

The Impact of Regulatory Changes on Risk Management

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12-1-2023

Chapter 1: Introduction

1.1 Introduction

The petrochemical industry has witnessed significant changes in recent years, primarily driven by evolving regulatory environments (Arner et al., 2017). This chapter of the thesis provides an overview of the research study, which aims to investigate the impact of regulatory changes on risk management within the petrochemical industry. The study will explore the correlation between regulatory changes and the strategies employed by organizations to manage risks in this sector. This chapter also provides the background for the study, highlighting the dynamic nature of the petrochemical markets and how regulatory changes can influence risk management practices. International regulatory authorities continually adapt to new challenges (Arner et al., 2017), and this study seeks to examine their implications, offer insights, and provide an understanding of how concerned stakeholders can navigate this evolving landscape. Thus, by presenting the background, research problem, objectives, and questions of the study, this chapter serves as the foundation for the entire investigation. This study not only contributes to the existing body of knowledge in the field of petrochemicals and risk management but also offers actionable recommendations for decision-makers and practitioners within this industry.

1.2 Background

In recent decades, the petrochemical industry has faced significant regulatory changes that have had long-lasting and profound consequences on risk management practices (Gallati, 2022). In the late 20th century, the industry encountered a series of challenges, including environmental regulations and safety concerns. These events highlighted the need for a more robust regulatory framework and oversight (Duffie, 2018). In response, international regulatory bodies, including

agencies like the Environmental Protection Agency (EPA), and the International Maritime Organization (IMO), drafted initial reforms to reduce risks within the petrochemical sector.

The regulatory changes within the petrochemical industry aimed to enhance safety, environmental compliance, and operational standards. Organizations operating in the petrochemical sector were compelled to adapt to stricter environmental regulations, safety protocols, and reporting methods. Management of operational, environmental, safety, and supply chain risks became more stringent, necessitating advanced risk modeling and technology (Gallati, 2022).

Hence, this study aims to investigate the impact of these regulatory changes on risk management strategies in the petrochemical industry and assess their effectiveness in improving the safety and environmental compliance of petrochemical organizations.

1.3 Problem Statement

As the petrochemical industry becomes more complex and interconnected, regulatory bodies have also evolved, introducing several reforms to protect the industry from systemic risks and to safeguard the interests of various stakeholders, including environmental agencies and consumers (ElBannan, 2017). However, there is still a lack of understanding regarding whether these regulations have been successful in achieving these objectives. One significant issue is that regulatory changes can lead to unintended consequences, such as stricter environmental compliance requirements that prompt petrochemical organizations to shift their operational practices in ways that may lead to new and unpredictable environmental vulnerabilities (Gallati, 2022).

Moreover, due to the diversity of these regulations, emerging from different regions and jurisdictions, regulatory arbitrage has increased, where organizations exploit these disparities to their advantage (Willessen, 2017). Additionally, the impact of these changes on smaller petrochemical companies, which often lack the resources compared to their larger counterparts, needs to be examined. Smaller organizations face higher compliance costs and numerous difficulties in adopting new environmental and safety management practices (Navaretti et al., 2018).

Hence, this research investigates the effectiveness of regulatory changes in reducing environmental and safety risks within the petrochemical industry while also highlighting any consequences and disparities in their application across different segments of the industry.

1.4 Research Objectives

The main research objective of the study is to "determine the impact of recent regulatory changes on risk management practices in the global petrochemical industry, with a focus on safety, environmental compliance, and industry stability."

To achieve this aim, the following objectives have been derived:

Analyze the significance of environmental regulations and safety standards introduced in the petrochemical industry, with a focus on their impact on risk assessment and operational safety strategies within petrochemical organizations.

Investigate whether regulatory changes in the petrochemical sector have contributed to a reduction in environmental and safety risks and have improved the resilience of petrochemical companies in meeting compliance standards.

Identify the consequences of regulatory reforms in the petrochemical industry, including potential shifts in operational practices, environmental risk profiles, or regulatory arbitrage strategies.

Examine the adaptability of smaller petrochemical companies in the evolving regulatory landscape, considering their compliance capabilities and challenges in implementing safety and environmental management practices.

Identify best practices and provide recommendations for regulators and petrochemical organizations to enhance the effectiveness of regulatory changes in mitigating environmental and safety risks while minimizing adverse side effects.

1.5 Research Questions

The main research question guiding this study is, "How have recent regulatory changes influenced risk management practices and industry stability within the global petrochemical sector?"

The following research questions further elaborate on the main question of the study:

To what extent do environmental and safety regulatory reforms, akin to Basel III in the banking sector, influence the risk assessment and safety management strategies of petrochemical organizations, and how have these changes affected their ability to manage safety and environmental risks effectively?

