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Effect of Supply Chain Risk Management on Organization Performance: A Case Study of National Foods Manooabad Muridke District Sheikhupura

Shafiq Ahmad[1], Muhammad Arfan Hadyait[2], Muhammad Mohsin Rashid[3]

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Corresponding Author(s):

Muhammad Arfan Hadyait
Fisheries Research and Training Institute, Lahore, Pakistan.
Email: marfan39@gmail.com

Abstract: Previously, many studies focused on risk management in a general context, with little attention paid to how supply chain risk management affects an organization's profit and performance. The main aim of our study is to explore the effect of supply chain risk management on organizational performance at National Foods Manooabad, Muridke, District Sheikhupura. This study was conducted at National Foods Manooabad, Muridke. Data were collected using a questionnaire distributed to the employees of National Foods Manooabad, Muridke. SPSS 22 (Statistical Package for Social Sciences) was used to analyze the collected data. This study attempts to assess the effects of supply chain risk management variables on the performance of the organization. Three main supply chain risk management variables were identified: supply chain risk identification, supply chain risk sources, and supply chain risk mitigation. We found that the risk register method is primarily used for the identification of risks in the supply chain at any level. The most important risks identified in our study are supplier risks, environmental risks, political risks, market risks, warehousing risks, and financial risks. Effective mitigation strategies include risk avoidance measures, risk control measures, and risk cooperation measures. We concluded that it is important for an organization to proactively identify risks as early as possible in the decision-making process. Different types of risks need to be identified across all processes of supply chains. After identifying these risks, the organization needs to mitigate them using different mitigation strategies. In the future, this study will be helpful for many organizations dealing with food items consumed by people. While many previous studies have generally focused on risk management, this study specifically focuses on supply chain risks. There is a need for more studies in different industries to provide better information for controlling risks in supply chain management.

Keywords Supply Chain Risk Management (SCRM), Muridke, Organization Performance, National Food

1. Introduction

Previously, many studies focused on risk management in a general context, with little attention paid to how supply chain risk management (SCRM) affects an organization's profit and performance. SCRM has an active approach towards risk management (McCormack et al., 2008). Risk response development is the major source of risk control, starting with documentation and ending with alleviation. Every organization aims to control this risk factor (Ouabouch & Amri, 2013).

In this volatile era, supply chains are gaining global significance in business, as they have the potential to disrupt or ensure business continuity. This is due to the multiple risks associated with the processes involved in such supply chains, such as production and transportation (McCormack et al., 2008). Uncertain socio-cultural behaviours, economic and political environments, and changes in trade policies have modified the overall industrial framework and increased supply chain disruption events. These events are acknowledged by the International Organization for Standardization (ISO) as risks, mainly dealing with losses and the uncertainty of their occurrence (Serio, Oliveira, & Schuch, 2011). Risk is a source of randomness that may affect organizational performance.

Most risks are related to procurement procedures and the shipment of goods (Munyuko, 2015). The industry has a significant effect on risk management, potentially causing unexpected disturbances. There are many components of risk, one of the most significant being a lack of knowledge (Berenji & Anantharaman, 2011). Risk is a common factor among different organizations, and competition between organizations has increased the risk factor, potentially affecting their performance (Bavarsad et al., 2014). Both predicted and unpredicted risk factors can seriously disrupt the routine of any organization, affecting sales and overall business operations (Li et al., 2006).

The supply chain management system encompasses many risks (Munyuko, 2015), including supplier risk, production risk, environmental risk, technological risk,

[1]University of the Punjab, Lahore, Pakistan. Email: shafiq.ahmad.132@gmail.com
[2]Fisheries Research and Training Institute, Lahore, Pakistan. Email: marfan39@gmail.com
[3]University of the Punjab, Lahore, Pakistan. Email: mohsiniqtm@gmail.com

transport risk, warehousing risk, and financial risk. Sometimes risk can be self-explanatory (Ghatebi et al., 2013). Risk consists of three parts: the chance of losses (Mburu et al., 2015). When compared with uncertainty, risk is measurable and calculable, while uncertainty is not quantifiable.

Humans have tried to lessen risk from early ages to the present, making efforts to exclude risk (Sharma et al., 2012). The supply chain is one of the most significant risk factors, and risk management aims to mitigate these factors as early as possible (Paul et al., 2016). Supply chain risk management starts with identification and ends with mitigation strategies. Now, risk factors have gained attention at the global level due to their importance (Munyuko, 2015).

