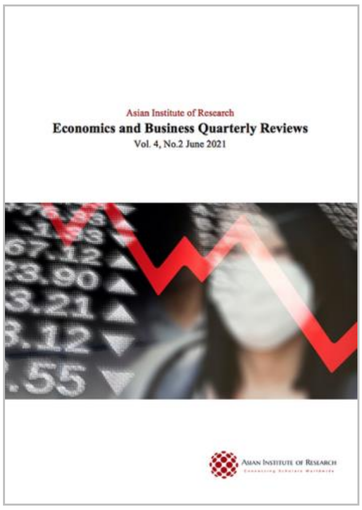

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Emerging Innovation Risk Management in Financial Institutions of United States

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Abstract
Financial institution within the USA is faced with great challenge of risk management, hence the pursuit of every financial institution to come up with better innovative ways of managing risks. However, the emerging innovation in risk management in financial institution has an underlying negative implication which is yet to be studied. The aim of this research was to explore emerging innovation in risk management in financial institutions. The research utilized qualitative research design, through an intensive literature review that involved deep research and reviewing of academic scholarly academic articles. This type of approach ensures that the research includes wide variety of sources that support this research and making it viable for future reference. Results showed that the emerging innovation in risk management in financial institutions is digital financing. Owing to the associated implication of excessive technology use, the research suggests that financial institutions should be very cautious, particularly with the associated risk of cybercrime.

Keywords: Innovation, Risk management, Technology

1. Introduction

Innovation has been the trend in every sector of society due to the dynamic nature of the world, and as such financial institutions are not left behind in terms of innovation. Financial institutions have got a long history in relation to risk (Johnson, 2015,131) management. Since time immemorial, financial institutions have continued to explore better and innovative ways of managing risk. Financial institutions are faced with great challenges of risk management; hence the pursuit of every financial institution is to come up with better innovative ways of managing risks (Johnson, 2015,131). However, the emerging innovation in risk management in financial institutions has an underlying negative implication that is yet to be studied. Research evidence has shown that while financial institutions struggle with many challenges related to risk management, non to date stand to effectively eliminate the challenges (Johnson, 2015,131). This has left financial institutions in a continuous search process to explore more innovations. To note, just but one of the risks, no innovative approach has been effective in the management of cyber risk in the financial institution. The sophisticated use of information technology characterizes the complexity of the risk.

This paper's primary focus is to explore emerging innovations in risk management in financial institutions in the midst of this global controversy of economic crime. There is no doubt that a lot of research is needed through the scientific literature to determine the most effective innovative means of risk management in financial institutions. This paper is divided into five main sections. Part one already has described the background of the research problem and exposed the research interest. The next section contains the research methodology depicting how the research was accomplished. Section three, which is the main section of the research, is comprised of the literature review. Section four of the research contains results and discussion based on the evidence gathered from the literature analysis. The last section of the research is the conclusion and recommendation section based on previous sections.

1.1 Research problem

The intellectual desire that motivates this research is the emerging innovation in risk management in financial institutions. There is an implication that it t has some underlying negative consequences to the performance of financial institutions, subjecting them to great risk. Research evidence has shown that while financial institutions struggle with many challenges related to risk management, non to date stand to effectively eliminate the challenges (Johnson, 2015,131). A lot is currently done to counter this proliferating trend. The use of innovation adds to the risks that financial institutions face when it comes to financial technology and innovations. As financial goods and services in the USA become more dynamic, knowledge asymmetry between suppliers and customers grows, resulting in the transformation of existing types of risks into new ones. This is the problem this research seeks to answer.

