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DEVELOPMENT OF AN ORGANIZATION BY ENHANCING SUPPLY CHAIN MANAGEMENT

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Abstract - In the global scenario, getting the right goods at right time at the right place is the mantra for attaining the objective of cost cutting. it is important for organization to develop visibility of flows in the network for proper planning, scheduling and monitoring is necessary to maintain the required quantity and quality of product.
Supply chain management is recognized as an important focus for competitiveness in the today's evolving manufacturing environment of short product life cycle, but still most companies in today's world have yet to learn about this advancement in order to face the ever increasing fierce competition.
Owing to inherent complexity of decision making in supply chain, there is felt a growing need for industries to effectively manage the advance systems. A large no. of manufacturing and service organizations are seeking modeling system to identify and implement strategies for designing and improving their supply chain networks.
Detailed structuring of competitiveness related problems of software firms in India identified weaknesses in understanding about the concept and its implementation as root causes. Review of competitiveness-related literature, by classifying it at three levels, clearly indicated the importance of the firm level.

***Key Words*:** Supply Chain Management, Modelling system, Advance system, Competitiveness

1. INTRODUCTION

1.1 Supply chain management Background

A supply chain comprises all partners, directly or indirectly, who fulfil the needs of the final consumer. Not only manufacturers and suppliers, but also the transporters, warehouses, retailers and consumers, belong to a typical supply chain. The supply chain is dynamic and includes the continuous movement of information, products and money between its many entities. Supply chain management focuses mainly on the function of SCM in our everyday tasks in terms of how a supply chain drives even the simplest things and ensures the correct product location and time at the right price. It's time to gain a better insight into the intricacies of delivering the coffee to the dealer at your door and the newspaper.
Supply chains are becoming more efficient and more responsive to consumer demand, spurred by advances in the production industry. It plays an important role in integrating and controlling supply chains more efficiently. Nearly every industrial business today plans to adopt an advanced technology to manage its supply chain more effectively. These systems are sophisticated planning and scheduling tools that improve customer service significantly and decrease expenses as well.
This thesis aims to map the features of advanced scheduling and planning systems and to determine their effectiveness.

1.2 Objective of SCM

The purpose of any supply chain is to optimize profitability, i.e., the difference between client revenue and the cost overall of the supply chain.
The major cost involved in a typical supply chain include the following

- Raw material cost
- Production cost
- Inventory cost
- Logistics cost

The core of a supply chain of a firm is its physical distribution that comprises of
(a) Material handling.
(b) Inventory control.
(c) Transportation.
(d) Freight selection.
(e) Packaging.
(f) Order processing and
(g) Plant capacity

1.3 Definitions of competitiveness

The notion of competitiveness is multifaceted. It takes place at all levels on the basis of countries, industry. It implies comparing to your rivals in the global market economy the economic strength in which products, services, people, talents and ideas may flow through a company.
It's time for competition today. No. There are rivals on the market. Competitiveness processes are useful to determine the significance and current results of key processes such as strategic management processes, processes of human resources, operational management and technological management. Such as management of operations and management of human resources. It improves an organization's capacity to compete more effectively.
The capacity of the company to develop, manufacture and or sell goods superior to those provided by its rivals, given its price and non-price characteristics, may be described as competitiveness. The environmental variables for all competitive companies are more or less consistent. Research indicates that 36% of the profitability variation may be linked to the features and activities of the companies (McGahan, 1999)

2. LITERATURE REVIEW

This chapter offers the literature read in order to grasp the fundamental idea of supply chain management. The review of literature is divided into three sections. Firstly, improved competitive performance in the context of competitiveness management. Secondly The supply chain council's established Strength Weakness Opportunity Threat (SWOT) model is

evaluated. Thirdly, additional literature on the performance measures of the supply chain is examined.
Competitiveness Procedures are processes which assist to determine the significance and the present performance of key processes like strategic management processes, processes of human resources, management processes and technology management processes. Competitiveness is the assets and procedures that create a competitive edge inside a company. These may be physical or immaterial sources.

2.1 Role of SCM in 21st century

In the 21st century business organization all over the world have to cope with the so called corporate warfare. It is fought between organizations vying for the same consumer in the market place and is faced with a unique set of challenges of the information age (Sashay et.al.1990) these include:

- **Increased competitive environment:** this leads to a higher level of complexity and uncertainty within the supply chain networks.
- **Proliferation of product variety:** As a result, it much important to implication on the forms of product and the process including research design, manufacturing, distribution and marketing and other sales services

Globalization of business: As a result of this barriers of time and place have been reduced to a myth. Companies have been forced to integrate and connect communities in the new space-time combinations leading to the mass customization by business.