Therefore, due to the significant impact of supply chain risks on organizations' profits, many organizations lack a plan or program for supply chain risk management. There is a need for all organizations, especially in the food sector, to identify potential risks using different methods and develop plans to mitigate them through proper strategies. This study was conducted at National Foods Muridke, a leading industry sector producing salt consumed daily in cooking. The main aim of our study is to examine the effect of supply chain risk management on organizational performance in National Foods Manooabad, Muridke district Sheikhupura.

The primary research question guiding this study is: "How does supply chain risk management (SCRM) affect the performance and profitability of organizations in the food sector, specifically at National Foods Manooabad, Muridke?" This research aims to fill a notable gap in the existing literature, which predominantly addresses general risk management without a focused examination of SCRM's impact on organizational outcomes. Unlike prior studies, which often overlook the unique risks faced by the food industry, our study provides a novel exploration of specific SCRM practices, including risk identification, risk sources, and risk mitigation strategies. By focusing on a critical sector where supply chain disruptions can have direct implications for human health, this research offers valuable insights and practical recommendations that are essential for enhancing supply chain resilience and organizational performance in the food processing industry.

2. Literature Review

Mand, Singh, and Singh (2013) worked on the implementation of critical risk factors in supply chain management (SCM). SCM is the process of planning, execution, designing, monitoring, and control of activities involved in the supply chain with the objectives of building competitive infrastructure, creating net value, leveraging worldwide logistics, measuring performance globally, and synchronizing supply with demand. For the industry, it is very important to produce products quickly, adequately, and conclusively. SCM is a systematic process of these steps. During the implementation of SCM, the following risks are important: operational risks, supply risks, security risks, demand risks, resource risks, and demand risks. They worked on these risks in the manufacturing industry.

Mensah, Diyuoh, and Oppong (2014) conducted a study in a manufacturing company in Ghana to examine the effect of supply chain risk management practices on performance. They collected information with the help of a questionnaire and the sample size was two hundred. SPSS was used for the analysis of the collected data. They found in their study that supply chain risk management practices impact the business activities of the manufacturing company. The study also indicated that these practices significantly influence their business performance.

Karimi and Rafiee (2014) analyzed the impact of supply chain risk management practices on organizational performance through competitive priorities as a case study in Iran Pumps Company. The study design is descriptive. Data was collected with the help of a questionnaire and data was collected from 483 employees who were selected randomly. Findings showed that these risk management practices influence organizational performance.

Raka and Liangrokapart (2015) also worked on supply chain risk management in Thailand as the supply chain system, with an increase in trades, became more complex and insecure. In their study, they collected information from supply chain stakeholders including collectors, growers, processors, wholesalers, consumers, and retail stores. They evaluated risks and identified them in 9 categories: demand risks, climate risks, information risks, financial risks, policy risks, operational risks, regulatory risks, price risks, and supply risks. We also included these risks in our study due to their importance.

Ghatebi, Ramezani, and Shiraz (2013) described that to remain competitive in the global market, there is a need to understand and implement supply chain risk management strategies. Their study is applied in terms of aim and descriptive in terms of implementation. The population of their study is manufacturing companies in Khuzestan Province. By using stratified random sampling, data was collected and analyzed by Pearson correlation coefficient. Results showed a direct relationship between supply chain risk management and organizational performance.

Munyuko (2015) also worked on the topic of the impact of supply chain risk management on organizational performance in terms of profits. They conducted a case study in Andy Forwarders Services Limited. While many previous studies focused on supply chain management in a general context, they specifically addressed supply chain risk management, including risk identification, risk sources, and mitigation strategies. They collected information using a questionnaire and analyzed it using graphs, pie charts, and tables. The results showed a direct

relationship between supply chain risk management and organizational performance, emphasizing the need to identify risks and have a plan to mitigate them.

Florian and Constangioar (2014), using samples from 64 companies in different industries, found that there is a direct relationship between organizational performance and supply chain risk management. By using these management strategies, firms can easily control their risks and increase their profits.

