SCM Practice at ABC Paper Industry

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ABSTRACT

The importance of this research is underpinned by the fact that the paper industry which uses waste paper as raw material has no well defined supply chain and there is a long felt need to understand how the supply chain works. The industries that use waste paper as raw material are mostly SME's(Small Medium Enterprise) and due to this reason the companies do not develop a suitable supply chain model instead they benchmark a regional leader and function accordingly.

Due to non availability of a suitable supply chain model, forecasting becomes difficult and the company has to face uncertainties in raw material procurement, production scheduling, order delivery, material requirement planning, inventory management, labour requirements, which ultimately result in loss of revenue.

This paper deals with the key supply chain activities like planning, sourcing, making, deliver, coordination in the supply chain, information system and understanding the customers. Data is collected by administering a checklist and a percentage analysis is done to calculate the effectiveness of supply chain. Further the feasibility of implementing JIT practices is also analysed.

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Introduction

During the last three decades, supply chain management has been both an important and a productive aim of corporations. By working to coordinate the production, shipment, and delivery of the goods required to meet their business needs, companies have been able to more easily meet the demands of their customers.

The term "supply chain management" arose in the late 1980s and came into widespread use in the 1990s. Prior to that time, businesses used terms such as "logistics" and "operations management" instead.

"A supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves."(Chopra and Meindl ,2001).

Balsmeier and Voisin (1996) states that supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry, and from firm to firm. Though paper industry worldwide has a well established supply chain practices this definition justifies the need for a research on identifying the supply chain of paper industry which uses waste paper as raw material.

The Supply Chain Operations Reference Model, commonly known as SCOR, is a diagnostic tool for the Supply Chain Management. It lets the users know the various processes involved in a business and the important things that lead to customer satisfaction.

SCOR is based on five distinct management processes: Plan, Source, Make, Deliver, and Return.

Plan - Processes that balance aggregate demand and supply to develop a course of action which best meets sourcing, production, and delivery requirements.

Source - Processes that procure goods and services to meet planned or actual demand.

Make - Processes that transform product to a finished state to meet planned or actual demand.

Deliver - Processes that provide finished goods and services to meet planned or actual demand, typically including order management, transportation management, and distribution management.

Return - Processes associated with returning or receiving returned products for any reason. These processes extend into post-delivery customer support.

Modelling, metrics and best practices are considered as three pillars of SCOR model and the model deals with customer interactions, product/ services transactions and market interactions.

About the company

ABC Paper Mills Private Limited was incorporated in the year 1985 as a private limited company with an installed capacity of 3000 MT per annum of printing and writing paper. The company commenced its production in the year 1986 with a capacity of 10 MT per day and within a span of 5 years, the production was increased to 20 MT per day with the installation of few equipments and increased drying capacity.

The company is producing Newsprint, Printing & Stationery Papers and Kraft varieties of paper in their 3 machines and has a work force of 250 direct workers and nearly 500 indirect workers in the factory. The monthly wage bill workers out to Rs.25 Lakhs per month.

The company uses 19 varieties of raw material, to name a few are No I Cuttings (Special), Note Book, Exam Paper, Ledger, Computer Print Out, etc

The finished products can be broadly classified under three main categories

1. MF (13 varieties)

   (DLX Maplitho, Deluxe Cream Wove, Cream Wove, etc)

2. MG (6 varieties)

   (White Poster Deluxe, White Calender Poster, Sweet Box Poster, etc)

3. Export (2 varieties)

   Plain Paper in cut size and Colour Printing Paper

Objectives of the study

ABC Paper mills was desirous of developing a new supply chain model by identifying and analysing the existing supply chain in the company. The main objectives of this research are as follows:

- A detailed study to identify and understand the existing supply chain practices
- To asses company's supply chain performance, and
- To provide Suggestions for supply chain improvement.

Scope of the study

- The company in which the research was conducted uses waste paper as its major raw material. So the study is applicable only to this company.
- The samples were selected based on their functional responsibility and no testing was done to check their subject knowledge.
- The study is cross sectional in nature hence same questions are repeated in various departments which are not addressed individually.

Research Methodology

The purpose of the study was to identify the existing supply chain model and to suggest improvements. The outline of the research is shown in the following figure.

