> • A risk and compliance management platform that provides tools for external threat monitoring, data analysis, and process automation. Enablon offers comprehensive solutions for risk management, compliance, and business resilience, providing integration with various systems and data sources [11].
GRC Cloud	<ul style="list-style-type: none"> • A cloud-based risk and compliance management solution that helps organizations manage governance, risk, and compliance programs, including policy management, workflow, and document review capabilities. GRC Cloud provides centralized risk and compliance management, simplifying monitoring and reporting processes [12].
SpiraTeam	<ul style="list-style-type: none"> • A project and risk management tool that integrates with other systems and provides capabilities for monitoring and analyzing external factors that may impact projects. SpiraTeam offers requirements management, testing, and defect tracking features that allow you to effectively control risks at all stages of a project [13].
ReQtest	<ul style="list-style-type: none"> • A cloud-based solution for requirements management, testing and risk management that allows you to track external threats and ensure projects meet external requirements. ReQtest provides tools for requirements management, test planning and defect tracking, which helps improve product quality and minimize risks [12].
Polarian	<ul style="list-style-type: none"> • A requirements and risk management tool that provides the ability to monitor external changes and adapt projects to new conditions. Polarian provides transparency into development processes, allowing teams to effectively collaborate and respond to changes in the external environment [12].

Figure 1. Overview of Additional Software Solutions for Managing External Risks
Source: compiled by authors on materials [11-13]

This figure illustrates the broad range of tools available for managing external risks, opening new horizons for business development. Enablon and GRC Cloud emphasize compliance strategy and integration, helping organizations respond quickly to changes in the external environment. SpiraTeam and ReQtest not only support risk management but also enhance product quality and project efficiency, making risk management a key factor in competitiveness. Polarian stands out for its flexibility in adapting to external changes, which is particularly important in today’s volatile market conditions. These tools enhance business resilience, ensuring competitive advantages and effective adaptation to dynamic environmental changes.

In the coming years, the development of digital technologies for external risk management is expected to advance rapidly, focusing on the integration of innovative solutions such as artificial intelligence (AI), machine learning, and blockchain. Currently, special attention is being given to improving real-time risk forecasting, automating decision-making processes, and enhancing cybersecurity. These innovations will allow enterprises not only to minimize potential threats but also to better exploit emerging opportunities for growth amid global uncertainty.

One of the key areas of digital technology deployment is the advancement of blockchain. Today, blockchain is used to ensure transparency in transactions and supply chains. Future developments include the implementation of scalable protocols such as Ethereum 2.0, which will significantly increase data processing speed, making blockchain suitable for real-time, large-scale use even by small businesses. Additionally, multi-layered smart contracts are expected to emerge that automatically account for changes in the external environment, such as currency fluctuations or delivery costs [14].

Blockchain is already being used by major corporations to reduce supply chain risks. For example, Maersk, in collaboration with IBM, developed the TradeLens platform to track cargo movements in real time, reducing delays and losses. Another example is Walmart’s use of blockchain in logistics, where the technology helps trace the origin and quality of food products, minimizing the risk of delivering substandard goods. Blockchain can also be applied in the financial sector to automate insurance payouts. AXA, for instance, has implemented smart contracts for flight insurance – in the event of a delay, the system automatically compensates the customer without the need for a formal claim, thereby simplifying the process and reducing operational costs.

Artificial intelligence (AI) is becoming an increasingly critical tool in risk management. Future AI systems will possess autonomous learning capabilities, enabling them to update risk models in real time [15]. Such technologies are already being applied in the financial sector – for instance, banks use AI algorithms to predict credit risks by analyzing transaction histories, macroeconomic conditions, and other factors.

Forecasting algorithms will soon integrate data from global information sources such as weather stations, economic reports, and IoT devices. In agriculture, for example, AI systems analyze real-time weather data to alert farmers to potentially adverse conditions. IBM's Watson Decision Platform is one such system that helps optimize crop planning by predicting rain, drought, or frost. These technologies will enable adaptive decision-making across various industries, especially in response to climate and geopolitical changes.

Besides forecasting, AI is also increasingly used for fraud detection. In large corporations like Mastercard, AI technologies analyze millions of transactions per second, detecting anomalies that may indicate fraudulent activity. This allows for immediate responses to potential threats and minimizes financial losses. In the future, AI is expected to become a core component not only in forecasting but also in automated decision-making.