As supply chains have rapidly expanded over the last decades to increase productivity, fulfil demands, and lower costs in markets, the complexity of the supply chain system has also increased (Faizal & Palaniappan, 2014). They worked on the risks of supply chains, noting that as the supply chain becomes more complex, the risks also increase. There is a need to identify these risks and make supply chain systems more efficient for all organizations to increase their business profits.

Mishra and Shekhar (2011) studied the impact of risks and uncertainties on the supply chain as a case study in the dairy industry. The main risks identified in their study include low milking cattle, non-remunerative prices of milk, illiteracy of the milk producers, hazard risks, logistical risks, demand risks, lack of products, cost of medicine and fodder, lack of leadership, delivery risks, seasonal risks, processing risks, and price risks. All these risks impact the supply chain system, highlighting the need to identify and mitigate them to increase organizational profitability.

With the development and modernization of the supply chain management system in different organizations in recent years, the chances of risks in the supply chain have also increased. Bavarsad, Boshagh, and Kayedian (2014) worked on the risks of the supply chain system. The results of their study showed that macroeconomic risks are the most important. In addition, financial factors are also significant, affecting organizational performance. By identifying these risks, organizations can improve their systems and address these risks.

3. Material And Methods

This study was a descriptive research study carried out in 2017 at National Foods Manooabad Muridke. The target population for data collection was all employees of the National Foods Muridke unit. Data were collected using systematic random sampling. We took 30% of the target population as the sample size, as Munyuko (2015) reported that a 30% sample size is sufficient for organizations with fewer than 500 employees, and the National Foods Manooabad unit has a total of 115 employees. Data were collected with the help of a questionnaire, which had four parts: demographic information, risk identification methods, risk sources, and risk mitigation strategies. The questionnaire was completed under supervision. Ethical permission was also obtained before the start of the study. We used SPSS (version 22) to analyze the data by percentages, mean, and standard deviation to check the effect of supply chain risk management on organizational performance.

4. Results

We conducted this study at National Foods Manooabad Muridke, District Sheikhupura, to check the effect of supply chain risk management on organizational performance. There are one hundred and fifteen employees, and we selected 30% as the sample size, totalling 35 people. Table 1 provides a complete description of the demographic variables studied. The demographic information of employees is very important in the management of supply chain risks.

Table 1: Description of Demographic Variables

Demographic variables		Frequency	Percent
Age	<30	15	42.9
	30-40	8	22.9
	40-50	4	11.4
	>50	8	22.9
	Total	35	100.0
Educational Level	Intermediate	8	22.9
	Graduation	16	45.7
	Master	7	20.0
	M. Phil	4	11.4
	Total	35	100.0
Sex	Male	35	100.0
Department	Admin	8	22.9
	Production	13	37.1
	Quality	5	14.3
	Store	9	25.7
	Total	35	100.0
Position	Supervisor	7	20.0
	Senior Supervisor	8	22.9
	junior Officer	7	20.0

Assistant Manager	5	14.3
Deputy Manager	4	11.4
Manager	4	11.4
Total	35	100.0

In the demographic variables from Table 1, we found that the most important variable is education because, in any industry, when a plan is implemented to control supply chain risk factors, the education of employees is crucial. In our study, 22.9% of respondents had an intermediate level of education, and 45.7% had a graduation level of education. Overall, the level of education among all respondents was satisfactory.

The response of the respondents to risk identification methods showed that 45.7% agreed and 42.9% strongly agreed that the risk register method was very useful in identifying supply chain risks. Similarly, in the brainstorming method, 57.1% agreed and 42.9% strongly agreed; in the previous risk assessment method, 45.7% agreed and 42.9% strongly agreed; in periodic quality assessment reviews, 45.7% agreed and 42.9% strongly agreed; in personal experience, 65.7% agreed and 34.3% strongly agreed; and in supply chain audit reports, 34.3% agreed and 65.7% strongly agreed.