Have regulatory changes in the petrochemical sector succeeded in reducing environmental and safety risks and improving the resilience of petrochemical organizations? If so, in what ways?

What consequences have resulted from these regulatory reforms in terms of operational practices, safety and environmental risk profiles, or regulatory compliance within the petrochemical industry?

How do smaller petrochemical companies adapt to the evolving regulatory landscape, and what disparities exist in their safety and environmental compliance capabilities compared to larger organizations?

What best practices and recommendations can be used to improve the effectiveness of regulatory changes in mitigating environmental and safety risks and promoting stability within the global petrochemical sector?

1.6 Relevance and Significance

Developing an understanding of how regulatory changes influence risk management in today's petrochemical industry is crucial. After the global financial crisis of 2008, the petrochemical sector also realized the need for effective risk management frameworks, leading to the adoption of numerous regulatory changes aimed at maintaining safety, environmental compliance, and industry stability. These changes were designed to prevent the recurrence of significant incidents and environmental hazards, making it imperative to assess their effectiveness in achieving this objective.

Furthermore, as the petrochemical industry is highly interconnected, a single safety or environmental failure can have cascading effects. Regulations have been developed to reduce environmental and safety risks through stricter controls and prudent safety management practices (Duffie, 2018). These regulatory changes also play a crucial role in protecting the safety of workers, the environment, and communities living near petrochemical facilities, ensuring that they are shielded from undue risks (Carlson, 2017).

Efficient safety and environmental risk management practices in the petrochemical industry contribute to a safer and more sustainable industry, ensuring that resources are allocated effectively to support environmental sustainability and economic growth. Regulatory changes influence how resources are allocated and contribute to the industry's efficiency. In recent years, significant technological advancements have also impacted the petrochemical industry, demanding a robust regulatory framework that adapts to these changes. These advancements include safety and

environmental monitoring technologies, cybersecurity measures, and the integration of digital tools in petrochemical operations (Gallati, 2022).

Moreover, it's essential to recognize that petrochemical organizations operate across borders, necessitating a unified approach to regulatory compliance. A study of the effects of regulatory changes on risk management in the petrochemical sector should acknowledge its implications for international safety, environmental compliance, and industry stability.

The study will also help identify and address the concept of regulatory arbitrage within the petrochemical industry, where organizations may seek to exploit variations in regulations to gain a competitive advantage. From a theoretical perspective, the study expands our understanding of the relationship between regulatory changes and safety and environmental risk management practices, shedding light on their effectiveness and consequences. This research informs and refines the theoretical framework, helping to design a more adaptive, resilient, and efficient safety and environmental risk management framework within an evolving regulatory landscape.

1.7 Definition of Key Terms

A) Risk Management

It is the process of identifying, assessing and reducing potential risks to achieve specific objectives. It includes strategies that control, minimize and transfer risks in a systematic and cost-effective manner (Chance & Brooks, 2021).

B) Regulatory Changes

This study refers to regulatory changes as the modifications, updates or new policies implemented by the government or industry in the finance sector which influence behavior, compliance and address changes in the sector. It can also include any alterations within the law, or standards that guide the operations of financial institutions and how they manage risk.

1.8 Thesis Structure

The following chapters of this research study further explore the relationship between changes in the regulations and risk management practices within the global banking sector. Chapter two of the study explores the historical and theoretical context of risk management and regulatory changes while providing an overview of the current research, gaps and theoretical models which are relevant to the study through journals, articles and available information. Chapter 3 is the research methodology which presents the research design, data sources, sampling strategies and ethical considerations of the study. It is followed by data analysis and findings where the empirical results of the study have been presented including the impact of regulatory changes on risk management practices. The findings are then discussed in the following chapter along with their significance, practical implications and potential recommendations for policymakers, regulators, and financial institutions. The last chapter provides a summary of the entire research, highlighting key findings and providing suggestions for future researches.

Chapter 2: Literature Review

2.1 Introduction

This chapter is an important aspect of the investigation over the influence of regulatory changes on risk management within the global banking industry. It provides a detailed overview and summary of the existing knowledge, theoretical frameworks and empirical research which is relevant to the research study. As it presents a synthesis of the existing knowledge, it provides a broader context which helps understand the impact of regulatory changes on risk management practices. Moreover, the literature review plays an important role in identifying gaps, research trends and methodological approaches which aid in developing a strong conceptual framework for the research. This chapter also enables a critical evaluation of the present state of information, assessing any conflicts or areas need to be further researched. The chapter itself is structured in a manner that it presents the information in a logical sequence, starting from the history on regulatory changes, introduction of theoretical frameworks, examining specific regulatory changes, exploring the impact on risk management, adaptations in risk management practices, overview of empirical findings, identification of research gaps and ending with a theoretical synthesis of information. This sequence will ensure that the reader is guided throughout the complexities of the topic and its relevance within the financial sector.

