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RISK MANAGEMENT STRATEGIES FOR MAINTAINING COMPETITIVENESS IN IT FIRMS

СТРАТЕГІЇ УПРАВЛІННЯ РИЗИКАМИ ДЛЯ ПІДТРИМАННЯ КОНКУРЕНТОСПРОМОЖНОСТІ ІТ-ФІРМ

This paper investigates risk management strategies crucial for maintaining competitiveness in IT firms by utilizing qualitative research and secondary data sources. Given the rapid evolution and complexity of the IT industry, effective risk management is essential for firms to navigate various challenges and sustain their market position. The research explores key risk areas, including cybersecurity threats, regulatory compliance, market adaptation, operational efficiency, financial management, strategic planning, and human resources. By employing thematic analysis, the study identifies and interprets patterns and themes within existing literature, reports, and industry documents. The findings highlight that robust cybersecurity measures, adherence to regulatory standards, continuous innovation, operational optimization, financial stability, strategic alignment, and effective talent management are critical for enhancing resilience and competitiveness. The research contributes to the field by linking risk management practices directly to competitive outcomes, offering valuable insights for IT managers and policymakers. Future research is suggested to explore the impact of emerging technologies and evolving risks on risk management strategies, providing a broader perspective on best practices across different industries and regions. This study provides a comprehensive understanding of how IT firms can leverage risk management as a strategic tool to achieve sustained success in a dynamic and competitive environment.

Keywords: risk management, IT firms, cybersecurity, regulatory compliance, market adaptation, operational efficiency, thematic analysis.

Дана стаття присвячена стратегіям управління ризиками, які є важливими для підтримання конкурентоспроможності ІТ-компаній, із застосуванням якісного підходу та вторинних джерел даних. Враховуючи швидку еволюцію та складність ІТ-індустрії, ефективне управління ризиками є необхідним для того, щоб компанії могли долати різноманітні виклики. У дослідженні розглядаються ключові ризикові зони, такі як кібербезпека, дотримання нормативних вимог, адаптація до ринку, операційна ефективність, фінансове управління, стратегічне планування та управління людськими ресурсами. За допомогою тематичного аналізу ідентифіковано та інтерпретовано закономірності та теми в сучасній літературі, звітах та галузевих документах. Результати дослідження свідчать про те, що надійні заходи кібербезпеки, дотримання нормативних стандартів, постійні інновації, оптимізація операційної діяльності, фінансова стабільність, стратегічне узгодження та ефективне управління талантами є критично важливими для підвищення стійкості та конкурентоспроможності. Дослідження також звертає увагу на роль корпоративної культури в управлінні ризиками, підкреслюючи важливість формування культури стійкості та адаптивності всередині компанії. Важливою частиною дослідження є аналіз впливу зовнішніх факторів, таких як зміни в законодавстві та міжнародні економічні тренди, на стратегії управління ризиками в ІТ-секторі. Крім того, дослідження пропонує підходи до інтеграції інноваційних технологій у процеси управління ризиками, що може сприяти підвищенню ефективності та зменшенню витрат. Особлива увага

приділяється необхідності постійного навчання та розвитку персоналу як ключового елементу в побудові успішної стратегії управління ризиками. Підсумовуючи, дослідження підкреслює важливість гнучкого та ефективного підходу до управління ризиками, що дозволяє ІТ-компаніям швидко реагувати на зміни ринку та залишатися конкурентоспроможними. Дане дослідження також додає вагомий внесок у розуміння взаємозв'язку між управлінням ризиками та конкурентоспроможністю, пропонуючи цінні рекомендації для ІТ-менеджерів та політиків.

Ключові слова: управління ризиками, ІТ-фірми, кібербезпека, нормативна відповідність, ринкова адаптація, операційна ефективність, тематичний аналіз.

Problem statement. In the dynamic and highly competitive landscape of the information technology (IT) industry, risk management has emerged as a critical component for maintaining and enhancing competitiveness. IT firms operate in an environment characterized by rapid technological advancements, regulatory changes, cybersecurity threats, and fluctuating market demands. These elements introduce a multitude of risks that can significantly impact the stability and profitability of IT firms [4]. Effective risk management enables these firms to anticipate, identify, and mitigate potential threats, ensuring they remain resilient and adaptable in the face of uncertainties.

