



A STUDY THROUGH ORGANISATIONAL PERFORMANCE ASPECTS OF PRODUCTION AND DISTRIBUTION IN SUPPLY CHAIN

Rakesh W. Ramteke

LKMIMSR, Kosara, Chandrapur.

Abstract

The supply chain encompasses all activities involved in the transformation of goods from the raw material stage to the final stage, when the goods and services reach the end customer. Supply chain management involves planning, design and control of flow of material, information and finance along the supply chain to deliver superior value to the end customer in an effective and efficient manner. The supply chain management function has two key responsibilities in the area of technology: It must ensure that the firm's supply base provides appropriate technology in a timely manner, and it must ensure that technology which affects the firm's core competencies is carefully controlled when dealing with outside suppliers and customers.

Keyword: Planning, Design, Control of Flow of Material, Firm's Supply Base and Firm's Core Competencies.

Introduction

In the past, customers were not very demanding and competition was not really intense. As a result, firms could afford to ignore issues pertaining to the supply chain. Today, firms that do not manage their supply chain will incur huge inventory costs and eventually end up losing a lot of customers because the right products are not available at the right place and time. The term supply chain refers to the complex sequence of activities, information and material flows involved in producing and distributing a company's outputs. Supply chain consumes vast amounts of capital in the form of plant, equipment and inventories and is responsible for most of a firm's cost of goods and operating expenses. Supply chains create significant value and ultimately determine a company's ability to satisfy the demands of its customers. As a result, effective supply chain management is a major strategic challenge for most companies. But formulating effective strategy requires a good understanding of what drives cost and service in a supply chain. Inventories drive the cost of a company and customer service level very significantly.

Review of literature

Kotler (1998) defines customer delivered value as the difference between total customer value and total customer cost. And total customer value is the bundle of benefits customers expect from a given product or service. According to him, customer added value is a set of product value, service value, personnel value, and image value; total customer cost is composed of monetary price, time of value delivery system. Value delivery system depends on the combinative capabilities of product delivery and service delivery processes.

Company Profile

Maharashtra Industrial Development Corporation is the nodal industrial infrastructure development agency of the Maharashtra Government with the basic objective of setting up Industrial areas with a provision of industrial infrastructure all over the state for planned and systematic industrial development. MIDC is an innovative, professionally managed, and user friendly organization that provides the World Industrial Infrastructure. MIDC has played a vital role in the development of industrial infrastructure in the state of Maharashtra. As the state steps into the next millennium, MIDC lives up to its motto 'Udyamat Sakal Samruddhi' i.e., Prosperity to all through industrialization.

Research Methodology

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically, here we study the various steps that are adopted by researcher in studying research problem along with the logic behind them.

Objectives of Study

1. To study the logistics management of small scale manufacturing units.
2. To study the product development for customer satisfaction and to study CRM.
3. To study the overall performance of small scale manufacturing units.

Hypothesis: Procurement procedure is dependent on demand analysis followed by small scale manufacturing units.



Data analysis

Statistical methods used for calculation

In order to test the efficiency of logistics in small scale manufacturing units there logistic performances were compared with the overall performance at 70%.

Z-test-z-test is based on the normal probability distribution and is used for judging the significance of several statistical measures, particularly the mean. The z test statistic is worked out and compared with its probable value (to be read from table showing area under normal curve) at a specified level of significance for judging the significance of the measure concerned.

$$z = (X - \pi_0 / \sigma) * \sqrt{n - 1}$$

Where, X = mean of the distribution

π_0 = assumed mean (70 in this research)

σ = standard deviation

n = number of observations

Evaluating the Efficiency of Supply Chain Management

The internal supply chain inefficiency ratio is measure of the efficiency of internal supply chain management. To calculate this ratio, researcher considered total inventory carrying costs and the distribution costs to the components of the internal supply chain management costs. Researcher calculates the internal supply chain inefficiency ratio as follows:

$$SCC = DC + INV \times ICC$$

$$SCI = SCC / NS$$

Where

DC = distribution cost,

INV = inventory (inclusive of raw materials, semi-finished goods and finished goods),

SCC = the supply chain management costs,

NS = net sales,

ICC = the inventory carrying cost,

SCI = the supply chain inefficiency ratio.