Big Data technologies will soon be increasingly integrated with the Internet of Things (IoT), allowing real-time analysis of manufacturing equipment, vehicles, and supply chains [16]. This integration enables a comprehensive view of system operations, including the monitoring of key indicators such as temperature, humidity, and equipment wear. For instance, factories using Big Data with IoT can automatically determine when machinery requires maintenance, preventing breakdowns and downtime. This predictive capacity significantly reduces operational risks.

In the logistics sector, Big Data and IoT technologies are already proving effective. DHL, for example, utilizes data analytics systems to optimize delivery routes. This reduces fuel consumption and delivery time by accounting for traffic conditions, weather, and other external factors.

Cloud technologies are also undergoing significant transformation. The adoption of multi-cloud strategies will allow enterprises to combine the advantages of multiple providers, increasing the continuity and reliability of their systems [17]. Companies can simultaneously use services from providers such as AWS, Microsoft Azure, and Google Cloud Platform, distributing workloads across them. In the future, hybrid platforms are expected to be implemented, offering simultaneous access to both on-premise servers and cloud-based resources. This will be particularly important for enterprises with high data security requirements, such as financial institutions [17].

Banks are already actively employing multi-cloud approaches to ensure data backup and support real-time financial transactions. For example, IBM Cloud for Financial Services offers specialized solutions that help institutions meet strict security and regulatory standards, minimizing the risk of data breaches. Furthermore, cloud technologies facilitate the adoption of serverless architectures, eliminating the need for companies to manage physical infrastructure themselves. This not only reduces maintenance costs but also enables faster business scalability. In addition, the development of cloud technologies fosters greater flexibility and scalability of business processes, allowing enterprises to swiftly adapt to changing market conditions and implement innovations with minimal time and resource expenditure.

Cybersecurity will be a critical component of risk management. New blockchain-based solutions will offer decentralized data protection, making unauthorized access or modification impossible. Blockchain is already used in electronic voting systems where data immutability and user anonymity are essential. Moreover, AI-powered automated cybersecurity systems can instantly detect anomalous activity within a network, blocking potential threats before they impact company operations [18].

Solutions like Darktrace already use machine learning algorithms to monitor network traffic and identify anomalies that may indicate cyberattacks. For instance, Darktrace can detect unusual user behavior or sudden data rerouting and automatically trigger protective mechanisms. Additionally, predictive cybersecurity tools are gaining traction. FireEye, for example, uses AI to analyze historical attacks and build models that can detect early signs of cyber threats. This enables organizations to take preemptive action and minimize risks.

Looking ahead, multi-factor authentication technologies are expected to become more widespread, combining biometric data, passwords, and hardware keys to create layered security frameworks. These technologies will become essential not only for responding to attacks but also for predicting risks and minimizing potential losses.

To better understand the development prospects of each of the technologies mentioned in the context of external risk management, the following table presents their core characteristics, expected implementation outcomes, and potential business impact (see Table 3).

This table outlines the core characteristics of modern technologies, their development prospects, and their potential impact on enterprise operations. Blockchain ensures transaction transparency through a distributed ledger system, reducing fraud risks. The scaling of blockchain protocols and the expansion of smart contract functionality will simplify management processes and enhance business-to-business interactions.

Artificial Intelligence (AI) opens new horizons for risk forecasting through real-time data analysis. Its autonomous learning capabilities enhance the effectiveness of risk management while reducing dependency on human judgment. Integration with global data sources ensures adaptability to new threats.

Big Data, especially when combined with IoT, enables real-time monitoring and analysis, allowing early detection of disruptions in production and logistics. This reduces operational risks and improves decision-making speed.

Table 3. Key Characteristics, Future Prospects, and Business Impact of Digital Technologies in Risk Management

Technology	Characteristic	Development Prospects	Potential Impact on Enterprises
Blockchain	Distributed database for storing transactions	Protocol scaling, smart contract expansion	Transaction transparency, automation of management processes
Artificial Intelligence (AI)	Systems for risk analysis and forecasting	Autonomous learning, integration with global data sources	Forecasting accuracy, reduction of human factor influence
Big Data	Analysis of large datasets from diverse sources	Integration with IoT, adaptive analytical models	Reduction of operational risks, acceleration of decision-making
Cloud Technologies	Centralized data storage and access	Multi-cloud solutions, hybrid platforms	Improved data accessibility, reduced infrastructure costs
Cybersecurity	Technologies to prevent unauthorized access	Decentralized blockchain-based solutions, automated monitoring	Enhanced security, reduced risk of data breaches

Source: compiled by authors on materials [14-18]

Cloud technologies provide consistent data accessibility and ensure system continuity. The implementation of multi-cloud strategies and hybrid platforms enhances resource efficiency and reduces infrastructure costs.