Table 2: Method used for risk identification in the organisation that affects organisation performance

Sr #	Methods used for risk identification in the organization	SD	D	N	A	SA	Mean	SD
1.	Risk registers method	-	-	4 (11.4%)	16 (45.7%)	15 (42.9%)	4.31	0.68
2.	Brainstorming method	-	-	-	20 (57.1%)	15 (42.9%)	4.43	0.50
3.	Previous risk assessment	-	4 (11.4%)	-	16 (45.7%)	15 (42.9%)	4.20	0.93
4.	Surveys	-	-	-	24 (68.6%)	11 (31.4%)	4.31	0.47
5.	Periodic quality assessment reviews	-	4 (11.4%)	-	16 (45.7%)	15 (42.9%)	4.20	0.93
6.	Personnel experience	-	-	-	23 (65.7%)	12 (34.3%)	4.34	0.48
7.	Supply chain audit report	-	-	-	12 (34.3%)	23 (65.7%)	4.66	0.48

Source: Calculated by the author

The mean score of all respondents for risk identification methods was greater than 4, as mentioned in Table 2. This mean score showed that all these methods are very important in risk identification. Risk management methods are very important and have a crucial role in overall supply chain risk management in early-stage planning. The methods under consideration in our study at National Foods are very important and include risk register methods, brainstorming methods, previous risk management, periodic quality assessment, personal experience, and surveys.

Table 3: Descriptive statistics of supply chain risks sources

Supplier Risks	N	Min	Max	Mean	SD
Raw Material Delivery Schedule	35	2.00	5.00	3.26	1.15
Raw Material Prices	35	2.00	5.00	3.00	0.97
Raw Material Poor Quality	35	2.00	4.00	2.23	0.65
Production Risks					
Products Quality Problem	35	2.00	3.00	2.43	0.50
Product Overproduction	35	1.00	2.00	1.23	0.43
Machine Failure Disruption	35	1.00	4.00	3.31	1.28
Procurement Issues Disruption	35	1.00	5.00	2.57	1.38
Technological Risks					
Disruptions of ICT	35	1.00	2.00	1.34	0.48
Failure in Infrastructure	35	1.00	3.00	1.97	0.95
Environmental Risks					
Disasters	35	1.00	5.00	3.31	1.08
Weather	35	3.00	5.00	3.66	0.84
Political Risks					
Instability in Political environment	35	3.00	5.00	3.46	0.70
Restrictions of Trade	35	3.00	5.00	3.34	0.68
Markets Risks					
Volatile Demand	35	3.00	4.00	3.66	0.48

Promotion wrong Strategies	35	3.00	4.00	3.89	0.32
Networking Sales Failure	35	3.00	4.00	3.89	0.32
Transport Risks					
In Transit Damage Of Goods	35	2.00	4.00	2.66	0.68
In Transit Loss Of Goods	35	2.00	3.00	2.43	0.50
Warehousing Risks					
During Storage Damage Of Goods	35	2.00	4.00	3.77	0.64
Changes of Taxes and Other Cost of Warehousing	35	3.00	4.00	3.89	0.32
Financial Risks					
Fluctuations Currency	35	4.00	4.00	4.00	0.00
Volatility Price	35	2.00	4.00	3.46	0.70
Lack of Finances	35	1.00	5.00	2.03	1.67

Source: Calculated by the author

In supply chain risks, the most important risks identified in our study are supplier risks, environmental risks, political risks, market risks, warehousing risks, and financial risks, as mentioned in Table 3. In supplier risks, the raw material delivery schedule had a mean score of 3.26 ± 1.15, and the raw material price had a mean score of 3.00 ± 0.97. In environmental risks, disasters had a mean score of 3.31 ± 1.08, and weather had a mean score of 3.66 ± 0.84. In political risks, instability in the political environment had a mean score of 3.46 ± 0.70, and restrictions on trade had a mean score of 3.34 ± 0.68. In market risks, volatile demand had a mean score of 3.66 ± 0.48, promotion of wrong strategies had a mean score of 3.89 ± 0.32, and networking sales failure had a mean score of 3.89 ± 0.32. In warehousing risks, damage during storage had a mean score of 3.77 ± 0.64, and changes in taxes and other costs of warehousing had a mean score of 3.89 ± 0.32. In financial risks, fluctuations in currency had a mean score of 4.00 ± 0.00, and lack of finances had a mean score of 3.46 ± 0.70.