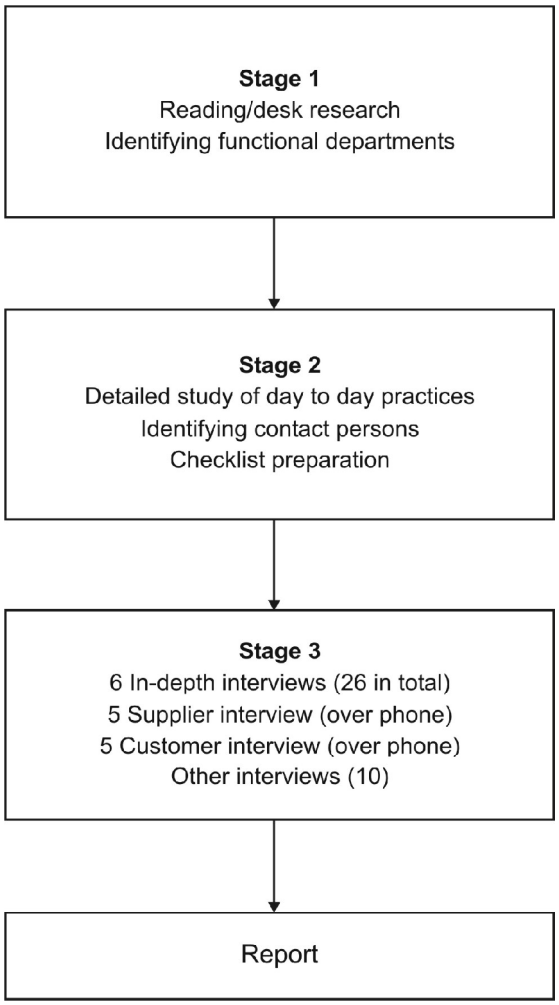

Fig 1 : Research Outline

In the first stage of the research an extensive desk research was done by examining secondary sources of data on similar studies conducted. Following this, the functional departments in the organisation were identified.

In the second stage, detailed observation was made to understand the day to day practice of all departments in the organisation with an objective to identify suitable persons to whom the interviews can be targeted on. A suitable checklist was prepared to assess the supply chain performance of the company

In the third stage, interviews were conducted, of which 6 were in-depth interviews with the functional heads, five with the suppliers, five with the customers and the rest with the employees at the functional department with an objective of understanding the current supply chain practice.

Research Design

The type of research is Exploratory (Observation along with structured interview) using checklist. The study was cross sectional in nature.

Population

Functional heads and departmental employees were the population for the study.

Sampling Method

Judgemental Sampling was the method adopted for the study.

Sample Size

The sample size taken was 26.

Data Collection Methods

Primary Data: Data was collected through scheduled personal interviews with the help of checklists. Individuals were the source of primary data. A detailed study of day to day operations was done by visiting the factory and the office. Functional heads were identified and interviewed in stage 3.

Analytical Tools Used

Percentage analysis and frequency analysis were used to describe the variables.

Interview Technique Adopted

Questions in the interview were administered with a check list in such a way to evaluate the company's performance in areas like planning, sourcing, making, delivery, coordination in supply chain, information systems, end customer management, forecasting, demand management, master production scheduling, changing market forums, new product development, mass customization, shop floor control, purchasing, supplier partnering, logistics and distribution resource planning,

The questions asked in the interview had three possible answers, the respondent can answer in the following ways

- ***Understood & Available:*** This means that the respondent has understood the question and the practice is available in the organisation.
- ***Understood & Not Available:*** This means that the respondent has understood the question and the practice is not available in the organisation.
- ***Not Understood & Could Not Determine:*** This means that the respondent has not understood the question and hence could not determine whether it is in practice or not.

Data Analysis

Planning

Table 1 Frequency analysis - Planning

Response	Frequency	Percent
Understood & Available	64	68.8
Understood & Not Available	20	21.5
Not Understood & Could Not Determine	9	9.7
Total	93	100

From Table 1 it can be inferred that 68.80 percent of the questions are understood and are in practice, 21.50 percent of the questions were understood but are not in practice, 9.70 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Sourcing

Table 2 : Frequency analysis - Sourcing

Response	Frequency	Percent
Understood & Available	119	66.5
Understood & Not Available	55	30.7
Not Understood & Could Not Determine	5	2.8
Total	179	100

