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Risk Management in Digital Banking

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Abstract
This paper looks at the dynamic nature of risk management in digital banking and how technological changes have transformed the old banking risks besides creating new weaknesses. The study is a qualitative and literature-based approach in order to examine the major risk domains such as cybersecurity risk, operational risk, credit risk, and systemic risk in digital banking scenarios. The results have shown that although digital banking leads to improved efficiency, accessibility and financial inclusion, it also puts users more at risk of cyber threats, data hacking, and technology reliance. The paper also mentions the increasing importance of artificial intelligence, big data analytics and regulatory measures in risk detection and reduction. But issues like algorithmic bias, regulatory loopholes and system failures still happen. The study highlights the importance of integrating and adaptability in risk management actions that are technology-oriented and in which innovation and security balance in a manner that brings stability in terms of finances in the long run.

Keywords: digital banking, risk management, cybersecurity risk, fintech, operational risk, financial stability

Introduction

One of the ways through which the global financial system has developed swiftly is the development of the digital banking paradigm, which combines innovative information technologies with the conventional banking operations to provide financial services based on the electronic platform. Digital banking involves mobile banking, internet banking, and services that are powered by fintech, which allows customers to transact their business effortlessly with no limitation imposed by physical stores. This has been triggered by the growing internet penetration, smartphone usage and the need to have efficient and real-time financial services. Nevertheless, even as digital banking is increasing accessibility and operational efficiency, it also brings with it intricate layers of risk that bamboozles the traditional risk management models. Final inclusion of financial technology into the banking systems has transformed the traditional type of risk and enlarged it to technological disadvantages, systemic risks, data-driven uncertainties, which influence financial stability, and institutional shock (Gomber et al., 2018; Vives, 2019). This has made risk management in digital banking one of the most important areas of research and practice, fundamentally multidimensional in that it necessitates integrating the financial, technological, and regulatory viewpoints.

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The seven building blocks of digital risk

McKinsey&Company

The growing use of the digital infrastructure has exposed banks to various classifications of risks, especially the threat of cybersecurity, interruptions, and vulnerability to fraud. In contrast to conventional banking systems, digital banking operates in a highly connected ecosystem featuring third-party services providers, cloud computing environment, and application programming interface, which increase the exposure to external risks. Though introducing innovation and competition, open banking models pose a substantial cyber threat as a result of data exchange between platforms, which permeates the probability of a financial offense and unlawful penetration (Zachariadis and Ozcan, 2017; Zetzsche et al, 2020). Simultaneously, online banking systems are very prone to the risk of data breach, identity theft, and service failure, which can lead to significant

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losses of money and reputation (Kou et al., 2021; Romanova and Kudinska, 2017). Such advancements have triggered the need to implement strong cybersecurity risks management models, which include live monitoring, threat intelligence, and superior authentication systems. Moreover, the dynamic aspect of digital threats also means that the risk is no longer fixed; it is actively changing, which also means that risk management process in place must be adaptive and proactive and, consequently, must have the capability to react to the emerging challenges on a real-time basis.

Besides technological risks, digital banking also has the impact on common traditional financial risk aspects, including credit risk, liquidity risk, and operational risk. Digitisation of the banking procedures has altered the credit assessment models by using alternative data and algorithmic decision-making that, though initiates efficiency, creates model risk and biases potentially. Big data analytics and artificial intelligence in lending decisions have changed the nature of risks by allowing much more accurate predictions, and it has caused concern regarding transparency and fairness (Buchak et al., 2018; Berg et al., 2020). Additionally, it is possible that the overall risk-taking behaviour of banks changes with digital transformation to increase the transparency, enhance data analytics, and facilitate strategic decision-making (Frost et al., 2019; Stulz, 2019). Meanwhile, the innovation environment created by fintechs remains adding novel types of risk such as platform risk, regulatory arbitrage, and systemic contagion to the state of risk management and makes it quite complicated (Arner et al., 2017; Claessens et al., 2018). However, it is clear that risk management in digital banking needs a balanced structure which ensures that technological innovation is matched with regulatory compliance, organisational governance and mitigation of risks which would guarantee sustainable development and financial soundness.

