



## In the context of supply chain management, the risk assessment method

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### Abstract:

The implementation of efficient risk management in a company's supply chain is very necessary for the company to achieve success. It is the purpose of this article to provide a comprehensive analysis of the prior research on risk assessment methodologies that have been used in supply chain management studies. In addition to highlighting the necessity of risk management in supply chain management, this article provides an analysis of the several ways that have been used in order to identify, evaluate, and manage risks. As an additional point of interest, the article offers examples of how these tactics have been put into practise. Additionally, in the last part of the study, we provide some suggestions for additional research that should be conducted in this category.

**Key Words:** Management, Risks, Supply, Chain, Assessment etc.

### Introduction:

Over the course of the last several years, supply chain management has become an increasingly crucial aspect for enterprises. Not only are businesses today expected to manage their own operations, but they are also expected to oversee the operations of their partners and suppliers. The ability to recognise and effectively manage risks within a company's supply chain is essential to the achievement of success for that company. It is vital for organisations to implement risk assessment methods in order to reduce the likelihood of possible interruptions and losses.

### Importance of risk management in supply chain management

Risk management is a critical aspect of supply chain management, as it helps companies to identify and manage potential risks that could negatively impact their supply chain operations. Some of the reasons why risk management is important in supply chain management include:

- **Ensuring continuity of operations:** By identifying potential risks and implementing strategies to mitigate them, companies can ensure that their supply chain operations are not disrupted. This helps to maintain the continuity of operations, avoid delays, and prevent financial losses.
- **Reducing costs:** Risk management can help companies to reduce costs by identifying and addressing potential risks that could lead to additional expenses, such as delays, product recalls, or legal liabilities.
- **Enhancing customer satisfaction:** Effective risk management can help companies to ensure that their products are delivered on time and are of high quality. This can enhance customer satisfaction and help to build long-term relationships with customers.
- **Improving supplier relationships:** By working collaboratively with suppliers to identify and manage risks, companies can build stronger relationships with their suppliers, which can lead to better communication, improved efficiency, and cost savings.
- **Maintaining brand reputation:** Supply chain disruptions or incidents can damage a company's brand reputation. Effective risk management can help to prevent such incidents and protect the company's reputation.

### Approaches to risk assessment in supply chain management

There are several approaches to risk “assessment in supply chain management, including quantitative risk assessment, qualitative risk assessment, and hybrid risk assessment.

**Quantitative risk assessment:** This approach involves the use of mathematical models, decision trees, and Monte Carlo simulations to analyze and quantify risks in the supply chain. Quantitative risk



assessment methods use historical data and statistical analysis to estimate the likelihood and impact of different risks.

**Qualitative risk assessment:** This approach involves the use of expert judgment, risk mapping, and risk matrices to identify and evaluate risks in the supply chain. Qualitative risk assessment methods rely on subjective assessments of the likelihood and impact of different risks based on expert opinion and experience.

**Hybrid risk assessment:** This approach combines both quantitative and qualitative risk assessment methods to provide a more comprehensive analysis of risks in the supply chain. Hybrid risk assessment methods use statistical analysis to estimate the likelihood and impact of different risks, while also incorporating expert judgment and subjective assessments of risks.

Each approach has its own advantages and disadvantages. Quantitative risk assessment methods provide a more objective and data-driven analysis of risks, but they may not account for all possible risks and may be limited by the availability and quality of data. Qualitative risk assessment methods rely on expert judgment and may be more subjective, but they can be used to identify risks that may not be captured by quantitative methods. Hybrid risk assessment methods offer a balance between objectivity and subjectivity and can provide a more comprehensive analysis of risks in the supply chain.

The choice of risk assessment approach depends on the specific needs of the company and the complexity of the supply chain. In some cases, a combination of different approaches may be necessary to provide a more accurate and comprehensive analysis of risks in the supply chain.

#### **Factors affecting the effectiveness of risk assessment processes**

Several factors can affect the effectiveness of risk assessment processes in supply chain management. These factors include:

**Complexity of the supply chain:** The more complex the supply chain, the more challenging it can be to identify and manage risks. A complex supply chain may involve multiple tiers of suppliers, numerous product lines, and various distribution channels. Risk assessment processes must be able to account for the complexity of the supply chain to be effective.

**Level of collaboration between supply chain partners:** Effective risk assessment processes require collaboration between different supply chain partners. The level of collaboration between partners can affect the effectiveness of risk assessment processes. If partners are not willing to share information or work together, it can be challenging to identify and manage risks.

**Availability of data:** The availability and quality of data can significantly impact the effectiveness of risk assessment processes. Risk assessment processes require accurate and reliable data to identify and evaluate risks. If data is incomplete or unreliable, it can be challenging to make informed decisions about risk management.

**Level of risk tolerance of the company:** The level of risk tolerance of the company can affect the effectiveness of risk assessment processes. If the company is willing to take on higher levels of risk, risk assessment processes may be less effective in identifying and managing risks. However, if the company has a low tolerance for risk, risk assessment processes may be more effective in identifying and managing risks.

