



**REST Journal on Emerging trends in Modelling  
and Manufacturing**

**Vol: 10(2), June 2024**

**REST Publisher; ISBN No: 2455-4537**

**Website: <https://restpublisher.com/journals/jemm/>**

**DOI: <https://doi.org/10.46632/jemm/10/2/1>**



# "Financial Institution's Role in Supply Chain Risk Management: Strengthening Resilience and Mitigating Financial Risks"

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**Abstract:** *One of the most important problems that multinational organizations are dealing with in risk-oriented supply chains is efficiency assessment and choosing the best low-risk financial institution for financial assistance. We provide an integrated approach for evaluating the unpredictable, dangerous, and fragile arrangement of the financial sector, which directly affects the supply chain network's processing stages. This model is supported by fuzzy-soft tools. The real economy is currently under pressure from both the domestic economic crisis and the decline in international commerce. President Xi Jinping has often suggested stepping up initiatives to assist the real economy's high-quality growth. In this regard, the development of the model for supply chain financing offers a fresh approach to resolving the funding issues faced by businesses. To tackle the financial issues facing the marketplace, we should use the chain of custody finance model, but we also need to thoroughly understand the risks associated with it and how to manage them. False trade orders and insufficient control over core businesses are difficulties that the present logistics finance risk management must deal with. The World Wide Web, big data, and block chain technologies are all blooming, opening new avenues for risk management in block chain finance. As a result, the goal of this essay is to examine the features of supply chain finance based on the technology of block chain, examine the risks associated with financing supply chains, and debate how to use block chain innovation for supply chain banking risk management.[4] Risk Financing: To assist organizations in transferring or reducing supply chain risks, financial institutions offer risk financing solutions including insurance & alternative risk transfer methods. The creation of novel risk financing products, evaluation of their performance, and comprehension of the effects on the resilience of supply chains can all be the subject of research. Financial institutions provide supply chain financing options like factoring, discounted invoices, and supply link finance programmed that help businesses manage their working capital, improve cash flow, and lower the risk of supplier failure to pay or insolvency. The effects of different financing choices on supplier relationships, supply chain stability, and overall risk reduction may be studied. Financial institutions collaborate with businesses to detect and classify different supply chain risks. An extensive investigation of the supply network environment, encompassing suppliers, transportation, logistics, and market dynamics, is required in this phase. Data gathering techniques used may include questionnaires, interviews, & site visits. In the above rank one is axis, and the last one is Punjab national bank. Financial Institution in Supply Chain Risk Management In the above rank one is axis, and the last one is Punjab national bank.*

**Keywords:** Risk, Finance, Liquidity.

## 1. INTRODUCTION

Every company manages risks in some capacity. However, only a small number of businesses employ a systematic approach to risk management (Beasley and Associates, 2005; Bowling and Rieger, 2005). Despite not being extensively used, enterprise risk management, or ERM, offers a framework and a collection of resources for managing risks comprehensively. ERM has been described in several ways, although the majority of definitions centre on comprehensively recognising, analysing, and managing risks across an organization's value cycle (COSO, 2004). One component of enterprise risk management (ERM), the management of supply chain risks (SCRM), is becoming a practical, proactive, and strategic supply chain administration (SCM) application. Existing SCRM models, nevertheless, do not formally relate ERM to SCRM. The design, installation, and upkeep of a formalised SCRM system are the key topics of this study. How a system like that may be connected to ERM. This integration is examined using the ERM framework put out by the Council of Sponsoring Organisations (COSO)