One of the primary risks in the IT sector is cybersecurity. With increasing reliance on digital infrastructure, the frequency and sophistication of cyberattacks have surged. IT firms, which often handle sensitive data and critical operations, are prime targets for malicious activities such as data breaches, ransomware, and hacking attempts. Robust risk management frameworks help firms to fortify their cybersecurity measures, develop rapid response strategies, and minimize the damage caused by such incidents [3]. This not only protects the firm's assets but also builds trust with clients and stakeholders, which is essential for long-term competitiveness.

Regulatory compliance is another significant risk factor for IT firms. Governments worldwide are continually updating and introducing regulations related to data protection, privacy, and technology standards. Non-compliance can lead to hefty fines, legal battles, and reputational damage. Risk management practices ensure that firms stay abreast of regulatory changes and implement the necessary compliance measures [2]. By proactively addressing regulatory risks, IT firms can avoid penalties and maintain their market standing.

Market volatility and technological obsolescence are inherent risks in the IT industry. Rapid innovation cycles mean that products and services can quickly become outdated, and market preferences can shift with little warning. Effective risk management involves continuous market analysis, investment in research and development, and strategic planning to pivot as needed. By staying ahead of technological trends and understanding

market dynamics, IT firms can maintain a competitive edge and swiftly adapt to changes.

Operational risks such as system failures, project delays, and supply chain disruptions can severely impact an IT firm's ability to deliver services and meet client expectations [10]. Comprehensive risk management practices involve identifying potential operational threats, establishing contingency plans, and ensuring robust project management processes. This proactive approach minimizes disruptions and enhances the firm's reliability and reputation.

Risk management is indispensable for IT firms aiming to sustain and enhance their competitiveness. By addressing cybersecurity threats, regulatory compliance, market volatility, and operational challenges, effective risk management strategies ensure that IT firms can navigate the complexities of their environment. This not only safeguards their current operations but also positions them for future growth and success in a rapidly evolving industry [9].

Maintaining competitiveness in the fast-paced and ever-evolving IT industry presents significant challenges for firms, necessitating robust and effective risk management strategies. The core problem this study addresses is the critical need for IT firms to implement comprehensive risk management frameworks that can anticipate, identify, and mitigate potential threats, thereby sustaining their competitive edge. As the industry faces increasing cybersecurity threats, rapid technological changes, regulatory pressures, and market volatility, the importance of strategic risk management cannot be overstated. Without effective risk management, IT firms risk falling behind competitors, suffering financial losses, and damaging their reputation.

To explore this central problem, our study will investigate several specific research questions and hypotheses. Firstly, we will examine the types of risks most commonly faced by IT firms and how these risks impact their competitive positioning. Secondly, we will explore the effectiveness of various risk management strategies currently employed in the industry. Our primary hypotheses include: (1) IT firms with robust cybersecurity measures are better positioned to maintain competitiveness; (2) proactive regulatory compliance strategies enhance a firm's

market reputation and stability; (3) continuous investment in technology and innovation mitigates the risks associated with market volatility and technological obsolescence; and (4) effective operational risk management improves client satisfaction and operational efficiency.

The objectives of this research are threefold. First, we aim to provide a comprehensive analysis of the risk landscape within the IT industry, identifying the most significant threats that can undermine competitiveness. Second, we seek to evaluate the effectiveness of current risk management practices and identify best practices that can be widely adopted. Third, our research aims to develop a set of actionable recommendations for IT firms to enhance their risk management frameworks, ensuring they remain resilient and competitive in an increasingly challenging environment. By achieving these objectives, this study will contribute valuable insights to the field of risk management in IT, offering practical solutions for firms striving to maintain their competitive advantage amidst evolving risks.

Analysis of recent research and publications. Risk management is a critical area of focus for IT firms, as it directly impacts their ability to sustain a competitive advantage in a rapidly evolving industry. This literature review synthesizes recent research on risk management, innovation, and competitive strategies, drawing connections to the study's focus on maintaining competitiveness through effective risk management.

