



SUPPLY CHAIN RISK OF A LOCAL PHARMACEUTICAL FIRM:A CRITICAL ANALYSIS

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Abstract:

The pharmaceutical industry has become one of the major areas of providing supplement for the people around the world. These industries face tremendous challenges every day in supplying items to their clients. The risk factor cannot be ignored like other industries. There is always demand and supply gap in the market due to fluctuation in demand. There exist problems in handling inventory and managing suppliers. In order to manage risk, supply chain risk management has become vital parts in every industry. The paper intends to focus on supply chain risk of a pharmaceutical company.

Keywords: Supply chain management, firm, performance, quality

Introduction:

Risk management has become important in today's scenario. Industries should be prepared to handle risk as and when required. Risk may disrupt the process of supply chain. The objective of supply chain is to do the activities with cost optimization. The major concerns in today's business scenario are complexity and increase of cut-throat competition. The supply chain manager should be able to understand the supply chain risk to identify risk associated with it at an early stage. In order to bring profit in the company it is necessary to know the supply chain risk associated with the process. Risk management can help with the quality and build customer loyalty. The goals of the pharmaceutical industry are to manufacture products with the highest cost optimization standard. Supply chain risk management is a management tool to capture Operations and financial aspects in decision making.

Review of Literature :

Cooper and Ellram (1990) stated Supply Chain Management (SCM) as "an integrated philosophy to manage the total flow of a distribution channel from the supplier to the ultimate customers". Harland (1996) identified SCM as "the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers"

Christopher, 1998; Heikila, 2002 argued that the term SCM should be replaced with terming “demand chain management to reflect market driven strategies.

Lambert *et al.* (1998) discussed SCM as “the term SCM was originally introduced by consultants in the early 1980s, since the early 1990s, academics have attempted to give structure to SCM.” Larsen and Rogers, 1998 realized the use of SCM despite its short history. Shapiro (2001) pointed argued that SCM comprises of several management disciplines as strategy formation and the theory of the firm, logistics, production, inventory management, management accounting, demand forecasting, marketing management and operations research

Beamon (1998) states that SCM is the activities comprising of (1) acquire raw materials, (2) convert these raw materials into specified final products, and (3) delivers these final products to retailers. According to Mentzer *et al.* (2001) argued that it is a series of three or more entities involved in flows of products, services, finances and/or information, from the source location to the consumer. Lancioni *et al.*, 2001) discussed that research from different fields had incorporated SCM in their research discipline. Tyndall *et al.* 1998 discussed logistics and SCM as a flow of materials and products from source to user. Ellram and Cooper (1990) defined SCM as a management philosophy. While according to LaLonde (1997) it is a management process.

New and Payne (1995) and Simchi-Levi *et al.* (2000) discussed that SCM as “the integration of key business processes among a network of interdependent suppliers, manufacturers, distribution centers, and retailers in order to improve the flow of goods, services and information from original suppliers to final customers, with the objectives of reducing system-wide costs while maintaining required service levels”

Min & Zhou (2002) discussed that SCM is an integrated system which are interdependent business process comprises of (1) supply raw materials and parts; (2) transform these raw materials and parts into finished products; (3) add value to these products; (4) distribute and promote these products either to retailers or consumers; (5) ease Pienaar (2009) argued SCM as “a general description of the process integration involving organizations to transform raw materials into finished goods and transport them to the end-user” information exchange between different business entities. According to the Council of Supply Chain Management Professionals (CSCMP) SCM is “the planning and management of all activities involved in sourcing and procurement, conversion and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers and customers. The Institute for Supply Management (ISM) states SCM as: “The design and management of seamless, value-added processes across organizational boundaries to meet the real needs of the end customer.” The Singapore-based Logistics & Supply Chain Management Society argued supply chain management as: “The coordinated set of techniques to plan and execute all steps in the global network used to acquire raw materials from vendors, transform them into finished goods, and deliver both goods and services to customers.” the terms a supply chain orientation and supply chain management are used differently to form a relationship between the two. Mentzer *et al.* (2001) classified supply chain as :a basic supply chain, an extended supply chain and a ultimate supply chain. According to Global Supply Chain Forum (GSCF) SCM is “the integration of key business processes from end

user through original suppliers, that provides products, services and information that adds value for customers and other stakeholders”

Definitions of SCM:

