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Supply Chain Risk Management

Surendranadha Reddy Byrapu
Northeastern University

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Abstract

"Logistics" encompasses the management of the movement of materials and services throughout their supply chains, from their raw state to their final form as finished products. To enhance customer value and gain a competitive advantage, businesses should adopt supply chain management strategies aimed at optimizing their supply-side operations. Manufacturers utilize supply chain management (SCM) to plan and execute cost-effective and efficient supply chains.

A supply chain comprises all the stages of the production process, from product creation to the oversight of supporting IT systems. Typically, SCM aims to consolidate all production and distribution stages within a single framework. By streamlining their supply chains, companies can achieve cost savings and enhance operational efficiency (Baldwin, 2012). Enhancing the precision with which the company monitors production, distribution, and sales is critical to attaining this level of efficiency. Globalization has not only affected contemporary businesses but has also accelerated the pace, intensity, and complexity of corporate processes, as it impacts the inventories of suppliers. Hence, effective supplier management is of paramount importance.

Some of the global market forces include the growth of the global economy, which serves as a primary driver for increasing consumer demand. According to the International Monetary Fund, the GDP of both developed economies such as the United States, Japan, and Europe, and developing economies like Brazil, Russia, India, and China, is expected to continue growing in 2019, albeit at a slower pace than in 2018. When demand rises, the supply must also expand to meet it. The rising cost of labor has, over time, contributed to pricing and supply challenges in recent years (Baldwin, 2012). The high labor costs have repercussions for international trade.

Introduction

Component Supply Limitations pose a significant challenge in the current business landscape. The demand for essential goods often exceeds the available supply, leading to extended waiting times. This shortage has far-reaching effects on global supply networks. Additionally, rising raw material prices, influenced by broader global economic factors, have contributed to these limitations and price increases. Global trade disputes and tariffs have further exacerbated the situation, creating a tense economic climate and intensifying scarcity.

The consolidation of suppliers is another factor impacting the supply chain. In recent years, a wave of mergers and acquisitions has swept through various industries, resulting in fewer manufacturers supplying goods to the market. This consolidation has not only reduced supply but has also shifted the bargaining power of buyers.

To address these challenges and foster growth, supplier development is crucial. Collaborative relationships with suppliers, known as "supplier development," are essential for enhancing performance and fueling growth. Understanding and aligning with a supplier's objectives is vital, often leading to the formation of partnerships. Systematic supplier development goes beyond contracts, enabling the co-development of products between customers and suppliers.

Assessing the current state of a supplier is fundamental for achieving desired outcomes and establishing a growth baseline. This assessment involves evaluating factors such as on-time deliveries, quality issues, and pricing ranges. Key Performance Indicators (KPIs) play a pivotal role in evaluating supplier performance. Identifying supplier-specific KPIs and determining the urgency of improvement in each area is essential.

Problem-solving strategies come into play when addressing supplier performance issues. For instance, if a supplier consistently delivers late but maintains acceptable pricing, it is crucial to develop solutions to improve delivery consistency. This may involve bringing in experts, providing additional training, or implementing new procedures. In-person meetings with the supplier facilitate problem-solving and help both parties agree on a strategy to tackle the most critical issues.

To implement the supplier development plan, the following steps should be taken after identifying poor supplier

performance. Firstly, apply the plan to address the identified issues with the supplier. Continue monitoring the Supplier's Key Performance Indicators (KPIs) to ensure sustained improvement. Keep track of progress and make necessary adjustments to the plan as needed. Once this method has proven successful with one provider, it can be replicated with other suppliers in the supply chain. It is advisable to prioritize suppliers with strong supplier development ratings, as better long-term performance from suppliers will ultimately benefit the entire organization.

However, this approach is not without its risks. One potential risk involves capital costs. It's essential to consider that the overall cost of a global sourcing selection may not fully account for factors like inventory concerns, leading to significant financial losses (Rao & Goldsby, 2009). Additionally, poor quality is a critical concern, particularly in international purchases where quality control may be lacking. Foreign vendors may face quality issues, such as an inability to address broken or defective parts. These quality issues can extend beyond the supplier's capacity and impact internal costs, such as those related to air freight. Thus, global suppliers must achieve high-quality standards quickly, even when sourcing from low-cost countries.

Another major concern is the protracted and unexpected lead times due to external factors, such as customs delays, port blockages, capacity limitations, and geopolitical conflicts. Additionally, security threats are a pressing issue in global sourcing, encompassing information security, infrastructure security, and threats related to freight, including terrorism, theft, criminality, sabotage, and piracy. Freight transport relies on public and corporate utility services, each presenting unique security vulnerabilities. These vulnerabilities can lead to the loss or manipulation of goods, and concerns about illicit activities, such as human smuggling or weapon trafficking, add further complexity to the security landscape.

