



# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact Factor: 6.078

(Volume 8, Issue 3 - V8I3-1348)

Available online at: <https://www.ijariit.com>

## Management & risk evaluation involved in supply chain management

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### ABSTRACT

*Supply chains have extended briskly over the time, with the means to increase efficiency, lower costs and fulfill the demands in developing & developed Business Segments. The ever growing complexity in a supply chain network blocks visibility and therefore decreases one's authority over the process. Complexity and Deterioration are coming up as significant difficulties in the supply chain risk management. It has become more challenging to point the risks with the rise of third party service providers, therefore making the process more complex & less visible. This project intends to break down how supply chain risks could be successfully managed. This would be done, first by situating the exploration plan in Supply Chain Risk Management (SCRM). Then, strategic plans for effective administration & control of Supply Chain risk are recognized and analyzed.*

**Keywords:** Supply Chain, Risk, Management

### 1. INTRODUCTION

Supply Chain Management (SCM) is a standard emphasizing the use of a proficient integrated arrangement of suppliers, manufacturers, warehouses, retailers and customers, so things can be manufactured, delivered and circulated at the right amounts, to the right areas, where costs are minimized and outputs are maximized.

A Supply Chain is the chain of associations/organizations, with facilities and functions with logistics included that are engaged with manufacturing and delivering an item or service. Earlier, when firms produced in-house, procured locally and sold direct to the clients, 'Risk' was less diffused and simpler to manage. With the approach for increased product and service complexity, and procurement of supply networks across international boundaries, risk is ever expanding and the location risk has moved through complex supply networks.

Management of risk in Supply Chains is a significant subject in Supply Chain Management. The topic's significance is because several ongoing Industry trends, such as: strategic out-sourcing to third party vendors, globalizations of business sectors, ever

expanding dependence on suppliers for particular capacities and development, dependence on supply networks for competitive advantage and rise of Information Technology that makes it easier to conceive and control the extensive supply chains.

Alongside the expansion in these drives, there has been an expansion in the potential and magnitude of Supply Chain Risks. Numerous modern cases have shown various results after risk occasions because of assorted moves (or absence of activity) initiated in confronting supply chain disruptions and disturbances.

**Risk** - Risk can be extensively characterized as an opportunity of danger, harm, misfortune, injury or some other undesired outcomes.

### Sources of Risk

#### a. Supply Risk

Supply risk connects with potential or real time disturbances to the flow of item or data movement inside the organization, upstream of the central organization. Therefore it is risk related with an organization's suppliers, or supplier's providers not being able to convey the materials to the organization needs. It influences internal progression of an asset to empower tasks to happen, negatively. This is termed as 'input risk'. It includes.

- Dependence on key providers
- Solidification in supply markets
- Quality and the Management issues emerging from international obtaining
- Potential disturbance at lower level

#### b. Demand Risk

Demand risk connects with potential or genuine disruptions to the flow of product, data and money exuding from within the organization, the central organization and the market. This demand risk can be a chance for disappointment on either the high or low side to precisely accommodate the level of demand. It incorporates vulnerabilities in both product volume and mix which includes.

- Loss of significant accounts
- Unpredictability of demand

- Centralization of customer base
- Inventive competitors

**c. Process Risk**

Processes are the arrangements of significant value adding and administrative exercises attempted by organizations. Process risk connects disturbances to these processes. It influences a company's ability to produce and supply products/services, which results from the outcomes of a breakdown in a central operation, manufacturing or processing ability. It includes.

- Producing yield variability
- Extensive set-up times and inflexible cycles
- Equipment dependability
- Limited capacity
- Out sourcing major business processes

**d. Control Risk**

Controls are the presumptions, rules, frameworks and methods that govern how an organization takes control over the processes. As far as supply chain is considered it might be product order quantities, batch sizes, security stock strategies, etc. It is therefore the risk emerging from the application or misapplication of these principles. It includes.