From Table 2 it can be inferred that 66.50 percent of the questions are understood and are in practice, 30.70 percent of the questions were understood but are not in practice, 2.80 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Making

Table 3 : Frequency analysis - Making

Response	Frequency	Percent
Understood & Available	111	66.5
Understood & Not Available	39	23.4
Not Understood & Could Not Determine	17	10.2
Total	169	100

From Table 3 it can be inferred that 66.50 percent of the questions are understood and are in practice, 23.40 percent of the questions were understood but are not in practice, 10.20 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Deliver

Table 4 : Frequency analysis - Deliver

Response	Frequency	Percent
Understood & Available	80	62.0
Understood & Not Available	46	35.7
Not Understood & Could Not Determine	3	2.3
Total	129	100

From Table 4 it can be inferred that 62 percent of the questions are understood and are in practice, 35.70 percent of the questions were understood but are not in practice, 2.30 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Coordination in the supply chain

Table 5 : Frequency analysis – Coordination in the supply chain

Response	Frequency	Percent
Understood & Available	17	42.5
Understood & Not Available	22	55.0
Not Understood & Could Not Determine	1	2.5
Total	40	100

From Table 5 it can be inferred that 42.50 percent of the questions are understood and are in practice, 55 percent of the questions were understood but are not in practice, 2.50 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Information system

Table 6 : Frequency analysis – Information system

Response	Frequency	Percent
Understood & Available	22	44.9
Understood & Not Available	26	53.1
Not Understood & Could Not Determine	1	2.0
Total	49	100

From Table 6 it can be inferred that 44.90 percent of the questions are understood and are in practice, 53.10 percent of the questions were understood but are not in practice, 2 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Understanding the customers

Table 7 : Frequency analysis – Understanding the customers

Response	Frequency	Percent
Understood & Available	17	50.0
Understood & Not Available	13	38.2
Not Understood & Could Not Determine	4	11.8
Total	34	100

From Table 7 it can be inferred that 50 percent of the questions are understood and are in practice, 38.20 percent of the questions were understood but are not in practice, 11.80 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

JIT Feasibility

Table 8 : Frequency analysis – JIT Feasibility

Response	Frequency	Percent
Understood & Available	6	50.0
Understood & Not Available	5	41.7
Not Understood & Could Not Determine	1	8.3
Total	12	100

From Table 8 it can be inferred that 50 percent of the questions are understood and are in practice, 41.70 percent of the questions were understood but are not in practice, 8.30 percent of the questions were not understood by the respondents and so could not determine whether it is in practice or not.

Findings and inferences

Understanding the Customers

The level of customer understanding in the company is low. As a corrective measure a customer profile database should be created and audited by periodic review to gauge accuracy.

Customer meeting programmes should be organised which should be regular and scheduled around customer convenience.

A system to track feedback from customers should be developed and implemented for both positive and negative feedback. The feedback thus received should be communicated to concerned department/person.

Customer service employees should be trained to use, and have readily available, databases (relational) that enable accurate and timely responses to customers when demanded. A backup policy with information list should be provided to customers which would enable them to know whom to contact in the event of absence of their regular contact person.

Customer satisfaction measurement should be done and reviewed periodically to ensure continuous improvement in the customer service function. Working process documentation should be maintained to measure customer satisfaction and it should be consistently examined and reviewed to monitor customers' perceptions of service.

Information emphasizing positive news or key events should be shared with customers via newsletters, reports, which would develop a sense of belongingness.

Planning

A suitable demand forecasting and demand management technique should be adopted based on which measurement standards for demand management processes can be determined.

Time series forecasting will be a suitable forecasting technique that can be adopted, which is based on the assumption that historical patterns of demand are a good indicator of future demand. Mathematical techniques such as moving averages and exponential smoothing can be used to create forecasts based on time series data.

The company officials should get to know more about the market variations, rate of growth/ decline and demand patterns.

Inventory flow should be optimized to reduce the cost of inventory.

Sourcing

The procurement process should be automated to avoid unnecessary delay in sourcing. The vendor selection should be based on quality achievement, on time deliveries, good communication and efficient paperwork.

The concept of vendor managed inventory (VMI) should be implemented.

Making

Visual aids enhancing communication, banners with important messages or slogans reminding people of shared beliefs should be placed in the shop floor which enhances productivity. Cross-training charts, skills matrixes of employees can be displayed which will result in employee motivation.