2. Methodology

This paper's primary focus is to explore emerging innovations in risk management in financial institutions by reviewing current practices for incorporating and implementing technologies in the context of the economy's deepening technological advancement. The study, therefore, exploited qualitative techniques of data collection, which was accomplished through a desktop review process. The desktop review was accomplished by performing an automated and systematic search of appropriate scholarly academic papers using a variety of search engines, such as Google Scholar, and libraries such as Willy's online library. The study considered papers of diverse nature. However, those with the highest rating were chosen for review. For the sake of inclusivity, both published and unpublished papers restricted to the English language were reviewed. The catchy words that informed the review include innovation, financial institutions, risk and risk management. The keywords were used to find the most relevant papers that formed the final review process references.

3. Literature Review

According to (Johnson, 2015,131), financial institutions face different classes of risks, such as systemic, interest rate, credit, market, strategic, financial, reputational, compliance, operational, and liquidity risks, among other risks. However, these risks' diversity has streamlined efforts by these financial institutions to come up with effective optimal risk management strategies. (Johnson, 2015,131) stated that for financial institutions to manage risks effectively, they need to rely on remote tools like enterprise risk management strategies and minimum capital ratios.

(Schwarcz, 2008, 193)**.** explained the extent to which single consternation or series of consternations may prompt the breakdown of one or more systemically relevant innovative financial institutions. According to (Schwarcz, 2008, 193), mitigating systemic risks poses evident challenges. For instance, the sources of systemic risks should be properly identified to mitigate the risks. Also, regulations relating to financial risk management must be properly tailored to mitigate the peril posed by systemic risks effectively. (Schwarcz, 2008, 193)concludes that institutions need to design and develop effective risk management regulations to ensure competent oversight and regulation.

(Fadun,2013, p. 225)**.** Described Effective Risk Management in innovative financial institutions as the process of managing risks related to firms' operation. Based on this description, institutions maximize opportunities while at the same time minimize perils. According to (Fadun,2013, p. 225), effective risk management is a set of processes that a financial institution or business enterprise undertakes to minimize all types of risks in an integrated manner. Nevertheless, these risks usually have a serious impact on the business organization's profitability, financial performance, and effectiveness.

(Barton, and Walker,2002)**.** Studied the interrelationship among risks and how they are evaluated across all market activities. According to (Barton, and Walker,2002), the reason for risk management in any financial institution is to increase shareholder's value as well as striking a balance between risk management and corporate performance. Additionally, this optimal balance would facilitate a business enterprise to seek its corporate strategy and objectives in the light of financial complexity. Based on (Barton, and Walker,2002)discussions, effective risk management in the innovative finance industry aims at aggregating and integrating all forms of risks by using risk-based mechanisms to mitigate and minimize those risks and report the risk information for better decision making.

(Onafalujo and Eke,2012, pp. 95-101).explain that firms and business enterprises' financial performance are driven by the nature of resources designated to tangible and intangible assets to enhance the firms' sustainability. Also, (Onafalujo and Eke,2012, pp.95-101).asserted that the main reason for measuring institutional financial performance is to assess the firm's progress in achieving financial and non-financial corporate strategies. In this case, the performance of any innovative financial institution is driven by its past events and it has a greater impact on its current and future sustainability. In their discussion, [5] explain the relevance of Enterprise Risk Management (ERM) to business organizations by stating that it helps these organizations to oversee brisk exposure and formulate risk management strategies to mitigate these risks. Therefore, the Enterprise Risk Management framework is intended to achieve the organization's overall performance objective as well as its strategic vision.

(Onafalujo and Eke,2012, pp.95-101). discussed that an effective risk management system helps to minimize the risk associated with innovative financial institutions' activities. According to Planesa (2001), unlike other financial institutions, innovative financial institutions benefit from obtaining external financing, balance sheet liabilities, non-profit lending conditions, and lower loan interest rates. Therefore, when applying innovations and technologies, there is a need to study the issues related to institutional financial services risk management (Demirguc-Kunt, Klapper and Singer,2017).The study further explained that in the context of digital development, the provision of innovative financial services enhances the target of financial inclusion.