2.2 Key issues in SCM

SCM problems relate to decision-making for a wide range of business operations, from strategic to tactical and operational. (Levi et.al.2000, Smirch).
Strategic level addresses choices such as number, location and capacity of warehouses; production of paint and material movement via the logistics network.
Tactical level comprises choices usually updated every one year, such as buying and manufacturing decisions, inventory policy and transport plans.

- **Vendor development:** Vendor management is any action that a buyer does to enhance the performance or capacities of a vendor to satisfy immediate or long-term buying requirements.
- **Inventory control:** Based on requirement, the ordering quality is to be calculated in order to ensure smooth production and at the same time keeping inventory level at optimal level. These are many in-built models to calculate the ordering quality.

2.3 Public goods provision

In the global economy, national innovation systems and states continue to play an essential role (Cantwell 1999). The provision of elementary and secondary education and sufficient healthcare contribute to a healthy and educated workforce which is an essential component of competitiveness. Hence
P13: The more the government's commitment to building an NSI (via physical and social infrastructure spending), the more competitive companies are excellent infrastructure (public goods) and political stability as factors within the NSI.
Other kinds of public activities in which government participation may be carried out to improve companies' competitiveness include the development of innovative networks such as regional innovation systems, university-industry collaboration, and scientific parks.
P14: Intervention by the government to promote interference in general leads to increased competitiveness.

3. METHODOLOGY

This chapter presents the major decision areas in the XYZ LTD. related to supply chain management, problems and the pitfalls in the existing system.

3.1 Methodology Adopted

Phase 1: Understanding the supply chain processes

- Inbound, operational and outbound logistics
- Information flow
- Integration of supply chain processes

Phase 2: Defining the major decision areas
Phase 3: Major problem area
Phase 4: Determining the pitfalls in the system
Phase 5: Data collection

- Procurement lead time
- Sales data

Phase 6: data analysis
Phase 7: Result and suggestion

3.2 SWOT Analysis of XYZ LTD.

SWOT stands for strength, weakness, opportunities and threats. These parameters are identified in XYZ LTD. ltd from SCM point of view.

STREMGTH

- Lean production system.
- Zero defects.
- Design for manufacturing.
- In house manufacturing of all the components.
- Extensive distribution network.

WEAKNESS

- Partially implemented supply chain.
- No direct linking with any of the overseas suppliers.
- High product flows lead time.
- Underutilization of available resources.

OPPORTUNITIES

- Growing urban and rural market.
- IT can be exploited to serve end customers more effectively and efficiently.
- Rising Indian economy.

THREATS

- Increasing fierce competition
- Obsolescence rate is very fast
- High expectation of Indian customers

3.3 Major supply chain decision areas

The success of companies supply chain strategies lies in planning and decision making effective the decision making, more the competitive advantage a company has over its competitors.
Following are the major decision areas determined in the supply chain of XYZ LTD.

- Reduced of lead time of project flow up to the end users
- Demand planning or fore casting
- Models range to be produced at different facilities

3.4 Pitfalls in the system

- Lack of integration of various group companies.
- Lack of vendor development in nearly region, out of 300 vendors only 152 belongs to local region (Delhi NCR, etc.), which increases inventory levels.
- Inadequate information flow from CMO. Production target is only and no information flows about tentative requirement by different warehouse.

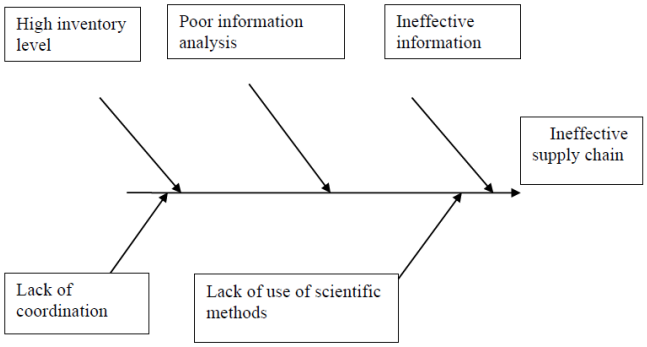

Fig 3.1 Factors leading to ineffective supply chain

4. CASE STUDY

The management of the supply chain serves to create a basis for company success. Evaluation of these two major areas will influence the position of the business in the supply chain, for customers and the creation of fundamental competitive strategies. Quality management and production supply chain analysis OEM utilises core and sub-factor elements such as culture & human resources, measurement and feedback, customer focus and focus, constant development and learning, the supply chain is covered in three sections, namely suppliers and organisations and distributors.

4.2 Company Profile & Achievements

XYZ LTD. is the component manufacturing company for construction equipment. The XYZ LTD. rolls its own steel, produces shell-critical components and has expanded into other companies, such as product design. The goal is to establish long-term connections with everyone. The XYZ LTD. Group has a passion for establishing high standards and the Group's primary motivator, way of life, and working culture is "Engineering satisfaction." XYZ LTD. name ensures the quality of technology and manufacture, including compactors, booms, core frameworks, cairns cabin; constructions etc.