Table 4: Descriptive statistics of supply chain risk mitigation strategies used in the organization

Sr#	Risk Avoidance Measures	SD	D	N	A	SA
1.	Avoidance is best risk management strategy	-	4 (11.4%)	-	8 (22.9%)	23 (65.7%)
2.	Avoidance approaches include the choice of not acting an action that could transmit risk at all.	-	4 (11.4%)	-	16 (45.7%)	15 (42.9%)
Sr#	**Risk Control Measures Used**					
1.	Continuous Training on Risk Management uses for risk control measures.	-	4 (11.4%)	-	16 (45.7%)	15 (42.9%)
2.	Framework Contracts with Suppliers.	-	-	-	35 (100%)	-
3.	Compressive record keeping	-	-	4 (11.4%)	16 (45.7%)	15 (42.9%)
4.	Insurance of Supplies	-	-	11 (31.4%)	16 (45.7%)	8 (22.9%)
Sr#	**Risk Cooperation Measures**					
1.	Cooperative responses involve joint agreements.	-	-	-	19 (54.3%)	16 (45.7%)
2.	Partners may offer the planned alliance with capitals such as goods and delivery channels.	-	-	20 (57.1%)	15 (42.9%)	-
Sr#	**Flexibility Measures**					
1.	Postponement is the method used in supply chain flexibility in your organization.	-	15 (42.9%)	-	4 (11.4%)	16 (45.7%)
2.	Delay reduces their need on forecasts and rises the ability to respond to changeability	16 (45.7%)	15 (42.9%)	4 (11.4%)	-	-
3.	Flexibility increases receptiveness while leaving the expectedness of factors unaffected	16 (45.7%)	15 (42.9%)	4 (11.4%)	-	-

Source: Calculated by the author

In mitigation strategies, we found that the following strategies are effective in mitigating risk in supply chain risk avoidance measures, risk control measures, and risk cooperation measures. The responses of the respondents are given in Table 4.

In our study, the methods for risk identification were all found to be important for identifying risks in supply chain risk management. The most important risks identified in our study are supplier risks, environmental risks, political risks, market risks, warehousing risks, and financial risks, which affect the supply chain risk management system of any organization. Production risks and technological risks were not important in our study. In mitigation strategies, risk avoidance measures, risk control measures, and risk cooperation measures are important to mitigate the risks.

5. Discussion

We found in this study that risk identification is very important in risk management. We must be aware that when risks are not properly defined and identified in the early stages, it is very difficult to treat or manage them, and these risks remain unmanaged and unseen. The risk register method is very important in the identification of these risks, and this method is mainly used for the identification of risks. The risk register method serves as a central information point for risks, and from this information, organizations in the risk management process can suitably sort, merge, and standardize the levels of risks. This finding is in line with Amemba (2013), which defined the identification of risks as a very important step in the risk management process. All other methods studied in this research are also important for risk identification. In reality, it is impossible to list every conceivable risk, and identification just covers the most significant risks in terms of their effect. The mean score of respondents in all risk identifications for the supply chain is 4, indicating that these risks have the ability to affect organizational performance (Munyuko, 2015).

In supply chain risks, the most important risks identified in our study are supplier risks, environmental risks, political risks, market risks, warehousing risks, and financial risks. Production risks and technological risks were not important in our study. According to Raka and Liangrokapart (2015), in any organization, there are five different sources of risks in the supply chain: political, technological, market, turbulence, and financial. These all affect the performance of an organization depending on the existing circumstances.

In mitigation strategies, we found that risk avoidance measures, risk control measures, and risk cooperation measures are effective strategies for controlling risks. These findings are in line with the study of Yap and Tan (2012).

6. Conclusion

Our study concluded that the identification of risks affects the performance of the organization at National Foods Manooabad Muridke. Therefore, there is a need for the organization to have a formal and proper risk identification process. In addition, risk mitigation strategies also affect the performance of the organization, and a business impact analysis is needed to identify mitigation needs. A business continuity plan is very important for organizations in planning for disruptions, which can improve organizational performance. It is important for an organization to identify risks proactively as early as possible in the decision-making process. Different types of risks need to be identified in all processes of the supply chain. After identifying the risks, the organization needs to mitigate them using different mitigation strategies. This study focused on supply chain risks and their management, as previous studies were generally conducted on risk management. There is a need for more studies in different industries to provide better information for controlling risks in supply chain management.

7. Limitations And Future Research

The main limitation of our study is the difficulty in obtaining permission from the industry to conduct such studies in their system, as students are not always facilitated in our country. We conducted this study in a salt processing plant, so there is a need for similar studies in major food processing industries. Our study is mainly theoretical, so future research should adopt a more practical approach to probe these risks in supply chain risk management.

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