To address these challenges, strategies for suppliers should focus on performance metrics for global organizations and consider the total costs associated with sourcing decisions. It's essential to base decisions on what is best for the organization as a whole, rather than just regional profitability. Adopting a global perspective on supply and demand, transportation costs, service, and inventory issues is crucial for effective global operations. Implementing sourcing measures that account for global corporate landing costs and risks can help reduce regional bias and make sourcing decisions more resilient in the face of the challenges mentioned.

Landed-cost-based performance evaluation methodologies are gaining widespread acceptance on a global scale as a means to break down regional isolationism and emphasize the importance of price (Frohlich & Westbrook, 2001). Building long-term collaborations with overseas suppliers, providing quality training, and recognizing and rewarding outstanding performance can help reduce cost-cutting efforts. Effective management involves establishing connections with vendors to minimize quality and delivery risks while also working to reduce pricing concerns. It's crucial to move away from a sole focus on unit cost.

Achieving internal-external harmony is vital, as it necessitates the integration of internal and external elements for smooth information flow and transparency. When there is a seamless and synchronized exchange of information about the flow of products across functional and organizational boundaries, it becomes possible to identify, assess, and mitigate risks effectively.

The process of integration demands organizational and cultural transformations. Internal process integration requires a company-wide commitment to achieving process excellence.

In terms of training, it is essential to include discussions on the evaluation of supplier performance. Providing training and tools for monitoring supplier performance based on factors like order cycle duration and volatility can significantly reduce operational risks. Many organizations in our study utilized Key Performance Indicators (KPIs) to hold suppliers accountable for subpar performance (Frohlich & Westbrook, 2001). Performance metrics should be designed to reward and incentivize innovative ideas. Educating employees about initiatives such as the Container Security Initiative and the Customs-Trade Partnership Against Terrorism can also help in mitigating sourcing risks.

In summary, embracing landed-cost-based performance evaluation, fostering long-term supplier relationships, internal-external integration, and effective training can all contribute to reducing risks and enhancing the overall performance of global sourcing operations.

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Risk Management and the Supply Chain

Risk in the supply chain is an inherent and sometimes unavoidable factor, often driven by external forces that impact the supply chain's operation. When such events occur, it becomes the responsibility of management to seek ways to either eliminate or reduce the business's exposure to these risks. These risks can originate from both known and unknown sources, encompassing factors like supplier performance, forecast accuracy, execution challenges, natural disasters, geopolitical instability, and epidemics (Simchi-Levi, et al., 2008).

Supply chain managers, although dealing with numerous responsibilities, play a pivotal role in establishing a successful supply chain by addressing the challenges arising from known and unknown sources. They must navigate and mitigate these risks to ensure the resilience and continuity of their business operations.

Unknown – Unknown Sources of Risk

Supply chain managers are tasked with the crucial role of managing and mitigating the various inherent risks that permeate supply chains worldwide. While many risks can be identified and prepared for in advance, there are those that prove more challenging to handle as they are inherently unpredictable until they materialize. These are the risks that originate from sources capable of causing disaster-like effects within the supply chain, potentially leading to substantial financial losses and even forcing businesses to exit the region or market entirely (Simchi-Levi, et al., 2008). Examples of such unknown-unknown sources of risk include natural disasters, geopolitical risks, and epidemics.

These unforeseen events can have devastating consequences, making it essential for supply chain managers to implement robust risk management strategies, contingency plans, and resilient supply chain designs to minimize the impact of these unexpected disruptions. Adaptable and flexible supply chain approaches are critical to effectively navigating these unknown-unknown risks.

Natural Disasters

Natural disasters represent one of the most significant unknown-unknown sources of risk in supply chains, capable of causing widespread disruptions. These disasters encompass a range of events, including earthquakes, floods, fires, hurricanes, and tornadoes. When a natural disaster occurs, it can lead to disruptions in regional and global supply chains, causing delays, closures of ports, cancellations of flights, and imbalances in supply and demand (Carey, 2018).

While natural disasters can have a severe impact on the supply chain, supply chain managers have several strategies at their disposal to mitigate these effects. One crucial aspect to consider when dealing with disasters and their impact on the supply chain is the management of suppliers. It's vital to have a comprehensive understanding of the suppliers a business works with and assess whether these suppliers themselves are susceptible to natural disasters. Additionally, having backup suppliers in place is essential in case issues arise with existing suppliers within the business's network. This approach allows for a thorough risk analysis of the supply chain, ensuring that products can continue to flow even in the event of a natural disaster.

By diversifying the supplier base throughout the supply chain, both in terms of region and geography, businesses can better protect themselves from the adverse effects of natural disasters. This not only enhances supply chain resilience but also reduces the risk of severe disruptions and minimizes potential financial losses.

Geopolitical Risks

Political unrest and geopolitical factors indeed cast a significant influence on the world of supply chain and the businesses that operate within it. The impact of geopolitical factors extends to various aspects of the supply chain, including port closures, embargoes, and even armed conflicts or wars. When these events occur, both international suppliers and manufacturers are affected, leading to disruptions in the flow of goods and services.