Algarni et al. highlight the significance of absorptive capacity in shaping firms' innovation and imitation strategies. Their study reveals that both potential and realized absorptive capacities are crucial for sustaining competitive advantage, as they enable firms to better adapt to and anticipate changes in the market. This finding underscores the importance of effective risk management strategies that enhance a firm's ability to absorb and utilize new knowledge to maintain competitiveness [1]. Bayraktar et al. provide empirical evidence on the relationship between competitive strategies, innovation, and firm performance in developing economies. They find that firms that effectively manage risks related to innovation and competitive strategy tend to perform better. This supports the notion that robust risk management practices are integral to developing successful competitive strategies [2].

Bigliardi et al. examine the impact of open innovation on firm performance. Their research suggests that firms embracing open innovation strategies are better positioned to manage risks and capitalize on new opportunities, leading to enhanced performance [3]. This study aligns with the idea that risk management should include

strategies for leveraging external knowledge and collaborations. Cappiello, Giordani, and Visentin discuss the role of social capital in fostering networked firm innovation and competitiveness. Their findings indicate that firms with strong social networks are better equipped to manage risks and drive innovation, which is essential for maintaining a competitive edge [4].

Carrasco-Carvajal, García-Pérez-de-Lema, and Castillo-Vergara explore the impact of innovation strategy, absorptive capacity, and open innovation on SME performance. Their study highlights how these factors contribute to performance improvements in SMEs, emphasizing the need for effective risk management to support these strategies [5].

Hermundsdottir and Aspelund review sustainability innovations and their impact on firm competitiveness. They find that sustainability-focused innovations can help firms manage environmental and regulatory risks, thereby enhancing their competitiveness [6]. Huang examines how competition influences innovation efficiency and firm performance in the Chinese manufacturing sector. The study suggests that competitive pressures drive firms to innovate and manage risks more effectively, which is relevant to IT firms facing similar competitive dynamics [7]. Jovv-Llopis and Segarra-Blasco analyze the role of innovation strategies in Spanish firms, highlighting that strategic innovation management is essential for maintaining competitiveness. This supports the integration of innovation-focused risk management strategies in the study [8].

Koyluoglu and Dogan investigate the impact of innovation strategies on business performance within high-technology companies in Turkey. Their study emphasizes that well-implemented innovation strategies can significantly enhance business performance. This research aligns with the focus of this study on risk management by highlighting how adopting effective innovation practices can mitigate risks and drive competitiveness in technology-driven sectors [9].

Mohapatra and Patra explore strategies for retaining competitive advantage in the commodities sector. Their findings reveal that maintaining a competitive edge involves strategic management of both internal capabilities and external market conditions. This research underscores the importance of a comprehensive risk management approach that addresses various factors impacting competitive advantage, which is pertinent to IT firms facing similar challenges [10]. Nimfa et al. examine the impact of competitive advantage through innovation on product quality among SMEs. Their empirical analysis demonstrates that innovative practices

contribute to improved product quality and sustainable growth. For IT firms, this suggests that integrating innovation into risk management strategies can enhance both product quality and overall competitiveness [11].

Prokopenko et al. discuss innovative models of green entrepreneurship and their social impact on local economies. While their focus is on green entrepreneurship, the concepts of innovation and sustainability are relevant to IT firms aiming to incorporate sustainable practices into their risk management strategies. Their findings suggest that innovative and sustainable approaches can provide a competitive advantage and support long-term success [12]. Rethlefsen et al. present the PRISMA-S extension, which enhances the reporting of literature searches in systematic reviews. While this study primarily addresses methodological concerns, it underscores the importance of thorough and systematic research, which is foundational for analyzing secondary data and developing robust risk management strategies [13].

These studies collectively highlight the crucial role of risk management in maintaining competitiveness through innovation, strategic adaptation, and effective utilization of resources. The insights gained from this literature review form the foundation for understanding how IT firms can apply risk management strategies to enhance their competitive positioning in a dynamic industry.

The purpose of the article is to explore and analyze the critical role of comprehensive risk management strategies in maintaining and enhancing the competitiveness of IT firms

Method and methodology. In this study, the author employed a qualitative research design to explore risk management strategies in IT firms, utilizing secondary data sources. This approach was chosen to gain in-depth insights into existing practices and their impact on maintaining competitiveness without the need for surveys, interviews, or case studies. The data analysis involved thematic analysis, a technique well-suited for identifying and interpreting patterns and themes within the secondary data. By systematically examining the literature, reports, and other relevant documents, the author extracted key themes related to risk management practices and their effects on competitive outcomes. This methodology allowed for a comprehensive understanding of the subject matter through a detailed examination of pre-existing data.