2.2 Historical Perspective on Regulatory Changes

2.2.1 Overview of Regulatory Changes

The landscape of regulatory changes within the banking sector has gone under a significant transformation in the recent decades (Arner et al., 2017). The reforms were adopted to improve the stability and resilience of the financial institutions specifically after major financial crises. The

Global Financial Crisis of 2008 has been a major event which contributed towards increasing the demand for a strict regulatory change in the banking sector (Duffie, 2018).

2.2.2 Global Financial Crisis of 2008

The 2008 Global Financial Crisis (GFC) was an important event in the history of banking and regulatory reform. It was caused due to the collapse of a number of major financial institutions, an extreme credit crunch and a global economic recession. It highlighted the fragility of the financial system and the importance of an effective regulation. One of the issues highlighted by this crisis was of systemic risk. As the financial institutions and financial products are all interconnected to each other, the crisis spread rapidly from one part of the world to the other (Cai et al., 2018). Regulatory changes were adopted to reduce the probability of systemic risk and protect the global financial system from a recurrence (ElBannan, 2017). The bailouts experienced by major financial institutions by the government and central banks also raised concerns regarding moral hazard where the institutions are willing to take additional risk in expectations of being rescued eventually (Liu, 2017). Regulatory reforms also addressed this by establishing mechanisms that prevent moral hazard. As complex financial instruments were in use, there was a strong lack of transparency in the financial market. Regulatory reforms helped improve transparency while also improving the oversight of financial products and markets (Curtin, 2017). The crisis also contributed towards highlighting the inadequacy of capital requirements for financial institutions (Gallati, 2022). Basel II and Basel III helped introduced reforms that demanded banks to maintain a sufficient amount of capital to bear losses during an economic recession (ElBannan, 2017).

2.2.3 Need for Regulatory Oversight

The GFC of 2008 due to its root causes highlighted the need of a stronger regulatory framework with improved oversight of financial institutions. The crisis helped display any limitations associated with existing regulations that managed risks among modern banking activities such as securitization and derivatives trading. In response to these challenges, international regulatory bodies, national governments and central banks introduced a series of regulatory changes (ElBannan, 2017). The Dodd-Frank Wall Street Reform and the Consumer Protection Act were established by the United States to address the weaknesses that were exposed during the global financial crisis. The act also improved transparency, consumer protection and oversight of systemic risk within the financial market (Carlson, 2017). These changes provided an entirely new framework that initiated a new era of banking, emphasizing over the need of capital adequacy, liquidity management, risk assessment and stress testing. They were targeted towards providing a safer and stable financial environment which was better equipped to handle an economic shock and mitigate systemic risks (Duffie, 2018).

2.3 Theoretical Frameworks in Risk Management and Regulation

2.3.1 Theoretical Models

In order to understand risk management and regulatory changes within the global banking industry, it is important that relevant theoretical models be used which help explain, predict and guide decisions within this complex domain. These models provide a framework that helps understand the relation between regulatory changes and risk management.

2.3.2 Application of Theories to Risk Management and Regulatory Changes

There are a number of theories that can be applied to study risk management and regulatory changes. The agency theory is a commonly used model which presents a principle and agent problem. It helps explore how a conflict of interest can emerge between the owner of the bank (principal) and the manager (agent) impacting their risk-taking behavior (Poletti-Hughes & Briano-Turrent, 2019). Regulatory changes can help align the interests of both these parties, and reduce moral hazard. Similarly, the capital structure theory used the Modigliani-Miller theorem and other related models to explain an optimal capital structure for financial institutions. These models elaborate over the process of regulatory changes specifically those which are related to capital adequacy and their relevant influence over the bank's financial structure and risk-taking behavior (Brusov & Filatova, 2023). The stakeholder theory can also be utilized which recognizes banks to have multiple stakeholders which includes; depositors, shareholders, regulators, and the broader economy. It helps explore how regulatory changes may influence the interests of the stakeholder and how banks balance these interests to manage risk (Shad et al., 2019). The information asymmetry theory can also be used since regulatory changes also target information asymmetry between the banks and their stakeholders. The model can explore disclosure requirements and transparency regulations, and their relevant impact over risk management within banks (Cui et al., 2018).

Another theory of interest is the game theory, which is used to examine strategic interactions between the financial institutions and regulators. It helps analyze how regulatory changes may influence the behavior of banks or regulatory authorities within a dynamic environment (Bussmann et al., 2021). The efficiency and risk trade-off theory meanwhile, examines regulatory changes specifically which are related to capital and liquidity requirements, and their influence

over the balance between efficiency and risk taking through imposing constraints over banking operations (Dierker et al., 2019). The market discipline theory focuses over the role of the market such as credit ratings and the stock price to discipline banks. Regulatory changes that improve transparency and disclosure can also strengthen the market discipline, influencing risk management practices (Christophers, 2017). Lastly, the behavioral finance theory considers the role of behavioral biases and heuristics within the decision-making process, as it can highlight the role of regulatory changes in reducing irrational behavior, improving risk management (Zahera & Bansal, 2018).