Despite the complexity of geopolitical risks, it is not impossible to detect and proactively address them. Supply chain managers play a critical role in identifying and assessing these risks. Geopolitical risks can range from subtle signs to severe and overt challenges. To effectively address these risks, businesses should engage in continuous data collection and analysis. This ongoing analysis helps in identifying and understanding potential issues before they escalate into more significant problems (Caudell, 2015).

Through vigilant monitoring of global political developments and their potential implications, supply chain

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managers can make informed decisions, develop contingency plans, and establish resilient supply chain strategies that are better prepared to navigate the complex landscape of geopolitical risks. This proactive approach is crucial for minimizing the adverse effects of political unrest on the supply chain and ensuring business continuity.

Epidemics

Epidemics represent another category of unknown-unknown risks in the supply chain. The unique challenge with epidemics is that they can lead to the restriction of movement in and out of affected areas, effectively bringing the supply chain to a halt until the epidemic is under control. This is a necessary measure to contain the outbreak and prevent its spread across borders. Transportation and travel restrictions are imposed to ensure proper containment.
To address the risk posed by epidemics, redundancy in supply chain systems is crucial. This redundancy can be achieved by conducting a thorough analysis of the supply chain, identifying critical nodes and potential points of failure, and then implementing backup systems and suppliers. By creating redundant systems, businesses can reduce their reliance on single sources and develop alternative supply routes**.**

Known - Unknown

Known-unknown risks in the supply chain represent a category of risks that, while anticipated to some extent by businesses, have not been precisely depicted by a risk management system. These risks emerge due to discrepancies or abnormalities in the risk models that organizations use. They often pertain to human errors and operational inefficiencies and are generally considered as standard or expected risks within the business model. Some examples of known-unknown risks encompass factors like supplier performance, forecast accuracy, and execution issues.
These risks are essentially part of the operational landscape and, while they may not be fully quantifiable or predictable, they are accounted for in the broader risk management framework. Mitigating known-unknown risks typically involves enhancing operational efficiency, implementing quality control measures, and continuously improving supply chain processes to reduce the impact of these known yet unpredictable challenges.

Supplier Performance

Supplier performance is a critical factor that can significantly impact a business's supply chain operations. The primary objective of suppliers is to ensure the smooth and trouble-free delivery of products or materials to their intended destinations while adhering to the contracts established by the parent company. However, achieving this goal doesn't always happen as planned. When suppliers fall short of their obligations, it can result in detrimental consequences for the supply chain, including missed delivery dates and products that do not meet the quality standards expected by the parent company.
To minimize the adverse effects of poor-performing suppliers, businesses can employ various strategies. One approach is to establish redundancy systems that provide a level of security against supplier underperformance. Redundancy systems involve having alternative suppliers or backup plans in place to ensure a continuous supply of essential materials or products, even when the primary supplier faces difficulties.

Forecast Accuracy

Forecasting within the supply chain is undeniably one of the most crucial activities for a business. When executed accurately, it enables the business to produce the right products at the right time, ensuring timely delivery to customers without any issues. Conversely, incorrect forecasting can lead to breakdowns in the entire supply chain, making it challenging to align the business's production with customer demand.
It's important to note that forecasting is not a one-size-fits-all process. There are different types of forecasting, each serving a specific purpose. Some forecasts focus on determining the supply capabilities of the business's suppliers, while others concentrate on understanding customer demands. In some cases, forecasting involves examining both aspects across the entire supply chain (Michigan State University, 2017).
Accurate forecasting plays a pivotal role in cost reduction, ultimately contributing to customer satisfaction. It achieves this by helping businesses fulfill orders promptly, minimizing unnecessary expenses related to inventory management, and providing insights into price fluctuations, which can be critical for cost control and maintaining

competitive pricing strategies. Accurate forecasting is, therefore, a key driver of supply chain efficiency and business success.

Market Changes

Market changes can indeed pose risks similar to those related to forecasting accuracy. When market shifts result in changes in customer demand that go in an unfavorable direction, businesses are at risk of producing products that have limited or no market demand, leading to financial losses. To mitigate the effects of market changes, Steve Rosvold (2013) recommends the adoption of hedging strategies.

Hedging tools enable businesses to manage and minimize the risks associated with market fluctuations. These tools allow companies to either retain these risks in-house or transfer them to other parties, including customers or entities involved in the supply chain. By employing hedging strategies, businesses can protect their profitability and financial stability in the face of market volatility.

Conclusion

In the world of business, risks are an inevitable part of the landscape. Whether these risks fall into the category of unknown-unknowns or known-unknowns, it's the responsibility of supply chain managers to address them within the context of the supply chain and make informed decisions aimed at either eliminating or minimizing these risks to the best of their ability. It's crucial to recognize that risk is a constant presence in business operations.

Having robust risk management plans in place is paramount because businesses must be prepared to navigate unexpected challenges and uncertainties. Being proactive and prepared to tackle unforeseen risks is essential, as no business wants to face closure or severe disruption due to unforeseen events. The ability to adapt, strategize, and implement measures to manage risks effectively is a hallmark of a resilient and successful business.

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