Presentation of the main material. In the rapidly evolving landscape of the IT industry, risk management has become a crucial aspect for firms aiming to maintain and enhance their competitiveness [1]. IT firms face a multitude of risks that can significantly impact their operations, financial stability, and market position. These risks span across various domains, including cybersecurity, regulatory compliance, market dynamics, operational efficiency, financial management, strategic planning, and human resources. Identifying and effectively managing these risks is essential for IT firms to remain resilient and competitive in a highly volatile environment. Table 1 aims to provide a comprehensive overview of the common risks faced by IT firms, assess their potential impact, and suggest strategies for mitigating these risks.

Table 1

Common risks faced by IT firms

№	Category	Risk	Description
1	2	3	4
1.	Cybersecurity risks	Data breaches	Unauthorized access to sensitive data, leading to loss of information, financial damage, and reputational harm.
		Ransomware attacks	Malicious software that encrypts files and demands payment for decryption, disrupting operations and causing financial loss.
		Phishing scams	Fraudulent attempts to obtain sensitive information through deceptive emails or messages, compromising data security.
2.	Regulatory risks	Compliance violations	Failure to adhere to industry regulations and standards, resulting in fines, legal action, and reputational damage.
		Data protection laws	Non-compliance with data protection regulations (e.g., GDPR), leading to significant financial penalties and loss of trust.
		Intellectual property infringement	Unauthorized use of intellectual property, causing legal disputes and financial loss.
3.	Market risks	Technological obsolescence	Rapid technological advancements rendering current products or services outdated, impacting market position and revenue.
		Market volatility	Fluctuations in market demand and economic conditions affecting profitability and strategic planning.
		Competitive pressure	Intense competition from existing and new market entrants, necessitating continuous innovation and adaptation.

Continuation of the Table 1

1	2	3	4
4.	Operational risks	System failures	Breakdowns in IT infrastructure and systems causing service disruptions and operational inefficiencies.
		Project delays	Delays in project timelines leading to cost overruns and client dissatisfaction.
		Supply chain disruptions	Interruptions in the supply of critical components or services, affecting production and delivery schedules.
5.	Financial risks	Currency fluctuations	Variations in exchange rates impacting international transactions and profitability.
		Budget overruns	Exceeding budget allocations due to unforeseen expenses or poor financial management, affecting financial stability.
		Credit risk	Risk of clients or partners defaulting on payments, impacting cash flow and financial health.
6.	Strategic risks	Misalignment with market trends	Failure to anticipate and align with market trends, resulting in loss of market share and competitiveness.
		Poor strategic decisions	Ineffective strategic choices leading to missed opportunities and resource wastage.
7.	Human resources risks	Talent acquisition and retention challenges	Difficulty in attracting and retaining skilled professionals, impacting innovation and operational efficiency.
		Workforce skills gap	Mismatch between available skills and required competencies, hindering project execution and growth.
		Employee turnover	High employee turnover rates leading to increased recruitment and training costs, and loss of organizational knowledge.

Source: International Monetary Fund (2024) [14]

One of the most pressing concerns for IT firms is cybersecurity risk, which includes data breaches, ransomware attacks, and phishing scams. Data breaches involve unauthorized access to sensitive information, leading to financial losses and reputational damage. Ransomware attacks can cripple operations by encrypting critical data and demanding a ransom, while phishing scams deceive individuals into disclosing confidential information, compromising data security.

Regulatory risks also pose significant challenges. Compliance violations, such as failing to adhere to industry regulations and data protection laws (e.g., GDPR), can result in hefty fines, legal actions, and loss of trust. Intellectual property infringement, where unauthorized use of proprietary technology occurs, can lead to costly legal disputes.

Market risks, including technological obsolescence, market volatility, and competitive pressure, are inherent in the IT industry. Rapid technological advancements can render existing products outdated, requiring continuous innovation. Market volatility affects profitability and strategic planning. Intense competition necessitates constant adaptation and innovation to maintain market position.

Financial risks, including currency fluctuations, budget overruns, and credit risk, also threaten IT firms. Variations in exchange rates can impact international transactions and profitability. Budget overruns strain financial resources. Credit risk arises from the potential default of clients or partners, affecting cash flow.