Deliver

Customer service processes should be documented so the customer service personnel get access to concise information which helps give good customer service. Trend analysis techniques should be used to analyse the cycle times to reply to customer orders and enquiries. Order entry accuracy should be measured and targets/ objectives should be defined.

A regular process audit to ensure that the customer is receiving a consistent service is to be done. The processing of routine orders should be automated.

Coordination in the supply chain

As said in planning the company should focus on implementing a forecasting technique with real time data considering the fluctuations in market demand.

Economic Order Quantity should be calculated for chemicals, boiler fuel and paper core. The feasibility of Electronic ordering of these materials is to be analysed and if found feasible the same should be implemented.

Information System

Information systems contain the processing logic needed by the business operations they support. There are several kinds of systems that support supply chain operations which are not in available in the company, important systems that are needed for efficient supply chain practice are as follows:

- Enterprise Resource Planning (ERP)
- Procurement Systems
- Advanced Planning and Scheduling
- Transportation Planning Systems
- Demand Planning
- Customer Relation Management (CRM) and Sales Force Automation (SFA)
- Supply Chain Management (SCM)

- Inventory Management Systems
- Manufacturing Execution Systems (MES)
- Transportation Scheduling Systems.
- Warehouse Management Systems (WMS).

Implications and Summary

It is evident from the study that supply chain issues are very much understood in the company whether the systems are available or not.. Level of customer understanding and interaction is low in the company. Customer requirements which form the basis for product enhancement and new product development are not analysed. The usage of information technology in the company is very limited.

The company should identify it's priorities in areas like planning, sourcing, making, delivery and information system which would enable the company to develop a new supply chain model, plan and coordinate the supply chain effectively. Customer meeting programmes should be organised to understand customer's requirements. The requirements identified should then be communicated to concerned departments for implementation.

A company's survival is decided by its sales, so customer service should be improved. A suitable forecasting technique based on historic data and market conditions should be adopted. The company should explore possible avenues to implement information technology systems and speed up the communication process both internally and externally.

The company should learn to coordinate its supply chain in real-time to become incrementally more and more efficient. By this way the company will become more profitable and quicker to see new opportunities than their competitors who are still working in a batch-time world of snapshot pictures.

References

- Harrison Francis (2002), "*Supply chain Management Workbook",* Butterworth-Heinemann, New Delhi.
- Mohanty.R.P, Deshmukh.S.G, (2007), "*Supply Chain Management, Theories and Practices",* Biztantra , New Delhi.
- Nandagopal.R (2007), "*Research Methodology in Business",* Excel Books, New Delhi.
- Gibaldi, Joseph (2004), "*MLA Handbook for writers of Research Papers",* East West Press New Delhi.
- Shah Janat (2009) "*Supply Chain Management: Text and Cases",* Pearson Education, New Delhi.

- Walker, W.T. (2005) "*Supply Chain Architecture",* Washington, D.C:CRC Press, Boca Raton: London: New York.
- Chopra, S and Meindl. P (2001) "*Supply Chain Management: Strategy, Planning and Operations"*, Prentice-Hall, Inc, Upper Saddle River, NJ.
- Magretta, J. (1998), "*Fast, Global, and Entrepreneurial: Supply Chain Management, Hong Kong Style: an Interview with Victor Fung*", Harvard Business Review, 76(5), pp.102-114
- Stevens, G. C. (1989), "Integrating the Supply Chain", International Journal of Physical Distribution and Materials Management, 19(8), pp.3-8
- Thomas, D. and Griffin, P. M. (1996), "Coordinated Supply Chain Management", European Journal of operational Research, 94(1), pp.1-15
- Banfield, E. (1999), "*Harnessing Value in the Supply Chain*", John Wiley and Sons, New York, NY
- Chuah, K. and Yingling, J. (2005), "*Routing for a just-in-time supply pickup and delivery system*",
- Transportation Science, Vol. 39 No. 3, pp. 328-39.
- Christopher Martin. (2005), "*Logistics and Supply Chain Management*", Financial Times Prentice Hall, Great Britain.
- http://en.wikipedia.org/wiki/Supply-Chain_Operations_Reference
- http://lcm.csa.iisc.ernet.in/scm/supply_chain_intro.html
- http://searchmanufacturingerp.techtarget.com/sDefinition/0,,sid193_gci214546,00.html