#### **Complexity of the supply chain**

The complexity of the supply chain refers to the level of intricacy and interdependence of the different components and processes involved in the supply chain. A complex supply chain may involve multiple tiers of suppliers, numerous product lines, various distribution channels, and a wide range of stakeholders, including suppliers, manufacturers, distributors, retailers, and customers. The complexity of the supply chain can significantly impact the effectiveness of risk assessment processes in the following ways:



**Difficulty in identifying and managing risks:** A complex supply chain can make it challenging to identify and manage risks. With multiple tiers of suppliers and numerous product lines, there may be a significant number of potential risks that could impact the supply chain. Risk assessment processes must be able to account for the complexity of the supply chain to identify and manage all potential risks.

**Lengthened response times:** With a complex supply chain, there may be delays in identifying and responding to risks. The lengthened response times can result in delays in the delivery of products or services, which can negatively impact customer satisfaction and revenue.

**Increased operational costs:** Managing a complex supply chain can be costly. The cost of managing suppliers, logistics, and inventory can increase significantly as the complexity of the supply chain increases. Moreover, the cost of implementing and maintaining effective risk assessment processes can be higher in a complex supply chain.

#### **Level of collaboration between supply chain partners**

The level of collaboration between supply chain partners refers to the degree to which different stakeholders within the supply chain work together to achieve common goals, including identifying and managing risks. Effective collaboration between supply chain partners can significantly impact the effectiveness of risk assessment processes in the following ways:

**Improved risk identification:** Collaboration between supply chain partners can lead to a more comprehensive and accurate identification of risks. Different partners may have unique perspectives on potential risks that may not be apparent to others”. Effective collaboration can lead to a more holistic view of the supply chain and can help identify risks that may have been overlooked.

**Enhanced risk management:** Collaboration between supply chain partners can also lead to more effective risk management. By working together, partners can develop strategies to mitigate risks that are more likely to succeed. Additionally, collaboration can help partners respond more quickly and effectively to disruptions in the supply chain.

**Improved communication:** Effective collaboration requires open communication between supply chain partners. Improved communication can lead to better coordination, faster decision-making, and a more efficient supply chain. It can also help to build stronger relationships between partners, which can be beneficial in the long term.

**Increased transparency:** Collaboration can also lead to increased transparency within the supply chain. By sharing information about potential risks, partners can develop a more accurate understanding of the supply chain and work together to mitigate risks effectively.

However, effective collaboration between supply chain partners can be challenging to achieve. Partners may have different priorities, goals, and incentives, which can make it challenging to work together. Additionally, there may be concerns about the sharing of sensitive information or the potential for conflicts of interest.

#### **Level of risk tolerance of the company**

The level of risk tolerance of the company refers to the degree to which a company is willing to accept and manage risks in its supply chain. The level of risk tolerance can significantly impact the effectiveness of risk assessment processes in the following ways:

**Identification of risks:** “A company with a higher risk tolerance may be more willing to accept risks, which can result in a reduced focus on identifying and assessing risks. Conversely, a company with a lower risk tolerance may be more focused on identifying and assessing risks to ensure that they are managed effectively.

**Risk management strategies:** A company with a higher risk tolerance may be more willing to accept the consequences of risks and may have less robust risk management strategies in place. Conversely, a company with a lower risk tolerance may have more robust risk management strategies in place to ensure that risks are managed effectively.



**Response to supply chain disruptions:** A company's level of risk tolerance can also impact its response to supply chain disruptions. A company with a higher risk tolerance may be more willing to accept disruptions and may not take proactive steps to manage them. Conversely, a company with a lower risk tolerance may be more likely to take proactive steps to manage disruptions and ensure that the supply chain remains operational.

It is essential for companies to have a clear understanding of their risk tolerance and how it impacts their risk assessment processes. Companies with a higher risk tolerance may need to develop strategies to ensure that risks are identified and managed effectively, while companies with a lower risk tolerance may need to focus on developing robust risk management strategies to mitigate potential risks.

### **Conclusion**

It is very necessary for businesses to have efficient risk assessment procedures if they want to effectively manage their supply chain operations and reduce the likelihood of interruptions and losses. As a result of the analysis of the relevant literature, a number of methodologies for assessing risk in supply chain management were discovered, including quantitative, qualitative, and hybrid approaches. In spite of the fact that each method has a unique set of benefits and drawbacks, it is possible that using a number of distinct methods will be required in order to carry out an investigation that is both precise and exhaustive of the dangers posed by the supply chain. In addition, the efficiency of risk assessment procedures can be affected by a number of factors”, such as the length and complexity of the supply chain, the degree to which partners in the supply chain collaborate with one another, the amount of data that is readily available, and the degree to which a company is willing to take risks. When designing their risk assessment procedures, companies should take these considerations into account and adjust their approach to the particular requirements of their supply chain.

In general, for risk assessment procedures to be successful, they need to include cooperation between the many participants in the supply chain, excellent communication, and a crystal clear understanding of the possible risks and the potential implications of those risks. It is possible that in the future, research in this field will centre on the development of risk assessment techniques that are more complex and the identification of approaches to boost the efficiency of risk management in supply chain management. Companies are able to save expenses, improve customer happiness, retain their brand reputation, and assure the continuation of their operations when they use efficient risk assessment methods.

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