Background to the Study

Digital technology changes and its influence on the banking industry greatly contributed to the transformation of this sector over the last ten years and changed the way of providing and consuming financing services. One of the models that has taken centre stage in the banking sector is digital banking which is characterised by the incorporation of mobile platforms, internet-based services, artificial intelligence and cloud computing in the core banking operations. This conversion has been given a boost towards evolving consumer demands which are becoming more inclined to the concepts of convenience, speed and accessibility as opposed to through the in-branch. The development of smartphones and fast internet has also allowed banks to continue to develop more digital products, making the financial ecosystem more competitive and innovation based. According to Gomber et al. (2018), the emergence of fintech has entirely transformed how financial intermediation is organized making traditional banks to be pushed towards pursuing digital strategy in order to survive. On the same note, Vives (2019) points out that the digital transformation has enhanced competition but at the same time, created complexity in operations,

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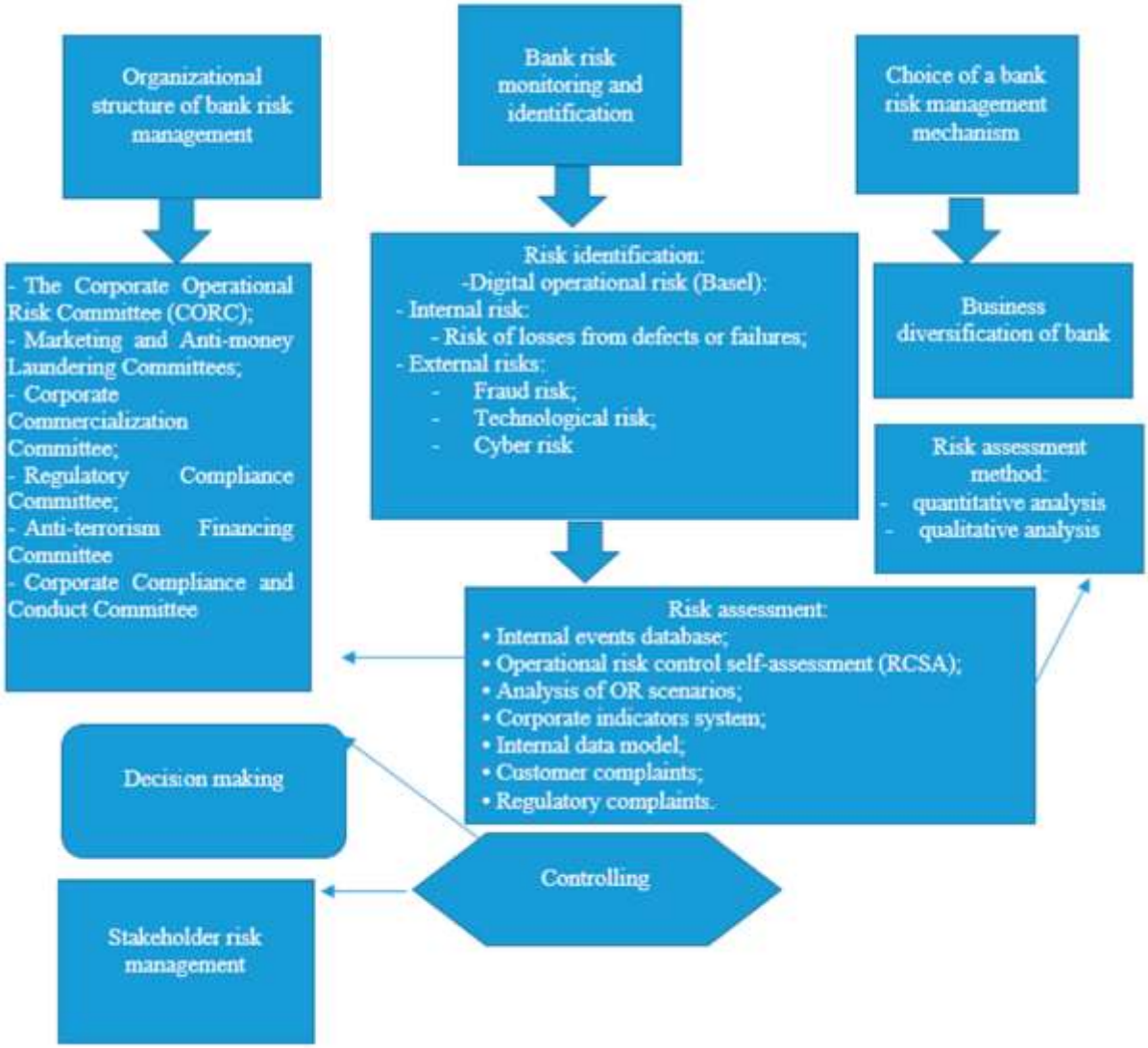
which has consequently contributed to the overall risk environment in which banks conduct their operations.