(Demirguc-Kunt, Klapper and Singer,2017).asserts that mobile finance and other digital technologies such as Point of Sale services, smart cards, ATMs, and biometric-based identification cards can be integrated. In this case, innovative institutions can use biometric data to verify customer identity during account opening and payment authorization to minimize risks related to account ownership. Therefore, mobile payments can be enriched by these mobile innovations, which to a large extent facilitates social cash transfer as well as providing micro-insurance. According to, the liquidity of firms is therefore improved due to simplified money transfer and the reduction of transaction cost resulting from mobile money innovations. Furthermore, a satisfactory increase in cash flows initiated by mobile money could lead to increased investment. Also, increased investment can result from increases in trade credit as well as other external financing sources aided by mobile money.

Based on (Harelimana, 2017)**.** study on "the effects of integrating computerized systems and digital financial services in Rwanda," reduction in transition costs and enhanced cash flows can also improve liquidity. According to this study, digital financial services enhance profitability and customer satisfaction. Further, this study shows that digital financial services can help individuals and institutions to manage financial risks and stem income shocks resulting from unexpected emergencies. (J. C. C. Jr,2013, p. 1259)**.** affirmed that credit and capital markets are important infrastructure resources around the world. A network of payment systems, exchanges, and clearinghouses enables financial market players to transfer commodities, cash securities, and other assets across countries in seconds. Therefore, technological innovations enable financial institutions to carry out transactions with less cognizance of territorial boundaries.

Further recent research by (Mishchenko, Naumenkova, Mishchenko and Dorofeiev,2021), indicates that financial technologies used in diverse financial institution creates new risk they require constant attention and innovative risk management involve strategy. The study recommends digital strategy as the promising one. The paper concluded that additional collective compensation methods for the risks of innovation and the strengthening of cyber threats are needed to ensure financial institutions' proper operational stability (Mishchenko, Naumenkova, Mishchenko and Dorofeiev,2021), This is a significant finding that informs more about the pitfall of financial technology in enhancing cybercrimes.

3.1 Classification of innovation risk types in financial institutions by individual characteristic

The rise in the provision of digital services, the use of blockchain and artificial intelligence technologies, the widespread use of electronic and mobile money, personalization of financial services, an increase in cyber-attacks, and increased accountability of government regulators in the use of divisive technologies are all characteristics of the current stage of financial services market development (Abu Karsh and Abbadi, 2013)**.** As a result, risk management necessitates a clear classification of risks based on individual characteristics, nature, and level of impact on financial institutions and innovative service consumers' activities. The classification of different types of innovation risks in the financial sector will help with this. (Arévalo, 2021,pp. 145-159)**.** The following are the key classification features: scope, existence, and modes of manifestation, technological complexity, and degree of complexity of cyber-threat security for information systems. See table 1 below.

Table 1: Classification of innovation risk types in financial institution

Classification feature of types of risk	**Characteristics of the type of risk and the level of its impact on the activities of financial institutions and innovative service (product) consumers**
Scope	Impact on the financial sector or the financial system as a whole Impact on the financial institution Impact on specific operations or activities Impact on consumers and customers
Forms of manifestation	Risks associated with the use of certain financial instruments and transactions Risks of remote financial service provision Risks of using agency services Risks of digital presentation of financial products and provision of financial services
Performance	Reducing the number of clients Reducing the volume of services provided Decrease in profits Decreased competitiveness of a financial institution
Technical complexity of innovations	Technical complexity of the perception of innovation by consumers and customers Customers' poor awareness of new technological equipment and software Complexity of the perception of the user interface
Protection level of technical systems and software	Failure of technological equipment Imperfect software Risk of unauthorized access Information risks, fraud, and cyber threats

Source: Developed by the author

3.2 Characteristics of the impact of innovation risks on financial institutions and consumers

The usage of classification noted in 3.2, table 1 allows for the identification of different types of risks as well as the description of their characteristics and level of effect on the operations of financial institutions and users of innovative services and products. Unique areas of risk effect on the activities of financial institutions and financial service customers were defined and listed based on the proposed classification as demonstrated in table 2 below. This information can then be used to measure risks quantitatively and qualitatively, as well as validate management strategies. The use of distributed registers and blockchain technologies is one of the most critical aspects of transforming financial institutions and lowering the risk of innovation. Their benefits include management decentralization, increased transaction reliability and accountability, and instant availability for all participants. Smart contracts, which are a form of computerized protocol (algorithm) for concluding commercial contracts using a cloud service, are made possible by blockchain technology.