The inventory carrying cost for most firms is estimated to be in the range of 0.15 – 0.25. In the absence of any data, one can work with an inventory carrying cost of 0.2. Firms with efficient supply chain systems will have relatively lower scores on this performance measure.

Engineering Units

Sr. No.	Company Name	Supply Chain Management Costs (SCC) In Lakhs	Net Sales (NS) In Lakhs	SC Inefficiency
1.	Adarsh tiles pipes industries	4.12	1000	0.004
2.	Anand Engineering	84.25	84	1.003
3.	Antoney mech. Engg	23.42	120	0.195
4.	Best fabrication & Engg works	670.79	1800	0.400
5.	Central India Engineers	184.93	60	3.080
6.	Ganesh Coolers & Fabrication	3.27	10.2	0.321
7.	J. K. Industries	50.18	120	0.418
8.	Laxmi Engineering Works	80.89	7.2	11.234
9.	Manav Engineering	670.79	1800	0.320
10.	Perfect Engineering Works.	33.91	120	0.286
11.	Plast Mould Industries	5.55	90	0.062



Manufacturing Units (Others)

Sr. No.	Company Name	Supply chain management costs (SCC) in Lakhs	Net Sales (NS) In Lakhs	SC Inefficiency
1.	Amar Art Products	69.59	144	0.483
2.	B. M. Chawhan & Son	3.29	36	0.091
3.	Bhartia Pulverisers	91.24	132	0.690
4.	Carbon Processors	72.83	48	1.517
5.	Daliya Cement Udyog	4.08	24	0.170
6.	Haryana Coasted Papers Ltd.	9.79	50	0.196
7.	India Explosives Ltd	0.04	12	0.003

Chemical Units

Sr. No.	Company Name	Supply Chain Management Costs (SCC) In Lakhs	Net Sales (NS) In Lakhs	SC Inefficiency
1.	Abhideep Chemical Pvt. Ltd.	6.88	18	0.382
2.	Aditya Air products	429.48	500	0.859
3.	Protect Traffice Device Pvt. Ltd.	8.64	18	0.480
4.	Multi Organics Pvt. Ltd.	227.27	60	3.790

Casting / Fabrication Units

Sr. No.	Company Name	Supply Chain Management Costs (SCC) In Lakhs	Net Sales (NS) In Lakhs	SC Inefficiency
1.	Bohra Cement Products	670.79	1800	0.370
2.	Chandrapur Cement Products	77.07	120	0.642
3.	Decorative Paper Board Pvt. Ltd.	79.00	108	0.648
4.	Economic Cement Co.	208.03	360	0.579
5.	Pima Controls Pvt. Ltd.	97.03	1000	0.097
6.	Hemac Precision	10.21	60	0.170
7.	Kaveri Industrial Fabrication & Casting	10.21	63.8	0.160
8.	Kushal Plastic	5.93	11	0.540
9.	Maharashtra Carbon Pvt. Ltd.	54.45	27.6	1.970
10.	Perfect Tech-aids Pvt. Ltd.	184.20	36	5.117
11.	Wirecloth industries	47.30	36	1.314
12.	Pfizer Ltd.	75.19	30	2.506

Maintenance / Packaging Units

Sr. No.	Company Name	Supply Chain Management Costs (SCC) In Lakhs	Net Sales (NS) In Lakhs	SC Inefficiency
1.	Anupam Plastic	14.42	40	0.360
2.	Balaji Gunny Bags	349.00	35	9.970
3.	Bhardwaj Engineers	520.13	24	21.67
4.	Ginni Paper Products	100.88	20	5.044
5.	Perfect International Pvt. Ltd.	161.79	180	0.900
6.	Perfect Packing Industries	22.14	120	0.185