The context behind the risk management research in digital banking lies in the appreciation that digitalisation, as as relates to it has yielded a myriad of risks that are quite different as compared to the risks posed by the conventional banking infrastructure. The increased exposure to cybersecurity threats associated with going online with financial services is among the most significant elements of this transformation that have become more advanced and common. Digital use, third-party providers and interconnected systems expose vulnerabilities in which cybercriminals can take advantage to cause monetary damages, breach of data and corrupted reputation. Zetzsche et al. (2020) found that the growth of open banking and data-sharing schemes

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has made the financial institutions more vulnerable to attacks, which complicates the risk management. Moreover, Kou et al. (2021) state that the fraud detection and prevention have become key issues in digital banking because anonymity and speed of online banking supply fraudsters with opportunities to commit offenses on a larger scale. The above developments justify the need to establish advanced risk management systems, which can be able to manage the technological and financial risks in unison.

Other than touching on the issue of cybersecurity, the digitalisation of banking has also altered the traditional types of risk such as credit risk, operational risk, and systemic risk. The introduction of big data analytics and machine learning into credit assessment procedures has led to a higher accuracy in banks in terms of the assessment of borrower risk, but it is accompanied by the emergence of new issues associated with model reliability, quality of data, and bias in the algorithm. Berg, et al. (2020) claim that in as much as digital footprints would enhance credit scoring accuracy, it would also result in unintentional discrimination and ethics. Moreover, the growing reliance on automated systems and digital-based infrastructures raises the operational risk, specifically when it comes to system failures or technical glitches, and service delivery disruptions. As Frost et al. (2019) remark, the systemic risk can be mitigated or amplified by fintech innovations based on their implementation into the financial system. The interdependence of the digital banking environment implies that risk can increase quickly through institutions and markets, and it may pose financial instability risk. These changing dynamics are what guide the study of the way that risk management practices have to evolve to meet the challenges of digital banking, it is of importance to note that regulatory frameworks, technological security, and organisational resilience are key in handling the emerging risks.

Scope of the research

The focus of the current study lies in the investigation of multidimensionality of risk management in the digital banking environment with specific references to the way the technological progress has reshaped the traditional scheme of risks. The paper is dedicated to the definition and the examination of the major classes of the risks that the digital banking industry faces, namely, the cybersecurity risk, operational risk, credit risk, and systemic risk, taking into account any interactions that the risks have within a more widespread financial environment. Digital banking is a phenomenon that has broadened the scope of banking activity, thus requiring an increased adaptable and extensive way of approaching risks management. According to Arner et al. (2017), the advent of the fintech sector that is rapidly evolving has posed opportunities and threats, and it is necessary to review traditional risk management processes in the context of digital innovation.

Besides classifying risks, the study goes as far as to analyze the process and structure that the financial institutions used to reduce the risks. It involves review into the cyber safety measures, data protection policy, the method of detecting fraud, and the functions of regulatory conformity