2.4 Regulatory Changes in the Global Banking Industry

2.4.1 Basel Accords (Basel I, Basel II, Basel III)

The Basel Accords have an important role in shaping the global regulatory structure of the banking sector. Basel I was introduced in 1988, targeted towards establishing a minimum capital requirement for banks primarily focusing on credit risk. However, due to its simplicity, there were concerns regarding risk sensitivity of the capital requirements. Basel II was developed in response to this concern, being a more risk-sensitive framework with proper and distinct approaches for credit, operational and market risk. Basel II provided advancements in risk management practices emphasizing over internal models and regulatory oversight. However, it too faced criticism since it was quite complex and procyclical. The 2008 Global Financial Crisis highlighted these limitations and led to the development of the Basel III. It addressed the gaps present in Basel II, demanding higher capital requirements, a leverage ratio and liquidity standards to improve resilience (ElBannan, 2017).

2.4.2 Dodd-Frank Wall Street Reform and Consumer Protection Act

The Dodd-Frank Act has been recognized as a landmark piece of US legislation, created due to the consequences and impact of the 2008 GFC to address systemic risks and ensure financial stability. It included a number of reforms, such as establishing a Consumer Financial Protection Bureau and the Volcker Rule which has also restricted propriety trading by banks. The Dodd-Frank Act also improved transparency in reporting and clearing of over-the-counter derivatives, introducing stress testing and resolution planning for systemic financial institutions. Despite targeting an improvement in consumer protection and reduction in systemic risk, there was also a criticism regarding its effect on smaller banks and the complexity associated with its implementation (Carlson, 2017).

2.4.3 Other International and National Regulatory Initiatives

In addition to the Basel Accords and the Dodd-Frank Act, there were other international and national regulatory reforms that have reframed the regulatory environment.

European Banking Authority (EBA); The EBA helped make the banking regulations more uniform within the European Union, addressing issues related to capital adequacy, liquidity and stress testing (Kapinos et al., 2018).

Financial Stability Board (FSB); The FSB played an important role in coordinating and developing global financial regulatory policies. It has introduced numerous initiatives, all of which are targeted towards strengthening the resilience of the global financial system (Park & Kim, 2020).

Bank for International Settlements (BIS); The BIS is the parent organization of the Basel Committee, which sets international standards for banking regulations, influencing national and international banking policies (Park & Kim, 2020).

National Initiatives; The countries of United Kingdom, Canada, and Australia introduced their own regulatory reforms, in compliance with international initiatives which helped address the unique challenges of the financial sector (Bell & Hindmoor, 2018).

2.5 Impact of Regulatory Changes on Risk Management

There is a multidimensional influence of regulatory changes over the risk management of the global banking industry. It has gained an adequate amount of attention within academia, and among researchers and policymakers. The section analyzes the influence of regulatory changes over; changes in risk assessment and capital adequacy strategies, mitigation of systemic risk, unintended consequences, and regulatory arbitrage, as well as the impact on smaller financial institutions, through the lens of existing literature studies.

2.5.1 Changes in Risk Assessment and Capital Adequacy Strategies

The first significant influence that regulatory changes have had over risk management, is how banks assess and manage them. The Basel III accord specifically has introduced strict capital requirements, improved risk-weighting methods, and liquidity standards (Nkwaira & Kruger, 2018). Existing studies have also investigated the impact of these changes over the risk assessments and capital adequacy strategies adopted within the market (Grunde & Kuhn, 2020; Golubeva et al., 2019). Banks have been prompted to adapt their risk assessment models and capital allocation strategies to comply with these new regulations (Grunde & Kuhn, 2020; Golubeva et al., 2019). The shift towards a more risk-sensitive capital requirement has also

demanding developing and implementing more sophisticated risk models. This has also contributed towards a higher focus on credit, market and operational risk modeling. Moreover, capital adequacy has also become an important concern where banks are struggling towards meeting their higher capital standards while also optimizing their capital structure to support their business activities effectively (Orgeldinger, 2017). Some of the studies are also of the opinion that these changes have led towards unintended consequences as well including overly complex risk models and regulatory arbitrage (Akkizidis & Kalyvas, 2018; Blundell-Wignall et al., 2018).