Agri Product Units

Sr. No.	Company Name	Supply Chain Management Costs (SCC) In Lakhs	Net Sales (NS) In Lakhs	SC Inefficiency
1.	Dinshaws Dairy Foods Limited	7.67	14.4	0.532
2.	Perfect Oil Pvt. Ltd.	28.17	72.0	0.391
3.	Pikman Auto Ancillary Pvt. Ltd.	54.45	27.6	1.940
4.	Saurabh Oils	1370.55	100	13.70

It can be observed from the table and formulas used that the inefficiency ratio can be reduced by either increasing sales value or reducing inventory. Increasing sales may be difficult than reducing inventory by applying selective inventory control methods.

Conclusion

Forecasting is the pre condition of good planning. Lack of forecasting may create a problem in planning process though, 61% of the units under study are using demand forecasting for the business planning purpose, still 39% lack in its implementation. Planning never gives guarantee of success but still it definitely reduces the uncertainties. To reduce uncertainties time horizon plays key role in today's competitive business environment short time horizon based forecasting using market research is in practice by 22 units out of 27 under study. Researcher concludes that market research as a favorite method for forecasting is being utilized by majority of small scale manufacturing units but scientific approach should be developed by the units under study. Units under study are managing their material resource planning, 75% of the firms apply MRP and 25% loses advantage of the same out of total 44 units under study. 61% of the units are interested in controlling the inventory cost by implementing MRP where as 24% takes the advantage in procurement of raw material and 15% for the purpose of scheduling and product structuring. To be more specific researcher concludes that 73% of units apply MRP for direct and indirect material where as 24% for direct and 3% for indirect material. To reduce cost and concentrate on the core competencies of the business units, which are missing in small scale manufacturing units under study, researcher found that only 10 units (22%) under study out of 44 units outsource some of their activities. Out of these 10 units, 6 units (60%) outsource for strategic and investment reasons, remaining 4 units (40%) outsource for internal in capabilities and for reducing cost of production. Researcher concludes that 78% units under study is far away from outsourcing and they should understand the importance of outsourcing in today's changing business environment for their growth and development.

References

1. Lambert, Douglas M. Supply Chain Management: Processes, Partnerships, Performance, 3rd edition, 2008, page 68-74.
2. Haag S., Cummings M., McCubbrey D., Pinsonneault A., & Donovan R., Management Information Systems For the Information Age, Canada: McGraw Hill Ryerson, 3rd edition 2006, page 45, 56, 78.
3. Lavassani, M. K., Movahedi B., Kumar V., Transition to B2B e-Marketplace enabled Supply Chain: Readiness Assessment and Success Factors, Information Resources Management, 2008, Niagara, Canada, page 45-55.
4. Lavassani, M. K., Movahedi B., Kumar V., Historical Developments in Theories of Supply Chain Management: The Case Of B2B E-Marketplaces. Administrative Science Association of Canada (ASAC), 2008, Halifax, Canada, page 34-56.
5. Stock J. R. and D.M. Lambert, Strategic Logistics Management, Homewood, Ill: Richard D. Irwin and Company, 2d edition 1987, page 155-167.
6. W.J. Hopp and M.L. Spearman, Factory Physics: Foundations of Manufacturing Management. Irwin, McGraw-Hill, 1996, page 22-25.
7. N. Viswanadham, Analysis of Manufacturing Enterprises, Kluwer Academic Publishers, 2000, page 34.
8. Sridhar Tayur, Ram Ganeshan, Michael Magazine (editors), Quantitative Models for Supply Chain Management, Kluwer Academic Publishers, 1999, page 45-67.
9. R.B. Handfield and E.L. Nichols, Jr., Introduction to Supply Chain Management, Prentice Hall, 1999, page 89-93.

Webliography

1. <http://www.dateyvs.com/cenex09.htm> .
2. <http://cenexcisenagpur.nic.in/Excise/ssi.htm>.
3. <http://www.mahavat.gov.in/mahavat/Rules/upload/00002-00108.HTM>.
4. <http://www.dsir.gov.in/reports/mitcon/chap2.pdf>.