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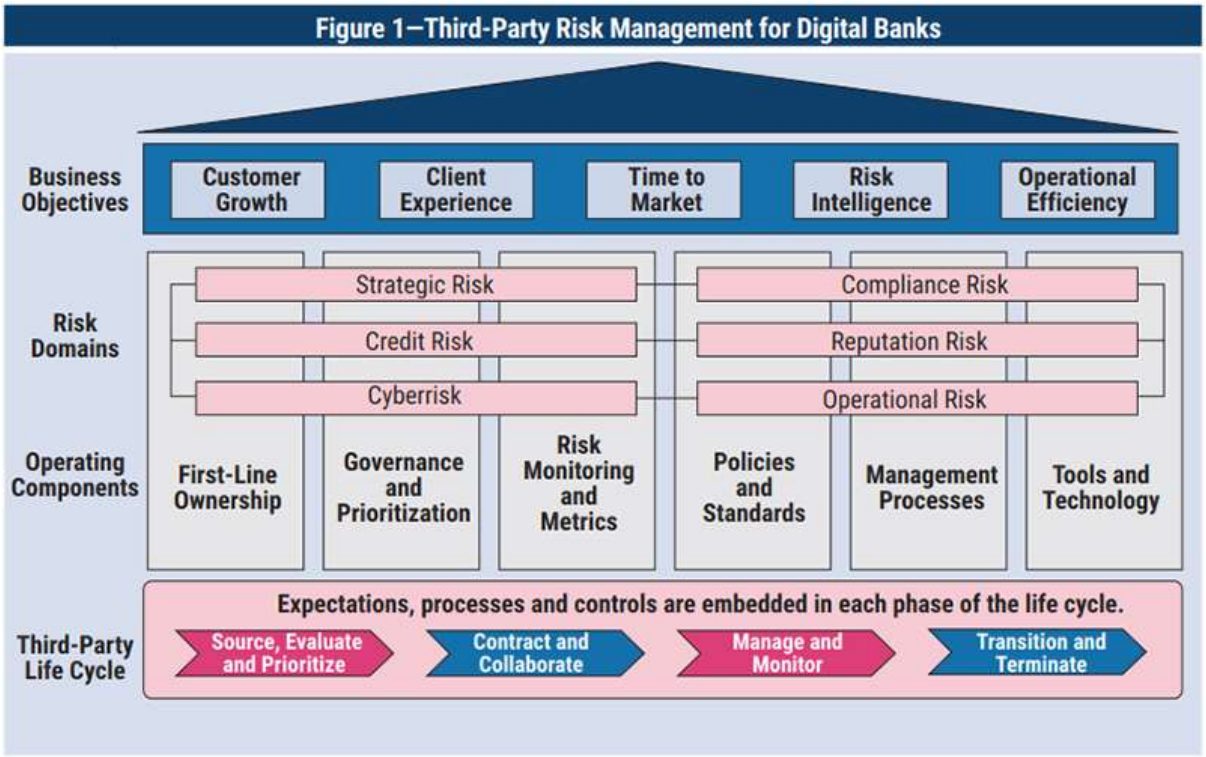
in ensuring financial stability. The implications of the emergence of innovations like artificial intelligence, blockchain, and big data analytics to risk identification and control process are also vehicle to the study. The technologies have gained banks a great capacity to track transactions and identify any anomalies in time, but come with complexities of controlling data, transparency of algorithms, and reliance on technology. Claessens et al. (2018) assert that the introduction of fintech solutions into the banking platform has erased the demarcation line between the conventional financial bodies and the technology companies, thus creating new forms of regulatory and operational challenges that are within the focus of this study.

Figure 1—Third-Party Risk Management for Digital Banks



In addition, the study narrows down to critically analyzing the regulatory environment in the digital banking field and how it impacts the risk management practices. The study explains the reaction of regulatory authorities to the dynamic nature of the risk environment through the adoption of policies that touch on the issues of data protection, consumer protection, and financial stability. It also takes into consideration how international standards and guidelines have contributed to the development of the risk management strategies in various jurisdictions. The key point is about regulatory adaptation that Vives (2019) emphasizes to resolve the issues of the digital transformation in banking. The proposed study will be conceptual and analysis-based using the literature available in the field without the utilisation of primary data collection and will integrate

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the knowledge of the learned scholars in arriving at a complete picture of risk management in digital banking.

Literature Review

Gomber et al. (2018) conceptualise digital banking as the key element of the more extensive fintech ecosystem and deem it as the means of changing financial intermediation via the transformative technologies. Their article underscores the way in which digital platforms, application programming interface and data analytics have reorganized the banking processes and made them efficient but also inherently complex. According to the authors, such transformation brings new types of risk, especially risk of system integration, third-party dependencies, and real-time data processing. They also observe that conventional risk management models fail to be effective in handling the pace and the magnitude at which digital risk is being created hence the need to be more agile and technological-driven.

By thoroughly analyzing the digital banking landscape in regards to competition and stability, Vives (2019) mentions that technological innovations have increased competition between banks and financial technology companies along with non-bank institutions. This heightened competition has brought about innovation but has equally contributed to risk taking behaviour by financial institutions in an aim to remain in the market. The article indicates that digitalisation can enhance efficiency and transparency, but it can also contribute to the increased systemic risk because the systems in the financial sector interconnect. Vives highlights the need to have regulatory frameworks capable of strike equilibrium between innovation and stability, especially in the context of regulating risks related to digital banking.