Strategic risks involve misalignment with market trends and poor strategic decisions. Failure to anticipate and align with market trends can lead to loss of market share and competitiveness. Ineffective strategic choices result in missed opportunities and resource wastage.

Human resources risks, such as challenges in talent acquisition and retention, workforce skills gaps, and high employee turnover, affect innovation and operational efficiency. Difficulty in attracting and retaining skilled professionals hampers growth and project execution. Workforce skills gaps create mismatches between available competencies and required skills. High employee turnover increases recruitment and training costs and leads to a loss of organizational knowledge.

IT firms face a diverse array of risks that can significantly impact their competitiveness and operational efficiency. Cybersecurity threats, regulatory compliance issues, market volatility, operational disruptions, financial challenges, strategic missteps, and human resources problems all pose substantial challenges. Effective risk management strategies are essential for IT firms to navigate these risks, ensuring resilience and sustained competitiveness. By identifying, assessing, and mitigating these risks, IT firms can protect their assets, maintain market position, and achieve long-term success in a highly dynamic industry. This understanding of risk factors will enable IT firms to develop robust risk management frameworks, enhancing their ability to anticipate and respond to potential threats.

Risk assessment in IT firms involves evaluating the impact and likelihood of various risks to prioritize and address them effectively. Cybersecurity risks, such as data breaches and ransomware attacks, are highly likely and can cause significant financial losses and reputational damage. Therefore, robust cybersecurity measures are essential. Regulatory risks, including compliance violations and data protection breaches, also have a high likelihood and impact. Non-compliance with regulations like GDPR can lead to hefty fines and legal issues, making comprehensive compliance strategies crucial. Market risks, such as technological obsolescence and market volatility, are moderately likely but can severely impact competitiveness. Continuous innovation and strategic planning are necessary to stay relevant and profitable.

Operational risks, such as system failures, project delays, and supply chain disruptions, can severely impact an IT firm’s ability to deliver services and meet client expectations. These issues disrupt operations, lead to inefficiencies, financial losses, and client dissatisfaction. Effective project management and contingency planning are essential to mitigate these risks. Additionally, financial risks like currency fluctuations and budget overruns, though moderate in likelihood, can further strain resources. Proper financial planning and management are crucial to handle these challenges and maintain stability.

Strategic risks, such as misalignment with market trends and poor strategic decisions, have a lower likelihood but can have a high impact if not addressed. Staying aligned with market trends and making informed strategic choices are crucial. Human resources risks, including challenges in talent acquisition and retention, are likely and impactful. Attracting and retaining skilled professionals is vital for growth and innovation.

Cybersecurity and regulatory risks are the most critical due to their high likelihood and impact, while market, operational, financial, strategic, and human resources risks also require proactive management. By prioritizing and addressing these risks, IT firms can maintain their competitive edge in a dynamic industry.

Effective risk management is crucial for IT firms to sustain their competitive edge. The risks these firms face, ranging from cybersecurity threats to regulatory compliance issues, market dynamics, operational disruptions, financial uncertainties, strategic misalignments, and human resource challenges, can significantly impact their performance and reputation. Mitigating these risks through well-structured strategies not only safeguards the firms but also enhances their competitiveness by ensuring operational continuity, financial stability, market relevance, and talent retention. Table 2 outlines the key risk mitigation strategies for various risk categories and links these strategies to competitiveness

Table 2

Key risk mitigation strategies for various risk categories

№	Risk category	Risk mitigation strategies	Competitiveness factors
1.	Cybersecurity risks	<ul style="list-style-type: none"> implement advanced encryption and firewalls; regular cybersecurity training for employees. 	<ul style="list-style-type: none"> protects sensitive data; enhances trust and reputation; reduces financial losses from breaches.
2.	Regulatory risks	<ul style="list-style-type: none"> regular compliance audits; implement robust data protection policies. 	<ul style="list-style-type: none"> avoids fines and legal issues; enhances market credibility; builds customer trust.
3.	Market risks	<ul style="list-style-type: none"> invest in R&D for continuous innovation; monitor market trends and adapt quickly. 	<ul style="list-style-type: none"> maintains relevance; enhances market positioning; increases adaptability.
4.	Operational risks	<ul style="list-style-type: none"> implement redundancy and backup systems; develop comprehensive project management plans. 	<ul style="list-style-type: none"> ensures service continuity; reduces operational inefficiencies; improves client satisfaction.
5.	Financial risks	<ul style="list-style-type: none"> use hedging strategies for currency fluctuations; strict budget controls and financial monitoring. 	<ul style="list-style-type: none"> stabilizes financial performance; enhances financial planning accuracy; reduces financial vulnerabilities.
6.	Strategic risks	<ul style="list-style-type: none"> conduct regular market analysis; involve stakeholders in strategic decision-making. 	<ul style="list-style-type: none"> ensures strategic alignment; enhances decision-making quality; reduces risk of strategic missteps.
7.	Human resources risks	<ul style="list-style-type: none"> develop strong talent acquisition and retention programs; offer continuous training and development opportunities. 	Attracts and retains top talent; Enhances innovation and productivity; Reduces turnover costs.