2.5.2 Mitigation of Systemic Risk

One of the main objectives of regulatory changes was to reduce systemic risk i.e. the risk associated with the failure of a single financial institution triggering a larger financial crisis affecting other financial institutions. The Basel III along with other international and national regulatory frameworks have been improved towards improving the resilience of the global financial system (Shakdwipee & Mehta, 2017). Studies have also implied that these changes have contributed towards a greater systemic ability through improving capital buffers and stress testing mechanisms (Schuermann, 2020; Taskinsoy, 2022). Stress tests have also become important towards identifying any vulnerabilities within the financial institutions, ensuring that they are able to tolerate any adversities or economic situations. These initiatives have significantly changed risk management practices through encouraging early intervention and risk-prevention measures (Schuermann, 2020; Taskinsoy, 2022).

2.5.3 Unintended Consequences and Regulatory Arbitrage

The regulatory changes have also been targeted towards strengthening risk management, which has contributed towards unintended consequences. These consequences have included a shift

within the risk profile, since the banks try to adapt to the regulatory requirements. In order to reduce the capital requirements, banks were prompted to change their portfolios and engage in more riskier activities (de-Ramon et al., 2017). Regulatory arbitrage also occurs where banks try to exploit regulatory gaps that help them reduce their capital or risk exposure. Existing studies have also shown that these regulatory changes have led towards unintended consequences and regulatory arbitrage as well (Akkizidis & Kalyvas, 2018; Blundell-Wignall et al., 2018). According to Abu-Alim (2021), banks have been reducing their capital requirements through changes within risk measurement, securitization and off-balance sheet transactions. Researchers have also highlighted that it is important for regulators to consistently monitor and address these issues (Abu-Alim, 2021; ElBannan, 2017).

2.5.4 Impact on Smaller Financial Institutions

The impact of regulatory changes is not uniform across all financial institutions. Smaller financial institutions usually experience distinct challenges when complying with new regulations due to limited resources and different risk profiles. Studies have also examined how smaller financial institutions adapt to the changing regulatory landscape. Researches have also indicated that smaller institutions have to bear higher compliance costs and significant challenges when implementing complex risk management practices (Navaretti et al., 2018; Stulz, 2019). Most of the studies have also suggested that these banks would eventually merge or consolidate themselves to achieve their economies of scale or access specialized risk management expertise (Navaretti et al., 2018; Yuanita, 2019).

2.6 Adaptations in Risk Management Practices

As mentioned earlier, regulatory changes have prompted banks to adapt to different risk management practices significantly.

2.6.1 Evolving Risk Management Strategies

In the evolving landscape of regulatory framework, banks have been driven towards adapting and improving risk management strategies. Basel III and other international initiatives have also emphasized over placing a premium on capital adequacy, risk assessment and liquidity management (Gallati, 2022). Studies have suggested that these changes have also framed a more sophisticated and integrated approach for risk management (Gallati, 2022; Orgeldinger, 2017). Research have also indicated that banks are inclined towards adopting a more detailed stress testing (Taskinsoy, 2022) and scenario analysis (Richter & Wilson, 2020) to identify vulnerabilities and strengthen their resilience towards risk. These changes have also encouraged a proactive and forward-looking risk management culture, which puts banks in a better position of preparing for an economic shock (ElBannan, 2017). Additionally, since there has been a higher focus on credit risk modeling, operational risk management, and market risk assessment which has improved risk measurement tools and practices, which helps banks make more informed decisions and allocate capital more efficiently (Orgeldinger, 2017).

2.6.2 Technological Advancements in Risk Management

Technological advancements have been framing risk management practices further. The adoption of advanced analytics, machine learning, and big data technologies which has significantly changed how banks assess and manage risks (Leo et al., 2019). Research has also showed that technology has made banks able to process and analyze vast volumes of data in real-time,

improving their risk monitoring capabilities (Oussous et al., 2018). Risk models have become more complex, meanwhile, predictive analytics have been applied to identify any emerging risks proactively. Moreover, technology has also improved how they comply and report any risks that arise, streamlining risk management processes and reducing operational risk (Leo et al., 2019). However, each advancement in technology also has its challenges. Research implies that there are significant concerns regarding data security, model interpretability, and potential for algorithmic biases (Jagtiani et al., 2018; Dicuonzo et al., 2019). Banks need to create a balance between innovation and ethical application of these new technologies in risk management.

2.6.3 Implications for Market Efficiency

Through adapting risk management practices, there have been different implications for the market efficiency. Research has also implied that there is a strong connection between risk management and market performance (Shad et al., 2019; Batae et al., 2021), which has highlighted various aspects including capital allocation efficiency (Chandrasegaran, 2020). Improved risk management practices, have led towards an improved allocation of capital. Banks are in a better position to allocate resources to profitable and low risk activities that have made the market more efficient (Chandrasegaran, 2020). Risk disclosure and transparency have also been improved within the financial markets which has improved investor confidence contributing towards market stability (Alabdullah, 2022). Advanced risk management practices have also prompted the need for diversification and identification of systemic risks. This has improved market resilience as well through reducing the potential for systemic failures (Shakdwipee & Mehta, 2017).