Arner et al. (2017) analyze the development of fintech and its effects on financial regulation with the focus placed on the transformation of the traditional banking concept toward the digitally empowered financial services. In their study, they note that digital banking presents regulatory issues to do with jurisdiction, compliance and oversight, particularly in cross-border transactions. The authors state that regulatory technology (RegTech) solutions should be included into the risk management of this scenario in order to ascertain the monitoring abilities and the improvement of compliance. They further state that technological changes can be very rapid than the adaptability of the regulations, thus leaving loopholes that can be used against by malicious entities.

The article by Claessens et al. (2018) presents the action of fintech on financial stability which involves the changes in the risk environment of digital banking. Some threats that they outline include disruption in operations, cyber threats, and overdependence on third-party providers of services. The paper has noted that although fintech has the potential to enhance access to financial services, it has also created new vulnerabilities that can spread via the financial system. Claessens and co-authors emphasize the importance of combined risk management systems that would

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incorporate both the conventional financial risks and new digital risks, especially when it comes to systemic stability.

Zachariadis and Ozcan (2017) explore the potential of the open banking concept, especially the application programming interfaces used to exchange data between the financial entities and third parties. In their study, they show that although open banking spurs innovation and services that are purposeful to customers, it increases vulnerability to cyber attack threats significantly. The authors suggest that data sharing systems should be complemented by the effective security schemes and governance frameworks that should help eliminate a threat of data leaks and unauthorized access. They also focus on the issues of trust as a key component of digital banking ecosystems which are tightly tied with the well-established risk management practices.

Zetzsche et al. (2020) examine the regulatory issues that surround open banking and fintech an area where risks emerge as a result of the availability of more data and the interconnection between systems. Their article emphasizes the fact that the digital banking setting is one that is most susceptible to cyber-attacks because of the presence of numerous entry points through integration with third parties. The authors suggest that a more concerted regulatory method should be adopted, which involves international cooperation because digital banking activities tend to surpass national borders. The latter also highlight the system that needs to be constantly monitored and managed through adaptive risk approach to deal with emerging threats.

Kou et al. (2021) concentrate on fraud detection and prevention in digital banking, discussing the possibilities of deploying the advanced techniques of analytics and machine learning to detect the fraud cases. Their research indicates that digital bank platforms are prone to all types of fraud, such as phishing, identity theft, and manipulation of transactions. The authors believe that conventional rule-based frameworks fail to identify advanced patterns of fraud, and they suggest applying artificial intelligence in order to improve the detection rates. But, they are also concerned with the fact that there is new danger of model errors and false positives when they use automated systems.

Romanova and Kudinska (2017) discuss the operational risks of digital banking, especially as applied to delivery of services and reliability of systems. In their study, the researchers emphasize the probability of digital banking platforms to experience system failures, technological failures, and malfunctions, which subsequently can hamper service delivery and destroy customer trust. The authors suggest that operational risk management should become a priority issue in digital banking, where system resilience, redundancy, and disaster recovery systems should be put into consideration. Monitoring and maintenance of systems through continuous system are also highlighted.

The paper by Berg et al. (2020) is dedicated to the importance of alternative data in credit risk assessment using the concept of digital footprints that contribute to better accuracy on credit

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scoring model. They also conclude, based on their study, that digital information, including online behaviour and transaction history, can be used to come up with insights which may be useful in determining the creditworthiness of borrowers. Nonetheless, the authors also warn of the privacy, data security and possibility of bias in decision-making as a result of using such data. They state that risk management structures should discuss such ethical and operational issues to guarantee processes of credit assessment that may be equitable and dependable.

Buchak et al. (2018) examine how the non-bank fintech lenders are up-and-coming, and how traditional banks are influenced by digital technologies, and observe that the digital platforms have allowed new entrants to compete with others in the market. According to their study, fintech lenders tend to have different risk profiles, being dependent on automated procedures and alternative data sources. This may enhance efficiency although there are risks associated with model accuracy and regulatory controls. The authors emphasize the fact that there should be a level playing field in the regulation so that all financial institutions will follow the same standards of risk management.