Handfield and Nichols, 1999	The SCM encompasses all activities associated with the flow and transformation of goods from the raw materials stage, through to the end user, as well as the associated information flows, material and information flow both up and down the supply chain
Lummus and Vokurka, 1999, p. 17	<p>“All the activities involved in delivering a product from raw material through to the customer, including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution</p> <p>Across all channels, delivery to the customer and the information systems necessary to</p> <p>Monitor all of these activities, of these activities into a seamless process. It links all of the partners in the chain</p> <p>Including departments within an organization and the external partners including</p>
Ho <i>et al.</i> , 2002	A philosophy of management, which involves the management and integration of a set of selected key business processes from end user through original suppliers that provides products, service and information that add value for customers and other stakeholders through the collaborative efforts of supply chain members
Aitken in Christopher, 2005	Network of connected and interdependent organizations mutuality and co-operatively working together to control, management and improve the flow of materials and information from suppliers to end users
Stevenson William (2005)	Supply chain comprises of activities like activities concerned with planning, coordinating and controlling materials, parts, and finished goods from supplier to custome
Chopra and Meindl, 2007, p. 6	“Effective supply chain management involves the management of supply chain assets and product, information, and fund flows to maximize total supply chain profitability.”
CSCMP, 2007	SCM encompasses the planning and management of all activities involved in sourcing and procurement, conversion and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers and customers
Harrison and van Hoeck, 2008, p. 6	“Supply chain management: Planning and controlling all of the business processes - from end-customer to raw material suppliers - that link together partners in a supply chain in order to serve the needs of the end-customer.”

Harrison and van Hoeck, 2008, p. 6	All the activities involved in delivering a product from raw material through to the customer, including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer and the information systems
Bowersox et al., 2010, p.4	“Supply chain management consists of firms collaborating to leverage strategic positioning and to improve operating efficiency. For each firm involved, the supply chain relationship reflects a strategic choice.”

From the above definition key elements of SCM are: Product and its flow, suppliers and suppliers of suppliers, firms, customers and customers of customers, Information and its flow, Value creation, Integration, Collaboration and agility and flexibility. But Lambert et al. (1997) argued that there are separate element of SCM which are network structures, business processes and management components

Elements of supply chain management		Description
Structure		
Members of supply chain		Members, roles, etc
Structural dimension (horizontal and vertical)		Horizontal structure / position or vertical structure of members/ nodes
Degree of integration (managed, monitored and none)		Degree of integration on arcs between members/ nodes in the supply chain
Process		
Flow	Product flow	Flow of products between members/ nodes
	Information flow	Flow information between members/ nodes
	Monetary flow	Flow of money between members nodes
Operational activities		Type of activities order between activities
Management Component		
Physical and technical	Planning and control methods	Measurement , performance metrics, key performance indicator (KPI), etc
	Organizational structure	Firm organization structure , inter organizational team work , etc
	Responsibility (ownership, liability and operations)	Ownership of product , liability of product, or responsibility of operations
Managerial and behavioral	Management methods	Management methods, level of commitment , etc
	Power and leadership structure	Power structure and relations between members
	Risk and reward structure	Contracts, fee structure, mechanisms, etc
	Culture and attitude	Culture, trust or attitude

Sources: **Sources:** Adapted from Lambert *et al.*, (1997, 1998)

The theory of supply chain disruption cannot be ignored while studying supply chain management of any firms. Mitroff and Alpaslan (2003) found that 95% fortune 500 companies are familiar with disruptive event. So companies need to identify supply chain risk to build competitive advantage. Hendricks and Singhal (2005a, 2009) identified that reason for supply chain on market performance. The MIT research group at (2003) identified various failure modes of supply chain. The failure modes are shown below:

Failure Mode	Description	Impact
Disruption in supply	Delay or unavailability of supply	Shortage of inputs
Disruption in Transportation	Delay or unavailability of the transportation infrastructure	Delay of inbound and outbound movement of goods
Disruption at Facilities	Delay or unavailability of plants/warehouses	Bottleneck in operations
Freight breaches	Violation of the integrity of cargoes and products	Loss or adulteration of goods due to theft
Disruption in communications	Delay or unavailability of the information and communication infrastructure	Inability to coordinate operations and execute transactions.
Disruption in Demand	Delay or disruption downstream	Loss of demand, temporarily or permanently

Source: MIT research group on "Supply Chain Response to Global Terrorism", Sheffi, Rice, Fleck and Caniato (2003)

PROBLEM STATEMENT

The main objective is to identify risk associated with the supply chain of the local pharmaceutical firm.

