



STUDY ON SUPPLY CHAIN MANAGEMENT IN FOOD INDUSTRY

REHAN JAMAL

Under the Guidance of

DR. PRIYA SINGH

Galgotias University, Greater Noida

ABSTRACT

The purpose of FSCM is to demonstrate the steps taken to ensure the safety and quality of food from the time it is harvested until the moment it is served to the consumer (Marsden et al., 2000; Bandon et al., 2009). Differentiating FSCM from other force chains like cabinetwork logistics and force chain operation, the underlying force chain is more difficult and sensitive to handle due to factors like food quality, safety, and newness within a restricted time period (La Scalia et al., 2016). Due to the limited time period in which perishable goods may be transported by FSCM and the inability to adapt to changes in demand and transit periods, dealing with these items presents significant difficulties. As international cooperation has developed, the complexity of supply chains has increased, shifting the focus from a single layer, such as food product, to the overall force chain's effectiveness and productivity. Optimisation

opinions and other approaches will be used to make the best use of the markets, warehouses, transportation networks, and staff that make up the food supply chain in order to ensure that food is of the highest

quality and safety (Wu, Liao, Tseng, & Chiu, 2016).

INTRODUCTION

PERESPECTIVE.

Supply chain management (SCM) is often described as a network of warehouses and distribution centres that work together to fulfil orders. Whereas SCM comprises tasks like locating suppliers, transforming raw resources into intermediate and finished products, and transporting finished items to consumers. Supply chain complexity varies widely by sector and by organisation, but this growing understanding of business operations is an exciting development nonetheless (Smith and Budress, 2005). Both the service and industrial industries make use of supply networks.

A supply chain for a single item might be used to illustrate the concept. First, raw materials are procured from vendors, then they through a single transformation to become finished products, then they are shipped to warehouses for distribution, and ultimately they reach the end consumer. The supply chain becomes extremely complex when several final products use the same components, facilities, and capabilities. Inefficient material flow, the use of several transport modes, and the potential for increased material costs in the end product are all discussed by Bertodo (2002).

The term "supply chain" is frequently used to refer to a number of distinct operations that are carried out within an organisation. These operations can range anywhere from sourcing raw materials to distributing finished goods. The following steps are included in this process: transportation (both incoming and outgoing), storage, inventory management, sourcing, procurement, supply management, forecasting, production planning and scheduling, order administration, and customer service. The process also incorporates the information systems that are associated with it. As a consequence of this, we are able to say that "the supply chain encompasses all of those activities associated with moving goods from the raw-materials stage all the way through to the end user." This is a pithy way of putting across what we are trying to say.

It is common practise for companies that are involved in the supply chain to have distinct "silos" for the planning, purchasing, production, marketing, and distribution of their products. These compartmentalised operations frequently pursue distinct and even occasionally incompatible objectives. The goals of marketing, which include providing exceptional customer service and achieving the highest possible sales volume, are in constant conflict with the goals of manufacturing and shipping. Two of the most important goals of marketing are provided below. When planning industrial operations, it is common practise to concentrate on maximising output while simultaneously

lowering costs. However, when doing so, little consideration is given to how this will impact inventory levels and distribution capabilities. When haggling over the cost of an item, it is common practise to base the discussion entirely on one's familiarity with previous purchases as a point of comparison. The organisation does not have a comprehensive plan as a result of these problems. According to Bertodo (2002), software configuration management, also known as SCM, is a method that can be used to integrate and coordinate all of these different components. We simply do not have the luxury of time to put off engaging in this level of cooperation and integration any longer.