The authors of Frost et al. (2019) explore the potential consequences of big tech companies transitioning to the financial market, paying particular attention to the impact of their data-driven business strategies on the structuring of risks. The research concludes that big tech companies have a chance to provide financial services more effectively through massive amounts of data, but also due to their concentration, the market can become concentrated and systemic risk ensues. According to the authors, the inclusion of big tech into digital banking should be tightly regulated to avoid monopolistic behaviour and promote financial stability. They also outline the possibility of misuse of the data and its violations.

The article by Stulz (2019) focuses on the connection between fintech innovation and financial stability and states that technology change can disrupt, stabilize, and increase risk. The research implies that despite the fact that digital banking is capable of enhancing risk management due to the enhanced data analytics and monitoring capabilities, it may also bring in the new vulnerabilities, specifically the cyber risk and the complexity of operations. Stulz highlights that overall effect of fintech on risk depends on how successful their institutions are in transforming risk management practices to the digital setting.

Thakor (2020) offers a theoretical account of the role of fintech and banking within the framework of the impact of the digital innovation on the risk-taking behaviour and financial intermediation. The author believes that efficient use of fintech can lead to better efficiency and competition systems, yet it is also possible that this results in an intensification of risk-taking since the new technologies are applied without full awareness of the consequences. Thakor explains why alignment between technology adaptations and the sound risk management structures should be adopted to achieve sustainable growth in the banking sector.

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Ozili (2018) discusses how digital finance affects the aspect of financial inclusion and stability, whereby digital banking access has increased access to financial services by the underserved populations. Nonetheless, the study also points out that more access can also create new types of risk especially to those with lower levels of financial literacy. According to Ozili, risk management within digital banking should move beyond institutional risks, and offer a consumer protection and financial education to counter possible adverse effects.

In their article, Lee and Shin (2018) focus on the fintech ecosystem and determine the main sources of innovation and risks. In their study, they point out that digital banking exists in a complicated system of actors, comprising of banks, fintech companies, regulators, and consumers. With this interconnection comes the potential to work together, but it may also create the risk of systemic risk. The authors suggest that to manage the challenges presented by the digital transformation, it is essential to have the coordination of all stakeholders with willingness to unite their efforts in managing risks.

Philippon (2016) examines the efficiency of financial intermediation in technological innovation context that digital banking could be more cost reduction as well as service delivery, but it has not brought much cost-saving in the total cost of financial intermediation. The paper points to regulatory limitations, old systems, and market structure as the cause of inefficiency. The findings of Philippon suggest that risk management should also focus on numerical functions of the financial system as it is only under those circumstances that the advantages of digital banking will be reaped to the full extent.

Carney (2017) explains what fintech implies to financial stability, and its policy-related aspects refer to the necessity of regulatory frameworks that should be able to keep up with the technological evolution. The author singles out the introduction of new types of systemic risk as introduced by digital banking, especially via the interconnecting platforms and shared infrastructures. Carney claims that it requires the regulators to take a proactive stance of risk management that involves stress testing, scenario analysis, and collaboration with foreign regulators to counter any emerging problem areas.

In general, the literature shows that risk management in digital banking is an ambivalent and dynamic area, affected by the fast technological progress and relative shifts in regulations. All the studies widely highlight the necessity of integrated, adapting and visionary risk management structures which have the potential to support the traditional financial risk areas as well as the emergent digital risk areas.

Methodology

The current paper includes a qualitative research approach that relies on a review method to explore the conceptual aspect of risk management in digital banking. The main purpose of the methodology is to conduct an analytical and synthesis process of the available academic literature

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to designate the main risk dimensions, the emergent issues, and the common risk management based practices in the digital banking setting. An organized method of literature review has been used so that the chosen studies are somehow relevant, credible, and consistent with the objectives of the research. The date of publication was not more than 2015, and special attention was paid to those that were included in the recognised academic databases, including Scopus, Web of Science, and Google Scholar.

The inclusion criteria were reviews that dealt with fintech, cybersecurity risk, operational risk, regulatory frameworks and digital transformation in banking. The findings were categorised into the major risk areas with the help of the thematic analysis technique, and the patterns, similarities, and contradictions across various studies were identified. Using this method, it would be possible to gain a holistic insight into the way risk management practices are currently modified due to the technological progress. There is no primary data collection process in its methodology, so it is based solely on the secondary one, which guarantees a conceptual and analytical approach based on existing academic research (Gomber et al., 2018; Claessens et al., 2018).