- What are the different types of risk
- How to manage the risk

RESEARCH METHODOLOGY

A case study, research approach is chosen to identify risk.

Data is collected through primary interview with the employees of the company, management and ownership of the company. Semi-structures questions interview technique is being used in order to understand the potential risk associated with the supply chain.

RISK CATEGORY

There are two types of risks identified

External Risk and Internal Risk

1. Supply Risk

These risks could harm the production and supply chain relationships with the customers. Delivery of wrong raw materials will be failure of the firm to produce items that are in the pipeline. These risks is should be studied carefully to gain customers and build lasting relationship with the competitive environment.

2. Inferior quality of supply

The raw materials supplied by the supplier are of low quality. These types of supplier will make a firm to lose its valuable customers. The inferior quality of raw materials can hamper the production process and the final product which can make to reject the product.

3. Non-availability of resources

The supplier may fail to supply the materials. This may be the problem of management. The process of assignment will be a problem both for the firm and supplier. The production process is scheduled for producing different products for different customers which can hamper the relationship

4. Natural Disasters

This type of disaster can harm the firms and earn huge loss for the firm. Natural disaster can't be predicted, but firms have to deal badly with natural disaster

5. Man-made disasters

This type of disaster can also harm the firms' performance and the production system will be in crisis to maintain the scheduling of jobs.

6. Selection of supplier

The supplier selection is very important in today's business scenario. Selecting the right supplier will make a smooth flow in the system otherwise there can be a huge problem.

7. Cost risk

The risk associated with the price of the product can be a crisis for the firm to perform smoothly

Production Risks

- Malfunctioning of Machinery

- Human Risks

- Wrong Packaging:

- Power Shutdown

- Demand Risks

- Forecasting Errors

- Miscellaneous Risks

- Transportation Risk

- Quality Risks

- Storage Risk

- Information Sharing Risks

- Safety regulations by government agencies

Analysis and discussion:

A firm will face SCM barriers in its process. The point of discussion is to have efficient supply chain flow. But it is possible to predict supply chain problems. But in order to get maximum benefit from customers, it's always better to adopt strategies to mitigate risk. A firm will always want to have a competitive advantage in some parts of their process. Supply chain companies have to be careful while devising strategies to reduce errors. While selecting suppliers, it can be a problem to build trust and relationship. The demand of firms will vary and type of service will not be offered by the regular supplier. There may be a question of timely delivery of product but some firms are well established in delivering exactly the scheduled provided. The firm has to learn from other established firms in the market. Supply chain integration is necessary for successful product flow in the system. Training has to be provided to the employees. Finished products should be handled with maximum care to avoid damages. The firm should build its

capability in SCM to satisfy its customers. Cooke in Queiroz and Cruz (1999) pointed out the main criteria to diminish the costs in the SCM and these are suggestion be used by the company in the study. The following is the points given below.

Figure . Actions that companies must take to diminish the costs in the SC

1	Develop or enhance programs such as Vendor Managed Inventory and JIT to gain speed and standardize inventory orders
2	Using Electronic Data Interchange (EDI), internet, to reduce the cost of transaction and cycle time
3	Using the new tools of prediction and planning to centralize this information.
4	Producing under a production schedule that aims to optimize the balance-profit, the service consumer, the utilization of resources and capacity utilization through software optimization
5	Constantly review the cost of building an inventory against the cost of production capacity in order.
6	Condense the supply chain substituting producers and distributors to be close to market
7	Integrated production, inventory planning, customer service, distribution and transportation functions to improve the feasibility of information, reduction of inventory and improved service
8	Identify and fix non-profit and consumer product lines to increase margins and eliminate businesses.
9	Assess the feasibility of outsourcing all or parts of your SC. Using external experts when they can make your company save money.
10	Centralizing support functions of SC, such as buying offices to gain economies of scale, downsize and reduce transaction costs.

Source: Cooke in Queiroz and Cruz (1999)

Conclusion

Supply chain management is vital competency in today's global business environment. Supply chain integration becomes the key factor for the firm to be successful in the business world. Sharing information can lead to the successful implementation of the supply chain process. The areas of problems are different for various firms and it is a subject to be studied further. In the advent of new technology and supply chain knowledge, the firms are still facing barriers towards implementing it. The reason for identifying becomes one of the significant factor in research. Successful companies break supply chain risk barriers by building confidence throughout the chain.

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