Those individuals who were in charge of the orchestration of this business procedure were aware that in order to increase productivity, it would be necessary to coordinate resources that were not located within the company. One of the most in-depth studies of supply chain management (SCM) that has been carried out up to this point was presented by Bernard J. (Bud) LaLonde, who is now an emeritus professor of supply chain management at Ohio State University. One definition of supply chain management (SCM) describes it as "the synchronised management of the flow of physical goods and associated information from sourcing to consumption." Another definition refers to it as "the management of the flow of physical goods and associated information." "the... synchronised management of the flow of physical goods and associated information," according to this definition, is what supply chain management (SCM) is. It is necessary to integrate these components both internally and externally in order to fully exploit the potential of supply chain management (SCM). The phrase "from sourcing to consumption" suggests that this is the case. The second group comprises all of the remaining individuals, including those who are responsible for production as well as consumers. The way in which these businesses are intertwined was conceptualised and referred to as a "extended supply chain" by James E. Morehouse of A.T. Kearney. "The expanded company's

goal is to improve service for customers," he continues, stating that a higher share of the market is achievable with superior service. "The expanded company's goal is to improve service for customers," "Improving service for customers is the primary focus of the newly expanded company," When a company controls a larger portion of the market, it is better positioned to reap the benefits of economies of scale in areas such as storage, transportation, and transaction processing.

When it comes to determining and conveying the value of the supply chain, Mr. Shrawan Singh, Vice President of Integrated Supply Chain Management at Xerox, believes that the customer is the single most important factor. It is possible to link the values of customers to the profit and loss statement as well as the balance sheet if "you can start measuring customer satisfaction associated with what a supply chain can do and also link customer satisfaction in terms of profit or revenue growth." The most successful businesses in the world are beginning to understand that they hold a significant competitive advantage over their other businesses in their industry. The phrase "supply chain management" (SCM) refers to the processes that need to be synchronised in order to deliver a product to customers and ensure that they are happy with the purchase. This is done in order to achieve "supply chain management." The term "Supply Chain Management," or "SCM," refers to the process of coordinating the activities of production, procurement, shipping, and distribution. In order for supply chain management to be successful, each of these processes needs to have careful coordination with one another and be woven together as seamlessly as is possible. It is designed to connect those who are involved and is open to participation from anyone. The various departments within the company interact not only with the company's customers and suppliers, but also with the company's carriers, third-party businesses, and information system providers.

SCM TOMORROW.

Optimism Multinationals looking to successfully source or sell products in India should be aware that local conditions, particularly in the supply chain, may differ significantly from those in more industrialised nations. With this model, companies will have a clearer idea of which supply chain strategy can help them succeed. Supply chain issues, enhanced logistics, and novel SCM activities and innovations may appear and thrive in the following settings.

With so many waterways to choose from, maritime transport may be perfected and put into effective use.

(b) In the industrialised world, supply chains are used to operating with cutting-edge highway infrastructure that includes cutting-edge container ports. They are, however, extremely uncommon in the world's least developed countries.

(c) Supply chain circumstances require careful consideration in the expanding economy, which has significant potential for long-term growth. When compared to more established countries like Europe and North America, India's massive and young labour and expanding market are significant advantages. Because of these factors, multinational firms are increasingly considering India as a potential industrial hub and consumer market.

Difficulties. India's slow and bureaucratic administration, as well as the country's limited infrastructure—such as its energy and skilled labour shortages, as well as its clogged roads and ports—present distinct challenges for businesses. Supply chain management is only one area where what is standard in

developed nations is often the exception in India. Transporting goods by road can take up to nine days in India compared to just three days in the United States. As an example, ships may have to are often much less. Most Indian logistics firms also operate with a fleet size of less than a hundred trucks. It's also tough to track delivery in real time since so few cars have GPS devices fitted.

CHALLENGES IN SCM.

The elimination of barriers between countries has shrunk the world in size, making it feel more like a global village. The idea for a computer chip may originate in the US, production would take place in Europe, final assembly and packaging would take place in Asia, and finally, the chip would be marketed in the US. Logistics today encompasses the previously separate industries of surface transport, railways, ships, aircraft, trade, and finance. Only twenty years ago, Indians would never have dreamed of having access to fruit grown in China and Australia. The movement of goods and people inside countries is now far more widespread than it was in the past. It's worth noting that the faces its own specific challenges, notably in India. For example, a local food distributor has to deal with unpredictable petrol prices, growing expenses of raw materials, price pressure, and tight delivery dates for factory production and customer orders every day. It may be challenging to ensure timely and cost-effective product delivery in India. There is a dearth of fast and inexpensive solutions here in comparison to Europe and other regions of Asia.