Results and Discussion

The findings of the current research are obtained based on a systematic review and analysis of the secondary data, which are presented in recent academic sources on the topic of digital banking and risk management. The results have found that the development of digital banking has tremendously changed the traditional risk landscape, which results in the development of hybrid risk structure, intertwining financial, technical and behavioural dimensions. The analysis suggests that the cybersecurity risk has taken the leading position among financial institutions, whereas the next concern is the operational risk and data privacy problems. The literature review, including Kou et al. (2021) and Zetzsche et al. (2020), continues to emphasize that the rate of cyberattacks and the level of its development are growing alongside the spread of online banking platforms. Such change represents a transformation of the traditional risk exposure that was more or less internal and manageable to external and continuously changing threats that need constant surveillance and adjustment.

The analysis of secondary results also shows that digital banking institutions continue to rely more on third-party service providers and cloud computing services and fintech alliances. Such dependency also creates concentration risk and vendor risk which is not well addressed in conventional risk discussions. According to Claessens et al. (2018) and Frost et al. (2019), this type of interconnectedness increases the systemic risk, with one single issue in a segment of the digital ecosystem potentially spreading very quickly to several different institutions. It was also found that the more financial institutions are digitally integrated, the more progressive risk management tools are updated, such as real time-data analytics and artificial intelligence-based monitoring systems. Nevertheless, such technological solutions have not been without flaws since

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they also introduce model risk and transparency and accountability concerns and especially in automated decision-making processes.

Table 1 is the synthesis of secondary information on the key categories of risks expressed in digital banking, and the level of impact thereof as argued through various empirical and theoretical studies.

Table 1

Major Risk Types in Digital Banking and Their Relative Impact

Risk Type	**Description**	**Relative Impact Level**	**Supporting Studies**
Cybersecurity Risk	Data breaches, hacking, phishing attacks	Very High	Kou et al. (2021); Zetzsche et al. (2020)
Operational Risk	System failures, technical disruptions	High	Romanova & Kudinska (2017)
Credit Risk	Algorithmic bias, model inaccuracies	Moderate	Berg et al. (2020); Buchak et al. (2018)
Data Privacy Risk	Misuse of customer data, regulatory non-compliance	High	Vives (2019)
Systemic Risk	Interconnected failures across financial systems	High	Claessens et al. (2018); Frost et al. (2019)

Table 1 interpretation allows concluding that the cybersecurity risk is the most vital in its effect because of the growing dependency on the digital infrastructure and the evolving complexity of cyber threats. Another risk/ threat that is of concern is the operational risk especially concerning system reliability and continuity of service. Though still, credit risk is still topical, it remains transformed in its character as a result of incorporating alternative data and automated decision-making solutions. The discussion also shows that the risk of data privacy has become visible since with the establishment of regulatory systems like the data protection laws, the financial institutions are finding it harder to meet these expectations. Although systemic risk is not as visible at institutional level, it is quite formidable at macroeconomic level since digital financial systems are interconnected.

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The findings also show that the regulatory frameworks are the important factors that influence risk management practices in digital banking. Arner et al. (2017) and Carney (2017) highlight that the regulatory reaction to the digital transformation has changed to incorporate technology-logical solutions like RegTech and SupTech that increase monitoring and compliance potentials. The comparison reveals that those jurisdictions that have greater regulatory infrastructures are more likely to have better risk mitigation results, especially through the regulation of cybersecurity and data protection risks. Nevertheless, regulation at the national level poses threats to the global digital banking business because a bank or a financial institution has to work across various regulations and regulations in different countries, which may complicate the operation and put the business in danger.

Besides the regulatory factors, the findings indicate the increased role of data analytics and artificial intelligence in risk management. Through these technologies, the banks can handle vast data volumes in real-time to enhance the capacity of the banks in detecting anomalies and responding to the possible threats. Nevertheless, as seen in the discussion, the dependence on the technologies provides some novel types of risk, especially concerning the algorithmic bias and the inability to explain. According to Berg et al. (2020), although digital data can be used to increase the accuracy of a score in predicting credit, it can also result in discriminatory outcomes when not used correctly. This highlights the importance of the ethical aspects, and institutional controls in the implementation of hi-tech risk control tools.