by the Treadway Committee (COSO, 2004). The idea is that by formally tying SCRM and ERM together, it may be easier to progress research on these crucial topics and aid supply chain executives in their attempts to create SCRM plans, get the resources they need, and implement SCRM at their companies. To determine the elements that impact the choice to establish an SCRM system as well as how these factors can affect the amount of ERM & SCRM success, data from 46 organisations was analysed. For most businesses, deciding to handle things supply chain risks is a significant task. Such an endeavour is a reaction to several causes or circumstances. There appears to be an understanding that success necessitates more than just starting a new programme or department. It is proposed that a number of elements work to prepare the company and its systems for the introduction, acceptance, and advancement of supply risk management.[10] The issue of risk handling throughout the chain of supply is a crucial one in many businesses, particularly those going towards lengthier supply chains (due, for example, to outsourcing) and dealing with a supply that is more and more unpredictable. The likelihood that uncertainties, dynamics, and accidents in one link in a supply chain will impact the other links in the chain increases as supply networks get leaner. According to Souter (2000), businesses should pay attention to risks in other supply chain connections in addition to their own. Understanding and attempting to prevent the terrible impact that disasters or even slight business interruptions may have on a supply chain are at the heart of the management of supply chain risks. As a result, management is working harder to anticipate and address risk and the sources of risk. The initial focus of risk management work has been on risk identification and analysis, risk evaluation, risk management/treatment activities, and business contingency planning (see, for example, Norrman & Jansson, 2004, and Zsidisin et al., 2000). But so far, we haven't seen much focus on tracking the effectiveness of the supply chain risk management activities. We ponder the possible signs that supply chain risk management efforts are effective, such as lowering risk repercussions, addressing the proper risk sources, and creating the proper risk management procedures. Profitability is the primary metric for businesses; thus, the cost of risk reduction must be weighed against possible risk costs.[8] Over the previous 10 years, supply chain operations have been routinely impacted by earthquakes, economic downturns, SARS, arises, and terrorist acts. Supply chain disruptions can have a substantial influence on a company's short-term success. For instance, after a seismic catastrophe struck Taiwan in 1999, Apple lost many customer orders due to a supply shortage of DRAM chips, while Ericsson lost \$400 million when their supplier's semiconductor plant caught fire in 2000. A company's ability to make money in the long run may suffer from supply chain disruptions. For instance, Martens and Singhal (2005) discovered that stock returns for companies with supply chain disruptions were 33–40% poorer than those of their industry norms. Many academics have created numerous strategies/models for managing supply chain risks to reduce supply chain disruptions caused by many sorts of risks (uncertain cycles of the economy, uncertain customer needs, and unexpected natural and man-made disasters). We explore supply chain risk models that are mostly quantitative in this work.1 We also link several supply chain risk control (SCRM) tactics that have been researched in the literature to practical applications. This paper has three objectives. To categorise SCRM articles, we first create a single framework. Second, we believe that our review may be useful to some researchers as an invaluable resource as they wade through the multitude of research publications in this significant field. Third, we seek to spur scholars to create fresh models for minimising supply chain interruptions by emphasising the discrepancy between theory and practise.[11] Today, an intricate structure of suppliers that might endanger the company and open new chances for agency management is the source of a growing number of management issues. Understanding the supply chain risks with which the businesses must contend gives agency managers the chance to increase their capacity for awareness and resistance to unforeseen events. Recognising the dangers in an insecure and unpredictable competitive environment leads to adaptation and serves as a tactical lever in an organization's competitive process. Using the supply chain assessment of risks approach can help with operational planning & strategic decisions to reduce the number of supply network defects (Zurich Insurance Company, the year 2010). The development in this sector may be attributed to firms' early attempts to produce things with greater quality & lower prices by standardised and improving their own internal processes to gain a competitive advantage. In the past, it was commonly accepted that great engineering and designing, along with submissive and dependable production methods, were the main determinants in being able to meet market demands and, as a result, acquiring a bigger market share. Therefore, businesses make a lot of effort to increase productivity. Later, as customers' expectations grew more diverse, organisations were more concerned with improving the flexibility of their manufacturing processes and creating new goods that would satisfy their customers. Later, when production processes were enhanced and new engineering models were employed, most industrial managers discovered that simply having flexible internal processes and improved internal processes was not enough to maintain their market position. However, manufacturers of components and materials should use the least expensive, highest-quality materials possible, and distributors of goods must be closely tied to market regulations. the growth of manufacturers. A view like this gave rise to supply chain management techniques (Mentzer et al.). To get a cost advantage and market share, most businesses engage in diverse operations including contract manufacturing of varied outputs. Due to the steady conditions, these activities could be effective. However, these acts by themselves might impact the supply chain by posing various hazards. Risks include unstable economic cycles, erratic client demands, and uncontrollable unforeseen natural and human disasters. Therefore, considering

the increased frequency of these activities, it is now more important than ever for top organisations to research various supply chain risk management techniques and tactics (Sharafati, 2009).