The infrastructure of India's coastal waterways is just being started. Unfortunately, India's burgeoning manufacturing sector has not yet been adequately served by the country's extensive rail network. Recent years have seen increased investment by the The participation of the federal government in the improvement of arterial highways that connect strategically significant parts of the country has led to the development of a road network that is both more extensive and more reliable. This is a direct result of the improvements that have been made to these highways. The supply chain faces challenges in both global optimisation for competing goals across a complex network of facilities and in reducing system changes over the course of time. Both of these challenges are difficult to overcome. The fact that the supply chain is always changing makes these challenges significantly more difficult to overcome. Many changes distinguish this "era" of SCM, and the procedures, techniques, and tools used to monitor these transitions have also experienced substantial development, thus the term SCM.

SUPPLY CHAIN ISSUES IN FOOD INDUSTRY.

A fundamental issue in SCM is the creation of systems that can synchronise goals and activities to boost system efficiency. The coordination mechanisms of supply chain systems may be studied by starting with the decision structure of supply chains and the characteristics of demand. The human elements and data requirements of supply chain cooperation are

highlighted in the given design. Finding these issues also points to potential research directions. One of the most difficult aspects of managing a supply chain is coordinating between producers and several customers. In today's market, it is uncommon for a single vendor to service a single buyer. It is common knowledge in today's business world that a smoothly operating supply chain may provide a company a considerable edge in the marketplace. Global corporations may improve their bottom lines by adopting supply chain methods that boost operational efficiency. When compared to other crucial industries influencing businesses, such as technology, supply chain is always changing. Managers of projects in the supply chain face a wide range of challenges on the job. There will be obstacles to overcome during the rollout of global supply chain efforts, so it's best to be ready for them ahead of time. The next paragraphs address these issues in further depth.

Overall Project Scale Sites in multiple countries will generally go live at the same time for a particular project thanks to globalised planning and execution. Companies have trouble preventing problems across several sites since higher management and project managers are often located in the same country. Project groups are put together at the regional/national level. However, if just one team or a small number of individuals is responsible for project planning, design, and control, the rest of the project teams will be relegated to supporting duties like aiding execution. Since the resources of the core project team are finite,

the most important or expansive locations are given priority. Technology, including infrastructure and software, must be deployed in order for supply chain efforts to succeed in addition to the numerous logistical modules like transport, commodities, warehousing, etc.

REVIEW OF MATERIAL AND PROBLEM ANALYSIS

CHALLENGES

This is System for Supply Chain Management. So far, SCM has been believed to refer to the systematic and cost-effective management of materials, transportation, storage, and retrieval, as well as personnel and data. Every business and its supply chain functions autonomously in terms of planning, purchasing, production, marketing, and distribution. These groups seek to achieve different goals, many of which are at odds with one another. It is also obvious that the marketing objective of providing excellent customer service and maximising sales volume is in direct opposition to the production and distribution objectives. The effects on inventory and distribution capacities are seldom considered when industrial activities are planned to maximise production and reduce costs. When negotiating a purchase agreement, oftentimes only basic information about past purchases is available. The sum of these factors makes it more difficult for any organisation to implement a coherent strategy. Only by building an SCM system that achieves the desired results will it be possible to coordinate and integrate all of these separate operations.