In the field of cybersecurity, blockchain-based solutions offer secure and tamper-proof information storage, while AI-powered systems rapidly detect threats and minimize the risks of data loss. Overall, these technologies hold significant potential to improve the efficiency of external risk management, ensuring business resilience and competitiveness in a volatile environment.

Risk management is one of the key areas where digital platforms demonstrate active development. In the near future, these tools are expected to become more effective, flexible, and adaptive. Platforms such as RSA Archer SaaS, MetricStream, LogicManager, SAP GRC, and Riskconnect will continue to evolve, incorporating the latest technologies. Their advancement will focus on expanding functionality – particularly through integration with ERP and CRM systems – thereby creating a unified environment for enterprise-wide risk management [19].

Moreover, platforms are increasingly transitioning to cloud-based architectures, which enhance scalability and flexibility while reducing infrastructure costs. As cyber threats escalate, developers are placing greater emphasis on real-time monitoring and automated incident response tools. In addition, adapting these platforms to evolving regulatory environments and new international standards will enable organizations to respond more swiftly to compliance challenges. Therefore, the advancement of these platforms will become a vital component of enterprise risk management strategies in the digital age [20].

To better visualize the future directions for platform development, along with expected outcomes and their impact on enterprise operations, see Figure 2.

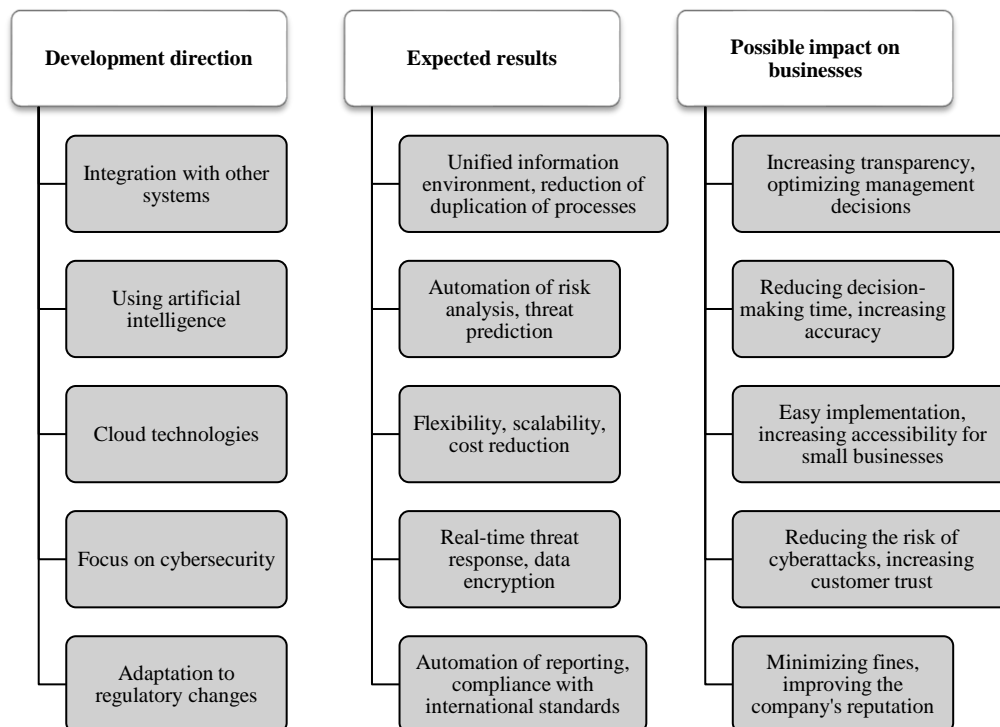


Figure 2. Development Prospects of Risk Management Platforms

Source: compiled by authors on materials [6-10, 19]

The illustrated figure presents the main directions for the development of risk management platforms and their potential impact on enterprises. Integration with other systems will ensure transparency and enable businesses to manage processes more efficiently by reducing data duplication. The use of artificial intelligence will support faster and more accurate decision-making by forecasting threats and automating risk analysis.