## 2. MATERIALS AND METHODOLOGY

The first data envelope analysis (DEA) model was known as the CCR (Charnes, Cooper, and Rhodes) model and was developed in 1978 by Charnes and others. DEA is a basic programming-based method for evaluating how effectively a group of decision-making units (DMUs) use different inputs to generate different outputs. For the remainder of DMUs, the size of their efficiency is determined by comparisons to a frontier built from the "best practises." It determines a subset of effective "best practise" DMUs. Inefficient DMUs have efficiency values below 1, whereas efficient DMUs are those with efficiency scores equal to 1. Effectiveness score can be used to rank inefficient DMUs, but it is unable to rank effective DMUs. Several techniques for ranking DMUs have been developed during the past ten years. No one approach can be recommended here as offering a comprehensive answer to the ranking problem, even though each approach (method) is effective in a particular context. Therefore, choosing the optimal ranking technique or the best approach to combine several ranking methods is crucial for ranking DMUs in DEA. In this research, we offer a system for rating DMUs that is based on the TOPSIS approach. This approach is particularly useful when we are unable to choose one ranking technique over another. The structure of this essay is as follows: The TOPSIS approach is the focus of section 2. We describe our suggested technique in part 3 by providing a numerical example, and our results are presented in section 4. [23] One of the crucial non-traditional machining techniques used to cut difficult-to-machine materials such composites and intermetallic materials is wire electrical discharge machining (WEDM). Complex profiles utilised in biomedical and prosthetic applications are also carried out in WEDM. The sophisticated physical and chemical processes used in WEDM, such as cooling and heating, are involved. The crater size, which in turn affects the machining effectiveness and surface quality, will be determined by the electrical discharge energy impacted by the spark ionisation intensity and the discharging time [1].

## 3. RESULT AND DISCUSSION

TABLE 1. Supply chain risk management

Syndicate bank	4	5	2	4
Axis bank	5	6	5	6
Allahabad Bank	5	3	6	3
Punjab National Bank	2	5	4	1
State Bank of India (SBI)	6	4	2	6
Oriental Bank of Commerce	3	6	5	3

In the above table 1 it shows the fluctuations between the four banks based on their evaluation parameters

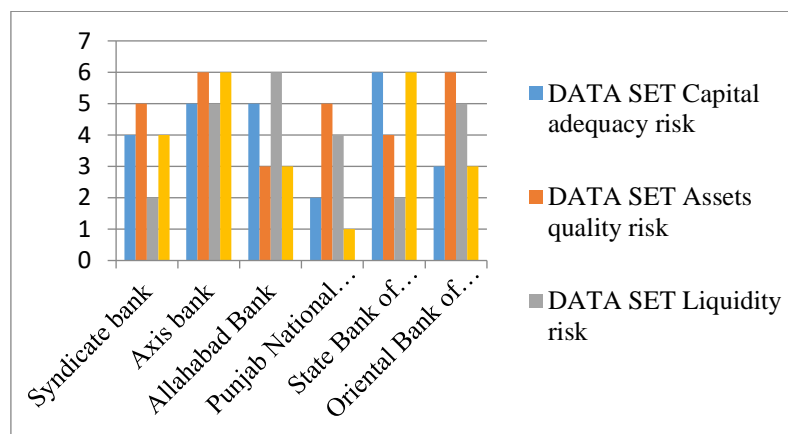


FIGURE 1. Supply Chain Risk Management

In the above figure 1 it shows the fluctuations between the four banks based on their evaluation parameters.