RESEARCH METHODOLOGY

The Fundamentals, also Known as the First Section It is always to the advantage of an organisation to use a comprehensive model because of its ability to provide a broad framework of rules for the facilitation of the important decision-making process in any organisation. In other words, using a comprehensive model is always advantageous for an organisation. If the models are going to be of any use in terms of assisting in the making of sound decisions and in increasing sales, then they need to be able to take into account the more comprehensive view of SCM. The manner in which a network is established, the manner in which inventory is managed, the terms that are included in supply contracts, the manner in which products are distributed, the manner in which the supply chain is integrated, the manner in which services are acquired, the manner in which products are designed, and the amount of money spent on information technology are all factors that can have a significant impact on the profitability of a supply chain. Even though SCM has come a long way and IT has made significant strides forward, it is still unable to deal with many of the challenges that are present in the real world in a satisfactory manner. This is despite the fact that both of these fields have made significant strides forward. A significant factor that contributes to the problems is the interdependencies that exist between the various departments/operations and the independent chain partners. Lakovou (2001) and Tayur, Ganeshan, and Magazine (1999) were two of the sources that were consulted for this study. The utilisation of models that are already in existence, in addition to the ever-changing nature of the regulations that are currently in place, both contribute to an increase in the inefficiency that is present in the management of food supply chains. The following is a list of some of the issues that have been brought to light: Food safety regulations encompass everything from the storage of products to their transportation (Hobbs & Young, 2000; Van der Vorst, Beulens, De

Wit, & Van Beek, 1998) [Hobbs & Young, 2000; Van der Vorst, Beulens, & Van Beek, 1998]. The most cutting-edge methods for managing supply chains have their own distinctive qualities, which are not taken into account by more traditional types of supply chain models.

The buyer is uncertain about the product's quality, safety, and reliability because the product has a limited shelf life. This uncertainty has an effect not only on the supply but also on the ability of the seller to find a customer (as in (b)).

Because perishable goods need to be brought to the market as quickly as possible to prevent them from deteriorating, it's possible that merchants won't be able to store them until conditions in the market become more favourable. In point of fact, some stores may need to make regular deliveries, which would require the use of vehicles equipped with refrigeration or some other kind of specialised gear. In order to carry out these kinds of deliveries, the stores would need to rent the appropriate vehicles.

FINDINGS

The procedure that is utilised in the construction of the model. According to the findings of our study, the ability to methodically plan, organise, and manage the flow of goods and services from the point of origin to the point of consumption is essential to the success of any food supply chain. This is because the flow of goods and services is what ultimately leads to the consumption of food. As a consequence of this, the development of a workable FSCM model in this industry necessitates an in-depth analysis of the more general problems that are plaguing supply chains in general. This is because supply chains are becoming increasingly complex. The FSCM is in charge of managing the value-added chain of agriculture and food products, which consists of a number of components that are connected to one another and help one another out. Each of these components contributes to the overall success of the chain. The producers, manufacturers,

distributors, shippers, employees of warehouses, retailers, and final consumers are the individuals who make up the supply chain. It is a widely held belief that uncertainty regarding order prediction horizons, input data, and administrative and decision processes are major impediments to an organization's ability to function effectively. By providing guiding principles for performance enhancement, the difficulty that was associated with each potential source of uncertainty was alleviated. As has been demonstrated, the elimination or reduction of uncertainty in the decision-making processes that are related to supply chains can provide significant benefits to improving supply chain performance. These benefits can be significant in magnitude. The management of problems may become more manageable as a result of this. Nonetheless, it is abundantly clear that other initiatives to strengthen the organization's internal control system must be carried out concurrently with IFSCM measures in order to achieve the greatest level of success. This is essential in order to achieve the objectives of the IFSCM. Within the context of this case study, the entirety of the analysis that has been presented here functions very well within the IFSCM framework. This study aimed to demonstrate the impact that utilising a variety of different strategies has on the chain's overall efficiency, and its primary objective was to do so. There were two distinct attempts made to formulate the model. Both of these attempts were unsuccessful. The first section of this paper dove deep into the theoretical underpinnings of FSCM analysis in order to present a modelling strategy for the flow of materials. Flow-based supply chain management is what FSCM stands for in its full acronym. In the following section of the paper, we talked about the specifics of using this methodology in the Food Supply sector of the economy. The IFSCM Model was developed so that the many functions of the modules that were discussed could be combined and coordinated. This was possible thanks to the development of the model.