Mission Statement XYZ LTD: Guidance towards continuous improvement in quality, costs and delivery as per business policy relevant regulatory requirements

- Process, product and service innovation. · Human development to enhance efficiency and efficiency.
- Promoting the culture of work that promotes teamwork and mutual respect.
- Supply chain management optimization.

4.3 XYZ LTD. Request Conditions

The Indian automotive industry exists throughout all sectors of the vehicle and essential components. New sellers have arrived. There is currently no axle pin, structures, major frames & booms manufacturers. Crain's manufacturing and sales, compactors in India, have increased sharply. As with the increasing demand for higher-end models that blend design and performance in this sector, there is also a rise in infrastructure. Models with greater capacity (hyd-12, c-8000, hyd-14, hd-85 compact) prove to be extremely popular in cranes, for example.

4.4 XYZ LTD's competitive performance.

Performance measurement is the quantification procedure for the efficiency of the production system. The performance of a company is frequently assessed as a result-to-input ratio. The two endurance values of XYZ LTD are confidence and trust analysis.

XYZ LTD. constantly improved its competitiveness, maintaining its leadership in the construction equipment mfg. Market. On a number of criteria, a company's competitiveness may be assessed: Thus, a thorough study of several organisational performance indicators will enable us to evaluate the competitiveness level of XYZ LTD on the basis of asset-performance.

4.4.1 Stores

The function of stores is storage of all accepted material received from the suppliers and issuing it to production. The various system and procedure are as follows:

- Follow standard stores procedures
- Every item is having fixed location
- Inventory policy for imported items

Items are order as per material resource planning (MRP).Turnaround time (TAT) is at least three months.

Kanban system for ordering

No. of kanban = (peak demand during TAT /No. of working days +1)

Where 1 is lot size or safety stock

Whenever items are completed. Card will be sent to purchasing department and then order will be placed.

4.4.2 Receipts

The purpose of receipts is to receive the material as per the invoice and do physical verification.

4.4.3 Quality Assurance

The various activities done in Q.A department are:

- Incoming quality control
- Process quality control
- Outgoing quality control
- Calibration of equipments
- Field failure analysis
- ISO 9000,ISO14000 system related activities

4.4.5 Production programming in XYZ LTD.

XYZ LTD.Increasesits production in a variety of ways.

- By automation and computerization
- By providing heat exhaust system,coolling system at the workplace to increase the productivity

As per Table:1 the productivity of individual shops is increased in respect to last financial year by taking the countermeasures like auto loader installed in press shop, cooling system for MIG welding torch,coveyer system for paint shop.

Table 1: Shop wise productivity

Shop Description	Productivity (2010~2011)	Productivity (2011~2012)	Action taken
Press Shop	120 Strokes/ Man	160 Strokes/ Man	Auto loader installed
Weld Shop	14 Subassbly/ Man	15 Subassbly /Man	Cooling system for MIG torch
Paint Shop	20 booms/Man	23 booms/Man	Conveyer system installed
Machine shop	2 compacter/ Man	3 compacter/Man	D.R.O. installed
Fab. Shop	45 Box/Man	60 Box/Man	FIXTURE installed.

4.5 New Product development system

Our creative assets are people who work for the company. They are the organisation's "lifeline" while running our factories and supervising every element of our corporate operation. If our business is efficient, the skill and commitment of our employees may be credited. His preferences for XYZ LTD. goods continuously inspired them to do even more in terms of developing one after another technologically and efficiently superior products. XYZ LTD. cooperation is in the form of initiatives spanning rural development, education and health to improve people's living quality with the community surrounding our production facilities. The secret to success is to be one spirit together. The business wants to dedicate its expertise and efforts to bringing the company to new heights and making XYZ LTD a symbol of a strong collaboration.

Time-to-Market	This involves an orientation to getting a product to market fastest. This is typical of XYZ LTD. ltd involved with rapidly changing technology or products with rapidly changing fashion. Pursuit of this strategy will typically lead to tradeoffs in optimizing product performance, cost and reliability.
Low Product Cost	This orientation is focused on developing the lowest cost or highest value product. This orientation typically requires additional time and development cost to optimize product cost and the manufacturing process.
Low Development Cost	This orientation focuses on minimizing development cost or developing products within a constrained budget. While this orientation is not as common as the other orientations, This orientation is somewhat compatible with time-to-market, but involves tradeoffs with product performance, innovation, cost and reliability.
Product Performance, Technology & Innovation	This orientation focuses on having the highest level of product performance, the highest level of functionality or functions and features, the latest technology or the highest level of product innovation. Pursuit of this strategy involves higher risks with newer technologies and accepts a trade-off of time and cost to pursue these objectives
Quality, Reliability, Robustness	This orientation focuses on assuring high levels of product quality, reliability and robustness. This orientation requires added time and cost for planning, testing, analysis and regulatory approvals.