TABLE 2. Normalized data

	Normalized data			
Syndicate bank	0.3885	0.4856	0.1943	0.3885
Axis bank	0.4856	0.5828	0.4856	0.5828
Allahabad Bank	0.4856	0.2914	0.5828	0.2914
Punjab National Bank	0.1943	0.4856	0.3885	0.0971
State Bank of India (SBI)	0.5828	0.3885	0.1943	0.5828
Oriental Bank of Commerce	0.2914	0.5828	0.4856	0.2914

In the above table 2 it shows the fluctuation of normalized data.

**TABLE 3.** Weightages

	Weightages			
Syndicate bank	0.25	0.25	0.25	0.25
Axis bank	0.25	0.25	0.25	0.25
Allahabad Bank	0.25	0.25	0.25	0.25
Punjab National Bank	0.25	0.25	0.25	0.25
State Bank of India (SBI)	0.25	0.25	0.25	0.25
Oriental Bank of Commerce	0.25	0.25	0.25	0.25

In the above table 3 Each bank is assigned equal weightage across four categories, each worth 0.25. The categories could represent different aspects or components of supply chain risk management, but without further context or labeling, it's challenging to precisely interpret the table.

**TABLE 4.** Weighted normalized decision matrix

	Weighted normalized decision matrix			
Syndicate bank	0.0971	0.1214	0.0486	0.0971
Axis bank	0.1214	0.1457	0.1214	0.1457
Allahabad Bank	0.1214	0.0728	0.1457	0.0728
Punjab National Bank	0.0486	0.1214	0.0971	0.0243
State Bank of India (SBI)	0.1457	0.0971	0.0486	0.1457
Oriental Bank of Commerce	0.0728	0.1457	0.1214	0.0728

In this table 4 shows the variation of Weighted normalized decision matrix

**TABLE 5** Positive Matrix

	Positive Matrix			
Syndicate bank	0.1457	0.1457	0.1457	0.1457
Axis bank	0.1457	0.1457	0.1457	0.1457
Allahabad Bank	0.1457	0.1457	0.1457	0.1457
Punjab National Bank	0.1457	0.1457	0.1457	0.1457
State Bank of India (SBI)	0.1457	0.1457	0.1457	0.1457
Oriental Bank of Commerce	0.1457	0.1457	0.1457	0.1457

In this table 5 shows the variation of Positive matrix

**TABLE 6.** Negative matrix

	Negative matrix			
Syndicate bank	0.0486	0.0728	0.0486	0.0243
Axis bank	0.0486	0.0728	0.0486	0.0243
Allahabad Bank	0.0486	0.0728	0.0486	0.0243
Punjab National Bank	0.0486	0.0728	0.0486	0.0243
State Bank of India (SBI)	0.0486	0.0728	0.0486	0.0243
Oriental Bank of Commerce	0.0486	0.0728	0.0486	0.0243

In this table 6 shows the variation of negative matrix in supply chain management

**TABLE 7.** SI Plus and Si Negative

	SI Plus	Si Negative
Syndicate bank	0.1214107	0.100118
Axis bank	0.0343401	0.175101
Allahabad Bank	0.1058434	0.130763
Punjab National Bank	0.1646895	0.06868
State Bank of India (SBI)	0.1085931	0.157366
Oriental Bank of Commerce	0.1058434	0.116453

In the above table shows the values of Supply chain risk management of Positive Matrix and Negative matrix of the banks such as Syndicate bank, Axis bank, Allahabad Bank, Punjab National Bank, State Bank of India (SBI), Oriental Bank of Commerce