2.7 Empirical Studies and Research Findings

Numerous studies have been published since significant financial crises that have provided important insights into how these regulatory changes influence risk management within the banking industry. These studies include several aspects of the regulatory landscape such as Basel III, Dodd-Frank, and other international initiatives (Shakdwipee & Mehta, 2017; Carlson, 2017). One of the studies have highlighted that influence of Basel III capital requirements on risk management. The study has claimed that banks significantly adjust their risk management practices which meet higher capital standards (Gallati, 2022). Capital allocation strategies have changed with an increased focus over credit, operational and market risk modeling (Behn et al., 2022). Even the Dodd-Frank Act which has been a major point within many studies has been studied extensively in its role of reducing systemic risk. The findings have suggested that the Act has emphasized over stress testing and resolution planning provisions that have had a positive impact on risk management within important financial institutions (Carlson, 2017; Turk, 2019; Ali, 2021).

Studies have also emphasized over the role of market discipline and transparency in risk management (Benassy-Quere et al., 2018; Srairi, 2019). Risk disclosure and transparency have been associated with an efficient capital allocation and market discipline (Srairi, 2019; Elamer et al., 2019). Technological advancements have also had a transformative influence on risk management where the adoption of advanced analytics and machine learning has improved risk modeling and monitoring capabilities (Leo et al., 2019). However, studies have raised concerns regarding data security and algorithmic biases (Jagtiani et al., 2018; Dicuonzo et al., 2019). Studies have also focused over the experiences of smaller financial institutions in adapting to regulatory changes. These institutions continue to face unique challenges in compliance with complex

regulations due to their limited resources. Mergers and consolidations have also been investigated as a potential strategy to achieve compliance and efficiency (Navaretti et al., 2018; Stulz, 2019; Yuanita, 2019).

2.8 Gaps in the Existing Literature

The findings of existing studies have been consistent with highlighting the impact of regulatory changes on risk management practices within the banking sector. The methodology adopted in these studies have varied significantly however, most of them adopted a mixed method approach comprising of quantitative and qualitative analysis. The mostly selected medium was scale surveys, interviews with banking executives and financial modeling to collect data. However, longitudinal data has been widely used where risk management practices have been compared before and after these regulatory changes allowing the researchers to assess causality and establish trends. Scenario analyses such as stress testing have been valuable tools in evaluating the resilience of financial institutions during adverse economic conditions.

Despite there being a consistency in findings, it has become important to acknowledge that the focus of the study and methodology adopted had an influence over the results. Some of the studies focused over the positive impact of regulatory changes on risk management practices including; transparency and market discipline. Meanwhile challenges included; regulatory arbitrage and unintended consequences. A majority of the information has improved the depth of understanding of the relationship between regulatory changes and risk management. It has highlighted the need for a balanced approach in designing and implementing regulatory reforms which promotes effective risk management while also reducing adverse side effects. These studies have also emphasized over the important role of technology in reshaping risk management practices and also

considering the diverse needs of smaller financial institutions in regulatory frameworks as important as well.

Through an extensive literature review of the available information regarding the influence of regulatory changes on risk management within the banking industry, a number of significant research gaps have been highlighted. Most of the studies focus on short term and immediate influence of the regulatory changes. Long-term consequences of these changes have yet not been understood, specifically how banks would adapt to these risk management practices over a long period of time. Most of the studies are also quantitative, identifying a need to explore behavioral and cultural aspects of risk management in response to these regulatory changes. It needs to be understood how organizational cultures and behaviors may influence risk management strategies and how they evolved under regulatory pressures. The relationship between regulatory changes and risk management during different economic cycles have also been unexplored. Risk strategies need to be understood regarding how they may adapt to economic upturns, downturns or crises. Moreover, cross-country and cross-regional comparative analyses can also provide a more detailed analysis of how regulatory frameworks influence risk management practices. This analysis can help identify best practices and lessons for global risk management.

On identifying research gaps and conducting an extensive literature review, different opportunities for future research have been identified. Through a constant emphasis over environmental, social, and governance (ESG) considerations and climate-related regulations, it can be investigated how any emerging regulatory changes influence risk management strategies within the banking sector. Further research can also explore how regulatory arbitrage operates, and any resultant unintended consequences that follow. Strategies can be identified which are employed by banks to navigate through regulations and evaluating their implications. The psychological and behavioral aspects

of risk management, and its impact on risk culture on compliance with regulatory changes needs to be investigated. Corporate governance and leadership should be assessed in its influence over risk culture. Moreover, as the society inclines towards technology within the banking industry, research can focus on how these technological advancements and cybersecurity concerns can interact with regulatory changes and risk management practices. Studies have mostly, specifically concentrated over experience of small and medium sized enterprises and regional banks in adapting to regulatory changes as important. On understanding unique challenges and strategies faced by these institutions, informed regulatory frameworks can be tailored to the market.