Adaptability of Models, Models' Capacity for, This model was developed with the goals of streamlining the decision-making process related to the major logistical drivers of an SCM, such as procurement, production, shipping, and inventory management, and establishing a flexible model by merging existing ones. These goals were developed with the intention of streamlining the decision-making process related to the major logistical drivers of an SCM, such as procurement, production, shipping, and inventory management. In particular, the model was created with the intention of simplifying the decision-making process that is associated with the primary logistical drivers of an SCM. The previously mentioned mathematical challenges needed to be tackled using a wide variety of different mathematical models, such as a VMI, ERP, analytical, and simulation model, amongst others. After that, the solutions that are generated by these models are subsequently implemented into a wide variety of software utilising a wide variety of different methodologies. Integrated models, on the other hand, can be utilised in multiple stages of the planning process, whereas other models are best suited for use in just one stage of the planning process. Other models are best suited for use in just one stage of the planning process. In addition to this, the model is iterated with numerous variants, each of which makes use of a different mode of transportation of some kind. The benefits may be very different from one another depending, not only on the features of the supply chain but also on the objectives that are intended to be achieved.

Acquiring an understanding of the proposition.

Shortcomings. The examined aspects of existing models and the ever-changing nature of the regulatory environment have been identified as existing challenges to effective IFSCM management. These challenges have also been identified as existing in the form of existing models. It was essential to provide the end user with the highest possible product quality, and it was also necessary to ensure that the product was

delivered on time in order to achieve success in supply chain management (SCM). It was determined that there were multiple issues, including the following: The traditional models did not take into account the effect of the more stringent regulatory rules that are in place in the current ever-changing environment. The regulatory climate is becoming more difficult to understand.

The fact that the food item had such a short shelf life caused both the consumer and the supplier to begin to question the item's quality, safety, and reliability, which in turn had an effect on the market.

Dealers are sometimes required to get the perishable items they are selling to customers as quickly as possible because there is a limited amount of storage space available.

Because of the cyclical nature of the companies that supply the raw materials for food commodities, it is necessary to have well-organized cold storage facilities for the food commodities themselves.

When there is uncertainty regarding the food's quality, there is a significant impact on the logistics of the supply chain for food.

CONCLUSION

According to the Integrated Framework for Supply Chain Management (IFSCM) Model, Version, the definition of supply chain management (SCM) is "the integration of all the processes, functions, and assets required to take a product or service from inception to delivery to a customer." This information comes from the definition of SCM that is included in the IFSCM model. The IFSCM paradigm works towards the goal of optimising the entire supply chain, beginning at the point of production and continuing all the way through inventory management, transportation, and distribution. This is done in an effort to achieve the goal of maximising efficiency. There is a wide variety of models available for the control and management of production and operations. Some examples of these

models include the Just-in-Time (JIT) model, the Variable Manufacturing Inventory (VMI) model, and the Zero Inventory (ZI) model for the management of inventories. The aforementioned models each come with their own individual set of benefits and drawbacks. Even though it would be preferable to optimise the entire supply chain, the reality is that multiple models can only solve a portion of the problem at a time. In spite of the inconsistency and unpredictability in the supply of raw materials such as food, the company may be expected to produce results that are reliable and consistent. Regional stocking makes it possible to aggregate a greater amount of cargo, which could lead to a reduction in transportation costs and an improvement in delivery performance, both of which could lead to an increase in sales. Both of these benefits could be realised through the utilisation of regional stocking.