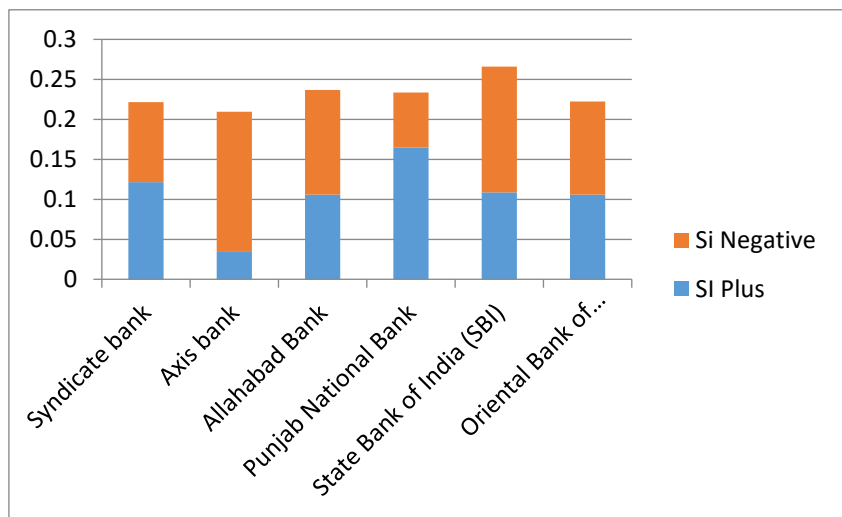


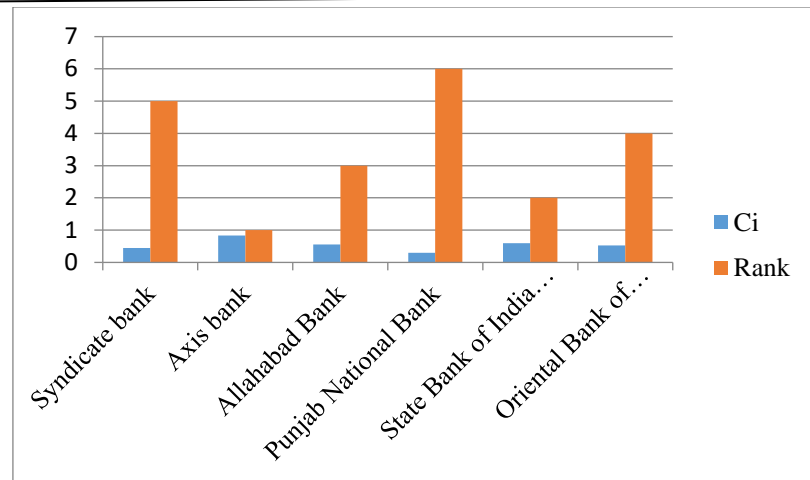
FIGURE 2. SI Plus and Si Negative

In the above figure 2 shows the values of Supply chain risk management of Positive Matrix and Negative matrix of the banks such as Syndicate bank, Axis bank, Allahabad Bank, Punjab National Bank, State Bank of India (SBI), Oriental Bank of Commerce

TABLE 8. Ranks of Supply chain risk management

	Ci	Rank
Syndicate bank	0.45	5
Axis bank	0.84	1
Allahabad Bank	0.55	3
Punjab National Bank	0.29	6
State Bank of India (SBI)	0.59	2
Oriental Bank of Commerce	0.52	4

Table 8 presents the ranks of different banks based on their Supply Chain Risk Management (SCRM) scores. Axis Bank secured the top position with a high SCRM score of 0.84, followed closely by State Bank of India (SBI) at second place with a score of 0.59. Allahabad Bank, Oriental Bank of Commerce, Syndicate Bank, and Punjab National Bank follow in ranks 3 to 6, respectively. These rankings suggest variations in SCRM effectiveness among these banks, with Axis Bank demonstrating the highest level of risk management proficiency.



**FIGURE 3.** Ci and Rank of Supply Chain Risk Management

In the above figure 3 rank the first rank has got axis bank and the last rank has got Punjab national bank.

#### 4. CONCLUSION

To ascertain how effectively they align & integrate into enterprise risk control (ERM) systems, this descriptive study assessed the supply chain risk management (SCRM) strategies, methods, and frameworks currently in use. The Group of Sponsoring Organizations (COSO) of the Treadway Commission's (COSO, 2004) recommended ERM framework is said to offer a practical framework that enables businesses to integrate SCRM with ERM. Using uniform words, metrics, contexts, and interrelationships, the combination of SCRM and ERM frameworks may offer a more reliable basis for further research. Additionally, such integration would make it possible for supply managers to create SCRM plans, acquire the required resources, and implement SCRM at their companies in a more effective and efficient manner.

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