- Inappropriate principles that mutilate request
- Unclear visibility along the pipeline
- Absence of cooperative preparation and forecasts

**2. ENVIRONMENTAL RISK**

Environmental risk is the risk related with external factors from the organization's viewpoint; uncontrollable events. It comprises of any uncertainties emerging from the supply chain and environmental interactions. These might be the consequence of mishaps, man-made or natural events. It includes.

- Natural disasters
- War & Terrorism
- Administrative & Regulatory changes
- Strikes & Lockdown

**a. Risk Evaluation**

Risk evaluation is utilized to break down the degree of risk related with each hazard. The goal of risk evaluation is to identify which regions and exercises in the supply chain are generally vulnerable to risks. It adjusts the likelihood of dependable supply, balances the probability of demand, effective allocation of resources and the likelihood of success of new product introductions, economic situations and the opportunity cost for alternate decisions.

**b. Risk Management**

It is a process of estimating or accessing risk and creating strategies to deal with the risk. Risk management is a wide movement of planning & decision making intended to manage the event of risks or dangers. A risk incorporates unlikely yet high effect disturbance risks, as well as more common unpredictability in demand, internal handling, and supply. Some factors resulting exposure to high risk includes -

- Customer responses
- Competitor responses
- Supplier responses
- Government responses

**3. PROBLEM DESCRIPTION**

To acquire cost advantage and market share, various organizations carried out various initiatives like out sourcing manufacturing and product variety. These drives were successful

in a steady environment; however they made supply chain more prone to various risks brought about by uncertain economy, consumer demands and natural/man-made calamities.

In this work, a gripping technique for managing 'Supply Chain Risk' is proposed with help of a stream diagram and a strategy is developed for its Moderation.

**a. Problem Identification**

- Acquiring different aspects of risks which has influence on Supply Chain Operations.
- Managing a powerful strategy for overseeing Supply Chain risk.
- To develop a flowchart for Supply Chain Management Risk.
- To develop a system procedure for Supply Chain Risk Relief.

**Definition -**

**A) Supply Chain Risk Management (SCRM)**

SCRM is seen as "the management of supply chain risk through collaboration among the supply chain partners in order to guarantee productivity and profitability".

These processes can imply the transaction of risk to another party, risk aversion and channel risk sharing. SCM risk evaluations balance the probability of Demand, the probability of reliable supply, the best allotment of resources and the probable outcome of new product introductions, economic situations and the opportunity costs of elective choice ways.

A solid risk analysis could recognize the level of disruption on supply chains. This could be laid out by checking the supply chain execution, for instance the production or financial exhibitions. With a legitimate execution of risk control, for example by means of mitigation procedures, the impact of disruption on processes could be reduced or avoided.

**b. Objective**

The primary objective is to investigate the ways in which Supply Chain risks can be successfully managed. This is done by positioning the agenda in Supply Chain Risk management (SCRM). Then, techniques for effective administration of supply chain are recognized and examined. In the framework displayed above, we can classify the Objective into two sub-classes -

**Objective I: Recognizing the Supply Chain Risk Management Agenda**

Recognizing the ongoing agenda in this field is significant. The investigation of different definitions, for both terminology and processes engaged with this area, assists with explaining future scope. To accomplish this goal, these two questions are raised as follows:

**Q1:** *What risks should be considered in supply chain operations?*

**Q2:** *How does a risk event affects the supply chain operations?*

**Objective II: Identification of Effective Management in Supply Chain Risk.**

This objective centers on finding how supply chain risk can be actually managed. To accomplish this goal, an examination of chosen approaches and strategies should be conducted to investigate their ability and vigor in sustaining supply chain activities. Thus, to accomplish the above objective, the following three issues are raised:

**Q3:** *How can we analyze supply chain performance from a risk management point of view?*

**Q4:** What kind of mitigation policies should be used for managing risk in supply chains?

**Q5:** What modeling techniques and approaches are possible in this area?

#### **4. PROPOSED METHODOLOGY**

Supply Chain Management Process can be mainly grouped into two parts:

- Risk Analysis
- Risk Control

Risk Analysis manages Identification, Approximation and Evaluation of risks, while Risk Control manages Relief and Monitoring of Risks.