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Table 2 discusses the comparative overview of the traditional banking risk management and digital banking risk management according to the secondary data analysis.

Table 2

Comparison of Traditional and Digital Banking Risk Management

Dimension	Traditional Banking	Digital Banking	Supporting Studies
Risk Nature	Primarily financial and operational	Multi-dimensional (tech + financial)	Gomber et al. (2018); Vives (2019)
Risk Detection	Periodic and manual	Real-time and automated	Kou et al. (2021)
Dependency	Internal systems	External vendors and platforms	Claessens et al. (2018)
Regulatory Approach	Standard compliance	Adaptive and technology-driven	Arner et al. (2017)
Risk Speed	Slow-moving	Rapid and dynamic	Stulz (2019)

Table 2 analysis demonstrates the radical change in the approach to risk management that digital transformation will cause. Conventional banking was based on the performance of periodic analysis and control systems, which were manual in nature, and digital banking implies permanent and automated monitoring systems that could identify possible threats in real-time. The reliance on third party systems and vendors also makes digital banking another source of divergence, adding new levels of complexity and risk. The results also indicate that regulatory strategies should keep pace with the technological solutions including embracing flexible and technology-driven systems to deal with the new risks properly.

The discussion also indicates that risk exposure in digital banking depends on customer behaviour and practice of digital adoption to a greater extent. Customer vulnerability to phishing and social engineering fraud has increased due to the increased use of mobile applications and online platforms. Ozili (2018) points out that, although digital banking increases financial inclusivity, it also leaves financially illiterate users to an increased level of risk. This means that risk management should not only focus on the institutional aspect of risk management but customer education and awareness process as well.

The next significant discovery is associated with the influence of the organisational culture and governance on the control of digital risks. The institutions with a high level of risk consciousness and those that invest in human-level training are more resistant to the cyber attacks and operational failures. According to Thakor (2020), the effective implementation of digital technologies in the processes of banks is attributed to harmonizing the notions of innovation and effective governance frameworks. This congruency will make sure that risk management practices are integrated into the organisational processes and not as an independent process.

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On the whole, the findings and discussion draw the attention of the fact that the aspect of risk management in digital banking is complex, dynamic, and interdependent. The adoption of new technologies has increased the capacity of financial institutions to deal with risks, yet another vulnerability has appeared, which has to be dealt with constantly. The results highlight the conditions of a holistic risk management strategy using technological solutions, regulatory compliance, organisational governance, and customer awareness. The digital banking nature implies that risk management will always be an important sphere of interest of researchers and practitioners as new technologies and business transformations reshape the financial space.

Conclusion

The risk management of digital banking study reveals how significant change has occurred in the financial sector due to the high-speed change of technology. Digital banking has transformed the format, and provision of the financial services, brought in efficiency, accessibility and innovation, it has also repackaged the character of risks the financial entities are exposed to. The results indicate that risk in digital banking has ceased to exist as a traditional financial construct but instead has broadened to a multidimensional construct, comprising of cybersecurity concerns, data privacy concerns, vulnerabilities in operations, and systemic interdependency. This change highlights the need to have an effective and responsive strategy to risk management which can fit with the dynamic nature of the digital space.

The analysis also shows that as the technological innovations over the years have amplified the abilities of banks to detect and diversify risks, they have also added some fresh obstacles in the form of model risk, algorithmic prejudices, and technological fixation. There has been an amplification of exposure to third-party service providers and interrelated systems that has increased vulnerability of financial institutions to cyberattacks and disruption of operations. Regulatory frameworks, in this case, are significant in providing stability and safety, whereas the speed of adjusting regulations to the technological changes generally falls behind the pace of technological one (Arner et al., 2017; Vives, 2019). This also provides loopholes that will have to constantly monitor and innovate in the risk management practices.

Also, the paper emphasises the significance of organisational governance, risk culture, and customer awareness in the effective management of digital banking risks. In order to be resilient, financial institutions need to incorporate the risk management into their strategic decision-making process and invest in the technological infrastructures and human capital. The position of customers is also important, as more and more people have to use digital in the future, and higher awareness will guarantee that it is not misused and abused. Altogether, risk management in digital banking is a constant and dynamic process, requiring striking a balance between innovation and control, to ensure that the gains of the digital transformation become an actualised opportunity with no harm to the stability of financial operations and security.

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