Table 2: Characteristics of the impact of innovation risks on financial institutions and consumers

Type of risk	**Characteristics of the impact of risks on**	
	Financial Institutions	**Consumers**
Strategic risk	Wrongly chosen direction of activity, wrong management decisions, inadequate response to changes in the business environment	-
Transformational risk	Changing the governance structure or business model of a financial institution	The need to master new technologies and software
Operational risk	Errors when using new programs, equipment, deliberate actions of employees, equipment failures	Consumer errors when using new programs, devices, or equipment
Information risk	Internal or external events related to information systems, lack of control, inadequate internal processes in information technology	Incomprehensible programs, interfaces, information resources, attempts to mislead a consumer
Reputational risk	Loss of trust in the institution, reduction in the number of customers and market share due to unfavorable perception of the institution's image	Deteriorated service conditions, denial of preferences, unfavorable perception of the financial institution's activities
Cyber threats	A complex type of risk associated with the unauthorized intrusion of third parties into computer and information systems in order to obtain information, deactivate programs and equipment	
Fraud	Illegal actions of attackers to seize funds or information of a financial institution or its customers	
Compliance risks	Failure to comply with legal and regulatory requirements, standards, corporate ethics rules, conflict of interest	-
Risks of access to IT platforms	Inconsistency of actions or terms of an agreement with an IT company, interface complexity, non-compliance of technical conditions	Technical complexity, low access level, user interface complexity
Financial service access risks	Agents' failure to fulfill (improper fulfillment) their contractual obligations to provide remote financial services	Lack of access to financial services, failure by agents to fulfill their obligations
Risk of loss of funds	Unauthorized access to databases and accounts due to technical failures, fraud, and cyber threats	Bankruptcy of an institution, unauthorized access to the account, cyber threats
Technological and technical risks	Failures in the operation of equipment, programs, technical devices, intentional damage and decommissioning of equipment, etc.	

4. Results and Discussion

4.1 Digital platforms

The drivers to transformation within the market environment through innovations are making a great impact in managing risk in financial organizations, and they are becoming more uncertain every day in the USA. In these uncertain and volatile periods, several financial organizations are striving to assess and to understand the impact of new technology in countering various financial management risks linked to cyber-crimes.

For instance, this research has found that several financial institutions in the United States are using digital platforms to revolutionize already relative new technologies in their financial institutions. The hybrid cloud (server/cloud) is used in giving clients both proper accessibility and privacy. Hybrid experience platforms allow the integration of data through real-time intelligence like real-time personalization, advanced analytics, and digitalization.

One of the key transformations that have been achieved by most financial organizations of the USA is the addition of API platform. The API platform gives customers an opportunity to integrate their banking information into other applications. Several financial organizations have tried to fight the integration of API, but the regulations by the EU have forced many organizations in the USA to adopt the change. Open banking has offered several benefits to the users, like sharing their data with the third-party budgeting organizations or apps, managing their finances using money management tools.

4.2 Artificial intelligence and Chatbots intelligence

The use of AI (artificial intelligence) and chatbots solutions is increasingly incorporated in digital transformation within the financial sectors of the United States. These technologies are popular among the banks, with everyone from tiny credit unions and large-scale banks are using them. The AI and Chatbots have greatly impacted the risk management, product delivery, and security. Banking machines have been integrated with simple algorithms to help in completing everything from entering data to risk management evaluation.