4.6 Data analysis

Competitiveness may be expressed in quantitative terms by a competitiveness index. Different framework problems such as assets, competitiveness awareness, competitiveness evaluation, the competitiveness initiative Functional management processes, competitive performance taken into account

The production competence framework of Cleveland et al. (1989) will be extended to the Competitiveness Index.

The Competitiveness Index is established on the basis of the model

$$Cj = \{wi \text{ Log } Ki\}$$

Where Cj = Competitiveness index for company

i = Competitiveness issue, R = Rank of competitiveness issue, K== Inverse Rank (If R=1, K= 7, when i =7, if R=2, K=6)

W= Weight assigned to particular competitiveness issue.

In order to give weight to various competitiveness problems, the greatest and lowest values of the four-point scale, i.e. 4 and 1 are mapped to 100% and 0% accordingly. Weight is given to each of the seven competitiveness concerns. The weight requirements (Wi) are as follows:

Wi = +1 (Strength), when percentage score > 60% (Mean value>3).

= 0 (Neutral), when percentage score is between 40-60% (Mean value between 2 and 3).

= -1 (Weakness), when percentage score< 40% (Mean value <2)

For example, an example of weight calculation is provided below. Say, the mean process score = 3.2 on a 1 to 4 scale. The proportion of two-point equation may be determined. The result is 3.2/4=0.80; thus the weight is given to +1.

Computing the competitiveness index using a spreadsheet is demonstrated. First, all the main components of the different competitiveness components are classified on a Likert scale from 1 to 4 (1- Very low, 4- Very high). Reverse scale, i.e. 1- very high and 4- extremely low, is regarded for pressures and restrictions since it is supposed that if organisations are less exposed to pressures and limitation they can fulfil the needs of the markets to be competitive. The initial answer in the Likert (1-Very Low, 4-Very) scale has therefore been modified in the new 4-1 scale (4-Very low, 1- Very high). After average scores for all its main elements are taken for a specific component. Following this rating, reverse rank and weight is determined for each problem. Sum of last column elements (W Log k) provide an indicator of competitiveness, i.e. 2.63

Theoretically, the index value of competitiveness may vary from -3.71 to 3.71. The Competitiveness Index indicates that XYZ LTD is now extremely competitive. There is, nevertheless, room for development in terms of managing pressure and limitations. Based on the score, the business may assess its position in industry and discover gaps in market leadership.

Table 2: Performance indicators in Production Operation process

PERFORMANCE INDICATOR	Linkert's Scale 1	2	3	4
1. Production Operation Process				
PO decision meeting lead time		•		
Time of PO decision meeting delay		•		
Percent deviation PO forecasts from the realized sales	•			
Percent deviation of export PO forecasts from the realized sales	•			
Percent deviation of other export PO forecasts from the realized sales		•		
Lead time of monthly production plan preparation		•		
Percent order entries by dealer with respect to quote determined			•	
Realization of dealer sales target		•		

5. SUMMARY AND CONCLUSION

The aim of this research is to create an affordable, time-efficient and efficient supply chain model for a real world example of the industrial organisation.

XYZ LTD. is faced with severe competition because of others that constantly reduce their product prices and proliferate their products. A business must continuously enhance its whole organisation with an innovative strategy to improve its supply chain to remain in a competitive market.

After conducting a detailed study of supply chain as in various decision areas and problem areas have been identified. These include

Problem areas

- Ineffective information flow
- High lead-time
- Lack of integration
- Underutilization of resources
- Matching of demand and supply

Decision areas

- Lead-time reduction
- Preparation of product plan
- Demand forecasting
- Models to be produced at different warehouses

Any business may effectively manage the supply chain by improving people's culture and measurement and feedback systems.

Each of the above areas is very important keeping in mind the issues of lead-time reduction, cost reduction and increasing coordination between various interfaces of supply chain.

Conclusions

- The present flow of information is monitored and the system proposes a new flow of information. This improves the information flow in the supply chain, making the supply chain quicker, more efficient and more responsive.
- When information is exchanged across the chain, the order change lowers the chain.
- Effective information and coordinated action among the levels lead to better decision-making.

Limitations of present work

- Better comprehensive system and interdependency research is required to fully understand the system that helps to build the model closer to the system's operating state.
- Demand forecasting is not always up the real life situation

Future scopes

- The concept of supply chain can be extended to almost every practical situation in modern day industry be it manufacturing industry, retail industry or service industry.
- There is felt a constant need for updating of forecasting model.
- The advanced simulation tool can be developed for better implementation of supply chain.

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