It is encouraged that people work together and be productive. One of the most important factors contributing to difficulties in the organization's internal coordination is the interdependence of the participants in the supply chain. The participants in the supply chain could learn to cooperate with one another and work to improve the quality of their informal relationships in order to realise their common objectives. It has been shown that the information and processes involved in a supply chain are intertwined, which makes it possible to coordinate efforts. This realisation was reached as a result of the demonstrations described above. As can be seen, the purpose of supply chain coordination is to ensure that all of the decisions made within the system are consistent with one another in order to achieve the results that are desired. This can be accomplished by ensuring that all of the decisions made within the system are cohesive with one another. This is made possible thanks to the efforts of a number of distinct disciplines, the most notable of which are supply chain management (also known as SCM), business information system (also known as BIS), and business strategy (also known as BS). If companies implement

IFSCM models for downsizing, right-sizing, and re-engineering their operations, they have the potential to transform into formidable competitors. It is generally agreed upon that, in order to achieve this goal, it will be necessary to optimise a variety of aspects of the endeavour, such as the number of people involved, the amount of time needed, the level of difficulty of the activity, and so on. Making strategic choices could potentially lead to an increase in output and revenues for companies that have already established the necessary models in their business. It is essential to perform regular reviews of organisational procedures in order to ensure that the benefits of this do not quickly become irrelevant. The manufacturer, the supplier, the subcontractor, the in-house product processor, the carriers, the distributors, the warehouses, the customer, and anyone else who is involved in the chain from the beginning to the end are all considered participants in Supply Chain Management (SCM). Because they serve distinct purposes, they are not in direct competition with one another; rather, they are mutually supportive of one another.

REFERENCES

1. Ablett, J., A. Baijal, E. Beinholder, A. Bose, D. Farrell, U. Gersch, E. Greenberg, S. Gupta, and S. Gupta. 2007. *The "Bird of Gold": The Rise of India's Consumer Market*. San Francisco: McKinsey Global Institute.
2. Acharya, S. S. 2004. *Agricultural Marketing in India*, vol. 17. Millennium Study of Indian Farmers. New Delhi: Government of India, Academic Foundation.
3. Adam Miller – Vice President – Building Management Systems of Shepherdstown, Inc. <http://www.bmswebsite.com>
4. Ahuja, R. K. (2007). A heuristic approach to the multi-period single-sourcing problem with production and inventory capacities and perishability constraints. *Inform Journal on Computing*, 19: 14-26.
5. Ahumada, O., Villalobos, J. R. (2009^a). Application of planning models in the agri-food supply chain: A review. *European Journal of Operational Research*.
6. Akyoo, A., & Lazaro, E. (2007). The spice industry in Tanzania: general profile, supply chain structure, and food standards compliance issues. Danish institute for international studies. Working paper, 2007/8.
7. Alberto Castano-Pardo, Dr Grace Y Lin, "On the Move".
8. ANZAC. 2005. "Agribusiness Development Support Project." Mimeo, report prepared for the Department of Agriculture and Cooperation and the Asian Development Bank.
9. Arjona E, Bueno G and Salazar L (2001). An activity simulation model for the analysis of the harvesting and transportation systems of a sugarcane plantation. *Computer and Electronics in Agriculture* 32: 247-264.
10. Armstrong and Associates Inc. 2009. "Agility Continues Its Global Expansion." Accessed arch 10. www.3plogistics.com/Agility_2-2009.htm
11. Arntzen, Brown, Harrison and Trafton [1995] "Global SCM", *Interfaces*, Vol25, No1.
12. Axsäter, S. (2006). *Inventory control*. 2nd Ed. [M]. Lund: Springer.
13. B.P. Zeigler, *Theory of Modeling and Simulation*, New York, Wiley – 1976.
14. Barnes AJ, Meyer E and Schmidt E (2000). Evaluation of methods to reduce harvest-to-crush delays using a simulation model.
15. Barnes AJ, Meyer E, Hansen AC, de la Harpe ER and Lyne PW (1998). Simulation modelling of sugarcane harvesting and transport delays. *Proc S Afr Sug Technol Ass* 72: 18-23.
16. Basu, J. P. 2010. "Efficiency in Wholesale, Retail, and Village Markets: A Study of Potato Markets in West Bengal." *Journal of South Asian Development* 5 (1): 85–112.
17. Basu, J. P. 2010. "Efficiency in Wholesale, Retail, and Village Markets: A Study of Potato Markets in West Bengal." *Journal of South Asian Development*.