Artificial intelligence and chatbots are playing a significant in risk mitigation, and cybersecurity in the bank of United States. This is because cybersecurity is becoming a big threat in the state among other risks that can be eliminated through using AI in real-time monitoring, analytics and sending an instant alert when something has been flagged as a threat. That way the concerned individuals are able to respond thus reducing the possible breaches.

4.3 Block Chain

Block chain is the next emerging innovation that has tremendously transformed the financial world but it has not been adopted by many organizations in the USA. In the USA, block chain is being used by the financial institutions like JP Morgan Chase, which is known as one of the major banks. One of the studies indicates that Accenture approximates that investment financial organizations could be saving like 10 billion dollars by settling and clearing processes to block chain.

Block chain seem to be the most secure technology that has not been adopted by many financial organizations. Some financial institutions are still developing a vast solution, although several banks have adopted it in money processing, trade finance and checking various activities within their systems. The adoption of the block chain technology has greatly contributed to developing smart contracts, safe payments and fraud reduction.

5. Conclusion and Recommendations

5.1 Conclusion

The paper was intended to explore emerging innovations in risk management in financial institutions in USA. An s informed from the literature, risk management is key in financial institutions for sustainable organizational performance. As identified from the literature and from the above discussion, digital financing is a remarkable risk management strategy in the finance industry and needs to be well embraced by all financial institutions.

However, it should be noted that using sophisticated technology in risk management among financial institutions creates a new risk that requires constant attention and innovative risk management involve strategy. For instance, people rely heavily on technology to conduct transactions, move cash and other properties, and facilitate payments in the increasingly interconnected universe of businesses that make up financial markets. Cyber threats can cause systemic risks and negative externalities that affect governments, industries, and societies all over the world. Therefore, financial institutions need to be aware of the above risk and find ways to mitigate it. The best way to start laying out a robust domestic and international innovative way risk management in financial institutions to create proper operational stability and uninterrupted execution of critical operations is to explore the questions concerning these issues.

5.2 Recommendations

The process of risk management of innovation in financial institutions is essential to ensure proper operational stability and uninterrupted execution of critical operations. Following the literature findings and discussion, the paper recommends that financial institutions embrace digital finance exploitation as the best innovative risk management method despite the associated negative implication of technology advancement.

Based on the study of various literature related to emerging innovations in risk management in financial institutions, it is evident that risk management should follow a clear process of classification based on the individual risk characteristics, level of impact on innovative service consumer and on the activities of financial institutions as well as the nature of risk. According to the reviewed literature, significant areas of reconstructing financial institutions and minimizing the innovation risk is the adoption of Enterprise Risk Management strategies. This is a set of processes or programs that innovative financial institutions or business enterprises undertake to minimize all types of risks in an integrated manner. Besides, the interrelationship between risks and market activities of innovative financial institutions needs to be assessed. This helps to create a balance between financial risk management and corporate performance by the financial institutions.

As observed from the literature review, it is therefore essential for financial institutions to measure their financial performance to assess the progress made by these institutions in achieving financial and non-financial corporate goals and objectives. It is also noted that the context of digital development and the provision of innovative financial services enhance financial inclusion. In line with this, mobile finance and other digital technologies such as Point of Sale (POS) services, smart cards, Automatic Teller Machines (ATMs), and biometric-based identification cards can be integrated to achieve higher financial outcomes. Therefore, there are high chances of innovative financial institutions experiencing increased investment resulting from mobile payments.

Digital financial services can help innovative financial institutions sustainably manage their financial risks. From the reviewed literature, therefore digital financial services can enhance the business profitability and promote customer satisfaction. As an emerging innovation in the finance industry, digital financial services have helped individuals stem income shocks resulting from unexpected emergencies. Nonetheless, the implication of the emerging innovation in risk management in financial institutions should the overlooked regardless of the urgency

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