Cloud-based solutions will allow companies to access advanced technologies without significant capital investment, making these platforms accessible even to small businesses. At the same time, a focus on cybersecurity will protect data from modern threats, which is critically important in the digital era. Adaptation to regulatory changes will enable businesses to remain competitive and maintain customer trust. Overall, the development of risk management platforms is a strategically important direction, ensuring enterprise resilience and efficiency in the future.

Conclusions

Digital technologies play a key role in enhancing external risk management, enabling enterprises to respond quickly to threats and adapt to a changing environment. The use of tools such as Big Data, artificial intelligence, blockchain, and cloud services significantly improves forecasting accuracy, automates risk assessment processes, and facilitates more informed decision-making. These technologies enable the real-time analysis of large volumes of data, allowing businesses to reduce operational costs and minimize the impact of external factors.

Automation of management processes is one of the key advantages of digitalization. Modern risk management platforms integrate with core business systems, optimizing workflows and reducing dependence on human intervention. These solutions allow enterprises to adapt to environmental changes with minimal disruption.

At the same time, the implementation of digital technologies presents a number of challenges, such as high implementation costs, integration complexity, shortage of skilled professionals, and the need for robust cybersecurity. This requires enterprises to adopt a strategic approach and carry out careful planning to overcome these barriers.

Future technological advancements will open new opportunities for improving risk management. Integrating Big Data with IoT will allow for more detailed monitoring of production and logistics processes, anticipating failures, and reducing losses. Artificial intelligence will improve risk modeling and automate decision-making, while the development of blockchain technologies will provide an additional level of security and transparency.

In summary, digital solutions not only enhance the effectiveness of risk management but also create new opportunities for growth, increasing enterprise flexibility, adaptability, and competitiveness. Their implementation represents a vital step toward ensuring business resilience in the face of contemporary challenges.

Abstract

This article examines the role of digital platforms in managing external risks for enterprises, highlighting their growing importance in today's dynamic business environment. The significance of the study lies in the increasing need for organizations to adopt innovative solutions to mitigate risks and enhance operational efficiency in response to external challenges. The purpose of the study is to explore the potential of advanced technologies, such as blockchain, artificial intelligence, big data, and cloud platforms, in transforming risk management processes. It also identifies key trends and challenges in the integration of these technologies into existing business practices.

Analysis of recent research indicates that digital risk management platforms have been widely discussed, yet certain aspects remain underexplored. Specifically, there is limited analysis of how technological advancements can address emerging threats while optimizing business operations. This highlights the necessity of further exploration into the adaptability and scalability of these platforms.

The main body of the article investigates the core functionalities and applications of leading risk management platforms, including RSA Archer SaaS, MetricStream, and SAP GRC. These platforms enable enterprises to automate risk assessment, integrate with ERP and CRM systems, and ensure compliance with evolving regulatory standards. Emphasis is placed on the integration of artificial intelligence and IoT to enhance real-time monitoring and predictive analytics capabilities.

Furthermore, the study addresses the transition to cloud-based solutions, which provide scalability, cost efficiency, and accessibility for businesses of all sizes. The focus on cybersecurity is also emphasized, showcasing the role of blockchain and automated threat detection systems in mitigating cyber risks. Thus, digital platforms for risk management are crucial for fostering resilience and competitiveness in the modern business environment. The use of advanced technologies not only reduces vulnerabilities but also creates opportunities for innovation and sustainable growth.

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Посилання на статтю:

Kovtunenکو K.V. Digital Support for External Risk Management in Enterprises / K.V. Kovtunenکو, V.O. Kalabina, N.I. Minzhyrian // Економічний журнал Одеського політехнічного університету. – 2025. – № 3 (33). – С. 46-55. – Режим доступу до журн.: <https://economics.net.ua/ejopu/2025/No3/46.pdf>. DOI: 10.15276/EJ.03.2025.6. DOI: 10.5281/zenodo.17148463.

Reference a Journal Article:

Kovtunenکو K.V. Digital Support for External Risk Management in Enterprises / K.V. Kovtunenکو, V.O. Kalabina, N.I. Minzhyrian // Economic journal Odessa polytechnic university. – 2025. – № 3 (33). – P. 46-55. – Retrieved from <https://economics.net.ua/ejopu/2025/No3/46.pdf>. DOI: 10.15276/EJ.03.2025.6. DOI: 10.5281/zenodo.17148463.