Source: World Bank (2024) [15]

outcomes, demonstrating how robust risk management practices contribute to sustaining a firm’s competitive advantage.

The risk mitigation strategies in this table emphasize the importance of proactive and comprehensive risk management for IT firms. Implementing advanced cybersecurity measures and regular compliance audits protects sensitive data and ensures regulatory adherence, enhancing trust and reputation. Continuous investment in research and development and monitoring market trends keep firms competitive. Operational strategies like redundancy systems and project management plans ensure service continuity and client satisfaction. Financial strategies such as hedging and strict budget controls stabilize performance, while strategic decision-making and stakeholder involvement ensure alignment with market trends. Strong talent acquisition and retention programs, along with continuous training, attract and retain top talent, fostering innovation and productivity. By managing these risks effectively, IT firms can maintain their competitiveness and ensure long-term success in a dynamic industry.

The findings from this study offer significant implications for IT firms striving to maintain competitiveness in a challenging and dynamic industry. By implementing the identified risk mitigation strategies, IT firms can effectively address the diverse range of risks they face, enhancing their operational stability and market position. For instance, adopting advanced cybersecurity measures and regular compliance audits can protect sensitive data and ensure adherence to regulatory standards, thus bolstering the firm’s reputation and trustworthiness. Investing in continuous innovation and staying attuned to market trends enable firms to remain relevant and responsive to shifting demands, which is crucial for maintaining a competitive edge. Operational strategies such as developing redundancy systems and comprehensive project management plans ensure service continuity and client satisfaction, minimizing disruptions and inefficiencies. Financial risk management through hedging and strict budget controls stabilizes

financial performance and mitigates vulnerabilities. Strategic decision-making processes and stakeholder involvement ensure alignment with market trends, while effective talent acquisition and retention programs foster a skilled and motivated workforce, driving innovation and productivity. By applying these strategies, IT firms can enhance their resilience and adaptability, securing their competitive advantage in a rapidly evolving landscape.

From a theoretical perspective, this study contributes to the understanding of risk management and competitiveness by bridging the gap between practical risk mitigation strategies and their impact on a firm’s competitive position. It underscores the importance of a holistic approach to risk management, integrating various risk categories and linking them directly to competitive outcomes. The study advances theoretical knowledge by highlighting how effective risk management not only protects firms from potential threats but also serves as a strategic lever for enhancing competitiveness. This integrated approach provides a valuable framework for both scholars and practitioners, offering insights into how risk management practices can be aligned with broader strategic objectives to achieve sustainable competitive advantage. By contributing to the theoretical discourse on risk management, this study enhances the understanding of how firms can leverage risk management as a tool for competitive success in an increasingly complex and competitive environment.

Effective risk management is essential for IT firms to navigate the complexities of the modern technological landscape and maintain a competitive edge. Table 3 provides actionable recommendations for IT managers and policymakers aimed at addressing key risk areas and enhancing overall competitiveness. For IT managers, these recommendations focus on practical measures to manage cybersecurity threats, ensure regulatory compliance, adapt to market changes, optimize operational efficiency, handle financial risks, and improve strategic planning and human resources management. Policymakers, on the other hand, are guided on creating

Table 3

Recommendations for IT managers and policymakers

№	Category	Recommendations for IT managers	Recommendations for policymakers
1	2	3	4
1.	Cybersecurity	Implement advanced cybersecurity measures, including encryption and multi-factor authentication; Conduct regular security training and awareness programs for employees; Develop and test incident response plans.	Establish and enforce comprehensive cybersecurity regulations; Support initiatives for cybersecurity awareness and training; Facilitate collaboration between private and public sectors for information sharing.