2.9 Theoretical Synthesis and Conceptual Framework

2.10 Conclusion

References

- Abu-Alim, S. (2021). *Three essays on banks' financial stability: the role of off-balance sheet activities* (Doctoral dissertation, Loughborough University).
- Akkizidis, I., & Kalyvas, L. (2018). *Final basel III modelling: Implementation, impact and implications*. Springer.
- Alabdullah, T. T. Y. (2022). Management accounting insight via a new perspective on risk management-companies' profitability relationship. *International Journal of Intelligent Enterprise*, 9(2), 244-257.
- Ali, M. (2021). Road to a Resilient Financial Sector: Impacts of the Dodd-Frank Act on Systemic Risk.
- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). *FinTech and RegTech in a Nutshell, and the Future in a Sandbox*. CFA Institute Research Foundation.
- Bătae, O. M., Dragomir, V. D., & Feleagă, L. (2021). The relationship between environmental, social, and financial performance in the banking sector: A European study. *Journal of Cleaner Production*, 290, 125791.
- Behn, M., Haselmann, R., & Vig, V. (2022). The limits of model-based regulation. *The Journal of Finance*, 77(3), 1635-1684.

- Bell, S., & Hindmoor, A. (2018). Are the major global banks now safer? Structural continuities and change in banking and finance since the 2008 crisis. *Review of International Political Economy*, 25(1), 1-27.
- Bénassy-Quéré, A., Brunnermeier, M., Enderlein, H., Farhi, E., Fuest, C., Gourinchas, P. O., ... & Zettelmeyer, J. (2018). Reconciling risk sharing with market discipline: A constructive approach to euro area reform.
- Blundell-Wignall, A., Atkinson, P., Roulet, C., Blundell-Wignall, A., Atkinson, P., & Roulet, C. (2018). Assessing the finalised Basel III banking regulation regime. *Globalisation and Finance at the Crossroads: The Financial Crisis, Regulatory Reform and the Future of Banking*, 201-235.
- Brusov, P., & Filatova, T. (2023). Capital structure theory: past, present, future. *Mathematics*, 11(3), 616.
- Bussmann, N., Giudici, P., Marinelli, D., & Papenbrock, J. (2021). Explainable machine learning in credit risk management. *Computational Economics*, 57, 203-216.
- Cai, J., Eidam, F., Saunders, A., & Steffen, S. (2018). Syndication, interconnectedness, and systemic risk. *Journal of Financial Stability*, 34, 105-120.
- Carlson, M. (2017). Dodd-Frank Wall Street Reform & Consumer Protection Act.
- Chance, D. M., & Brooks, R. (2021). *An introduction to derivatives and risk management*. South-Western, Cengage Learning.
- Chandrasegaran, L. (2020). Capital adequacy requirements and profitability: An empirical study on banking industry in Sri Lanka. *Journal of Economics and Business*, 3(2).
- Christophers, B. (2017). Climate change and financial instability: Risk disclosure and the problematics of neoliberal governance. *Annals of the American Association of Geographers*, 107(5), 1108-1127.
- Cui, J., Jo, H., & Na, H. (2018). Does corporate social responsibility affect information asymmetry?. *Journal of business ethics*, 148, 549-572.
- Curtin, D. (2017). 'Accountable independence' of the European Central Bank: seeing the logics of transparency. *European Law Journal*, 23(1-2), 28-44.
- de-Ramon, S., Francis, W., & Milonas, K. (2017). An overview of the UK banking sector since the Basel accord: insights from a new regulatory database.
- Dicuonzo, G., Galeone, G., Zappimulso, E., & Dell'Atti, V. (2019). Risk management 4.0: The role of big data analytics in the bank sector. *International Journal of Economics and Financial Issues*, 9(6), 40-47.
- Dierker, M., Lee, I., & Seo, S. W. (2019). Risk changes and external financing activities: Tests of the dynamic trade-off theory of capital structure. *Journal of Empirical Finance*, 52, 178-200.
- Duffie, D. (2018). Financial regulatory reform after the crisis: An assessment. *Management Science*, 64(10), 4835-4857.