Risk management process is comprised of two principal components; Supply Chain risk analysis & Supply Chain Risk control.

##### **a. Risk Identification**

A vital part of supply chain risk management is recognition/identification. Recognition/Identification includes making a rundown of potential occasions that could harm any aspect of Supply Chain's performance. Risk Identification lets a company/organization to take precautions and necessary steps before any misfortunes happen.

##### **b. Risk Assessment & Evaluation**

Supply Chain Risk Assessment provides with the knowledge of where the more serious risks might exist to focus on available resources for risk relief.

Risk Assessment is commonly comprised of two measures: Likelihood and Impact. Likelihood estimates the chances that the occasion will happen.

Effect measures the outcomes on the Company/ organization assuming that the occasion happens.

##### **c. Risk Monitoring & Relief**

When areas of risks have been recognized, the organization needs to plan their internal and external environment. This assists them with anticipating when mishaps are turning out to be more probable.

It is critical to monitor indicators that would show up earlier in a risky occasion or better even before it happens by demonstrating a happening probability.

If an arrangement to relieve or prevent a risk has been executed, monitoring can verify whether the corresponding measurements give no indications of the mishap happening.

Five functional methodologies for managing disruptions are:

- Stockpile Inventory** - Hold stock that can be utilized to fill customer request regardless of whether supply is intruded.
- Diversify Supply** – Procure an item from numerous merchants/providers with the goal that an issue at one seller/merchant doesn't influence the whole Stockpile.
- Reinforcement/Backup Supply** - Have a crisis provider (or coordinated factors supplier) that isn't typically utilized however that can be enacted in case of a Stockpile issue.
- Manage Demand** – Influence Demand to more readily match the genuine inventory by, for instance, adjusting costs or

offering incentives to urge Customers to buy items that are less supply-constrained.

- Strengthen Inventory network** - Work with suppliers to diminish the frequency of supply issues.

##### **d. Supply Chain Operation Reference (SCOR) Model**

Supply Chain Operation Reference (SCOR) Model gives a well crafted framework that links execution measurements, processes, duties and individuals into a single structure. The framework upholds communication between supply chain partners and upgrades the effectiveness of supply chain management, tech, and related supply chain improvement exercises.

SCOR depends on Five Core Administration Process:

##### **SCOR Cycle**

- PLAN** - Processes that balances total demand and supply to foster a game-plan which best meets obtaining, creation and conveyance necessities
- SOURCE** - Processes that acquire labor and products to fulfill arranged or genuine need.
- MAKE** - Processes that product item to a completed state to satisfy arranged or real need.
- DELIVER** - Processes that give finished products to satisfy demand, normally including order management, transportation management and distribution.
- RETURN** - Processes related with returning or receiving returned items under any circumstance.

##### **Advantages of taking on the SCOR model**

- Fast assessment of Supply Chain performance
- Clear recognizable proof performance gaps
- Efficient supply chain network redesign and optimization
- Upgraded operational control from standard core processes
- Streamlined administration reporting and hierarchical structure
- Arrangement of supply chain team abilities with vital targets
- Detailed approach for launching new products/businesses
- Methodical supply chain mergers that catch projected funds

#### **5. CONCLUSION**

The motive behind working with this project was to create awareness among the businesses that neglect the risks involved in the supply chain that increase their misfortunes.

Effects of these risks and their occurrences can be limited or even nullified.

The **SCOR Model** can play a significant part in pursuing the overall objective of a real cooperative interaction inside and between organizations, targeting maximum performances with reduced risks.

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