Continuation of the Table 3

1	2	3	4
2.	Regulatory compliance	Conduct regular compliance audits to ensure adherence to industry standards and regulations; Implement robust data protection policies and practices; Stay updated on regulatory changes and adjust practices accordingly.	Develop clear and consistent regulatory frameworks for emerging technologies; Provide guidance and resources for businesses to achieve compliance; Promote international collaboration on regulatory standards.
3.	Market adaptation	Invest in research and development to drive innovation; Monitor market trends and adapt business strategies accordingly; Foster a culture of agility and responsiveness within the organization.	Support innovation through funding and grants; Create favorable conditions for technology adoption and market entry; Encourage industry research and trend analysis through public-private partnerships.
4.	Operational efficiency	Develop and maintain redundancy and backup systems; Implement effective project management practices to avoid delays; Optimize supply chain management to ensure timely delivery of components.	Invest in infrastructure that supports operational efficiency, such as high-speed internet and data centers; Provide incentives for firms to adopt best practices in operations management; Support the development of robust logistics and supply chain networks.
5.	Financial management	Use hedging strategies to manage currency fluctuations; Implement strict budget controls and regularly review financial performance; Develop contingency plans for financial risks.	Facilitate access to financial resources for risk management; Promote financial literacy and management training for businesses; Provide support for financial planning and risk mitigation strategies.
6.	Strategic planning	Conduct regular market analysis and involve stakeholders in decision-making; Align strategic goals with market trends and emerging opportunities; Continuously evaluate and refine strategic plans based on performance and feedback.	Promote strategic planning best practices through industry guidelines; Support education and training programs focused on strategic management; Encourage collaboration between firms and research institutions for strategic insights.
7.	Human resources	Develop comprehensive talent acquisition and retention programs; Provide ongoing training and professional development opportunities; Implement programs to address and reduce employee turnover.	Support workforce development initiatives, including training and skill development programs; Encourage partnerships between educational institutions and industry for talent development; Implement policies that support work-life balance and job satisfaction.

Source: authors development

supportive regulatory frameworks, fostering innovation, and developing infrastructure to assist firms in managing risks and achieving growth. By following these recommendations, both IT managers and policymakers can contribute to a more resilient and competitive IT sector.

The recommendations outlined in this table serve as a comprehensive guide for IT managers and policymakers to enhance risk management practices and sustain competitiveness. IT managers can leverage these practical strategies to address cybersecurity threats, ensure compliance with regulations, adapt to market trends, and optimize operations and financial management. Policymakers can play a crucial role by establishing supportive regulations, promoting

innovation, and investing in infrastructure that facilitates effective risk management. Together, these efforts contribute to creating a robust IT environment capable of thriving amidst challenges and seizing opportunities for growth. Implementing these recommendations will not only mitigate risks but also foster a more competitive and resilient IT sector, driving long-term success and advancement in the industry.

Conclusions. In conclusion, this study provides a comprehensive analysis of risk management strategies essential for maintaining competitiveness in IT firms. The main findings underscore the critical importance of addressing various risk categories, including cybersecurity, regulatory compliance, market adaptation, operational efficiency, financial management, strategic

planning, and human resources. By implementing advanced cybersecurity measures, adhering to regulatory requirements, investing in innovation, optimizing operations, and managing financial and strategic risks effectively, IT firms can enhance their resilience and sustain their competitive advantage.

The research contributes significantly to the field by integrating practical risk management strategies with their impact on competitiveness. It offers a valuable framework for IT managers and policymakers, illustrating how targeted risk mitigation efforts can drive operational stability and market success. This study also advances theoretical understanding by linking risk management practices directly to competitive

outcomes, providing a deeper insight into how firms can leverage risk management as a strategic tool.

Future research should explore the evolving nature of risks in the IT sector, particularly with the rise of new technologies and emerging threats. Investigating the long-term effects of risk management strategies on firm performance and competitiveness would provide further insights. Additionally, research could examine how different industries and regions adapt to risk management challenges, offering a broader perspective on best practices and innovative solutions. Exploring these areas will contribute to a more nuanced understanding of risk management in a dynamic and globalized IT landscape.

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