- Elamer, A. A., Ntim, C. G., Abdou, H. A., Zalata, A. M., & Elmagrhi, M. (2019, April). The impact of multi-layer governance on bank risk disclosure in emerging markets: The case of Middle East and North Africa. In *Accounting Forum* (Vol. 43, No. 2, pp. 246-281). Routledge.
- ElBannan, M. A. (2017). The financial crisis, Basel accords and bank regulations: An overview. *International Journal of Accounting and Financial Reporting*, 7(2), 225-275.
- Gallati, R. R. (2022). *Risk management and capital adequacy*. McGraw-Hill.
- Golubeva, O., Duljic, M., & Keminen, R. (2019). The impact of liquidity risk on bank profitability: some empirical evidence from the European banks following the introduction of Basel III regulations. *Journal of Accounting and Management Information Systems*, 18(4), 455-485.
- Grundke, P., & Kühn, A. (2020). The impact of the Basel III liquidity ratios on banks: Evidence from a simulation study. *The Quarterly Review of Economics and Finance*, 75, 167-190.
- Jagtiani, J., Vermilyea, T., & Wall, L. D. (2018). The roles of big data and machine learning in bank supervision. *Forthcoming, Banking Perspectives*.
- Kapinos, P. S., Martin, C., & Mitnik, O. A. (2018). Stress testing banks: whence and whither?. *Journal of Financial Perspectives*, 5(1).
- Leo, M., Sharma, S., & Maddulety, K. (2019). Machine learning in banking risk management: A literature review. *Risks*, 7(1), 29.
- Liu, X. (2017). The Costs of Bailouts in the 2007-08 Financial Crisis. *Fordham J. Corp. & Fin. L.*, 22, 417.
- Navaretti, G. B., Calzolari, G., Mansilla-Fernandez, J. M., & Pozzolo, A. F. (2018). Fintech and banking. Friends or foes?. *Friends or Foes*.
- Nkwaira, C., & Kruger, J. W. (2018). Using risk-weighted assets to generate risk-weighted fees to counter the effects of basel iii on revenue generation. *Journal of Finance*, 6(2), 48-54.
- Orgeldinger, J. (2017). Critical analysis of the new Basel minimum capital requirements for market risk. *Emerging Science Journal*, 1(1), 1-15.
- Oussous, A., Benjelloun, F. Z., Lahcen, A. A., & Belfkih, S. (2018). Big Data technologies: A survey. *Journal of King Saud University-Computer and Information Sciences*, 30(4), 431-448.
- Park, H., & Kim, J. D. (2020). Transition towards green banking: role of financial regulators and financial institutions. *Asian Journal of Sustainability and Social Responsibility*, 5(1), 1-25.
- Poletti-Hughes, J., & Briano-Turrent, G. C. (2019). Gender diversity on the board of directors and corporate risk: A behavioural agency theory perspective. *International Review of Financial Analysis*, 62, 80-90.
- Richter, A., & Wilson, T. C. (2020). Covid-19: implications for insurer risk management and the insurability of pandemic risk. *The Geneva risk and insurance review*, 45, 171-199.
- Schuermann, T. (2020). Capital adequacy pre-and postcrisis and the role of stress testing. *Journal of Money, Credit and Banking*, 52(S1), 87-105.

- Shad, M. K., Lai, F. W., Fatt, C. L., Klemeš, J. J., & Bokhari, A. (2019). Integrating sustainability reporting into enterprise risk management and its relationship with business performance: A conceptual framework. *Journal of Cleaner production*, 208, 415-425.
- Shad, M. K., Lai, F. W., Fatt, C. L., Klemeš, J. J., & Bokhari, A. (2019). Integrating sustainability reporting into enterprise risk management and its relationship with business performance: A conceptual framework. *Journal of Cleaner production*, 208, 415-425.
- Shakdwipee, P., & Mehta, M. (2017). From Basel I to Basel II to Basel III. *International Journal of New Technology and Research (IJNTR)*, 3(1), 66-70.
- Srairi, S. (2019). Transparency and bank risk-taking in GCC Islamic banking. *Borsa Istanbul Review*, 19, S64-S74.
- Stulz, R. M. (2019). Fintech, bigtech, and the future of banks. *Journal of Applied Corporate Finance*, 31(4), 86-97.
- Taskinsoy, J. (2022). Stress Testing Financial Systems: Macro and Micro Stress Tests, Basel Standards and Value-at-Risk as Financial Stability Measures. *Basel Standards and Value-at-Risk as Financial Stability Measures (February 11, 2022)*.
- Turk, M. C. (2019). Stress Testing the Banking Agencies. *Iowa L. Rev.*, 105, 1701.
- Vartanian, T. P. (2019). Regulation and deregulation of the savings and loan industry. In *Housing and the New Financial Mark* (pp. 138-158). Routledge.
- Willeesson, M. (2017). What is and what is not regulatory arbitrage? A review and syntheses. *Financial markets, SME financing and emerging economies*, 71-94.
- Yuanita, N. (2019). Competition and bank profitability. *Journal of Economic Structures*, 8(1), 31.
- Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*, 10(2), 210-251.

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