



A DETAILED STUDY ON PRODUCT MANAGEMENT AND STRATEGIC NETWORK DESIGN

Rakesh W. Ramteke
LKMIMSR, Kosara, Chandrapur.

Abstract

Companies across the world are looking forward to value innovation as the strategic logic for high growth. World-class value adding performance outputs are Quality, Cost and Technology. It is one of the major functions common to many types of organizations: the overall goal of supply chain management is to impact the organisation's bottom line in a positive way. Traditionally marketing, distribution, planning, manufacturing and the purchasing organizations along the supply chain operated independently. These organizations have their own objectives and these are often conflicting.

Keyword: Quality, Cost, Technology, Time and Continuity of Supply.

Introduction

In today's rapidly changing business environment, ever-greater demands are being placed on business to provide right products and services quicker with greater added value to the correct location with no relevant inventory position. A supply chain consists of all the activities starting from sourcing of raw materials or components till delivery of the finished products to the customer. Supply chain management is, therefore, the management of these activities so as to maximize the benefit to the organization. Supply chain management takes a holistic view of the working of an organization, without getting unduly obsessed with the performance of the chain of activities, the primary driving force being delivering value to the customer.

Review of literature

Mohanty and Deshmukh (2004) describes, "A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products and the distribution of these finished products to customers. Supply chain exists in both service and manufacturing organization, although the complexity of chain may vary greatly from industry to industry and firm to firm."

Company Profile

The BID (Board of Industrial Development) framed the legislation and it was introduced before the state legislation and passed in the form of "Maharashtra Industrial Act" which gave birth to MIDC, as a separate corporation on August 1, 1962. The BID was the first personnel strength of MIDC. A small ceremony at Wagle Estate Thane, under the Chairmanship of the Chief Minister Shri Y.B. Chavan, marked the birthday of MIDC on August 1, 1962. The Board of Industrial Development during its existence between October 1, 1960 and August 1, 1962 has done enough spade work to identify the locations for setting up industrial areas in different parts of the state. Thus, right in the first year of establishment MIDC has come up with 14 industrial areas, to initiate action for infrastructure and help entrepreneurs set up the industrial units in those areas.

Research Methodology

Objectives of Study

1. To study the product management and strategic network design for products manufactured in small scale manufacturing units.
2. To study the demand analysis and procurement procedure followed by small scale manufacturing units.
3. To study the outsourcing of procurement of materials and components and its overall distribution planning used to survive in the competitive market.

Hypothesis: Product management and strategic network design helps small scale manufacturing units to manage their products.

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%.

t-test –t-test is based on t-distribution and is considered an appropriate test for judging the significance of a sample mean or for judging the significance of difference between the means of two samples in case of a small sample when the population variance is not known. The relevant test statistic, t, is calculated from the sample data and then compared with its probable value based on t-distribution (to be read from the table that gives probable values of t for different levels of significance for



different degrees of freedom) at a specified level of significance for concerning degrees of freedom for accepting or rejecting the null hypothesis.

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

Where, X = mean of the distribution

π_0 = assumed mean (70 in this research)

σ = standard deviation

n = number of observations

Statistical Analysis

Following the research methodology researcher has collected data through questionnaire and following three supply chain performance measures were calculated with the help of formula given.

Calculating Length of Various Stages of the Chain

The following formulae are used to calculate the length of the various stages in the supply chain:

$$DRM = RM \times 356 / CRM$$

$$DWIP = SFG \times 365 / CP$$

$$DFG = FG \times 365 / CS$$

$$\text{Total length of chain in days} = DRM + DWIP + DFG$$

Where, CS = Cost of sales,

CP = Cost of production,

CRM = Cost of raw material,

RM = Raw materials inventory,

SFG = Semi-finished goods inventory,

FG = Finished goods inventory,

DRM = Days of raw material,

DWIP = Days of work in process,

DFG = Days of finished goods

The duration of time taken by the material flow is observed by this measure.

Engineering Units

Sr. No.	Company Name	Days of Raw Materials	Days of Work In Process	Days of Finished Goods	Length of SC
1.	Adarsh tiles pipes industries	0.050	0000	0.500	0.55
2.	Anand Engineering	0.025	0.02	0.008	0.053
3.	Antoney mech. Engg	0.013	0000	0.005	0.018
4.	Best fabrication & Engg works	0.025	0.10	0.330	0.390
5.	Central India Engineers	0.010	0000	0.167	0.177
6.	Ganesh Coolers & Fabrication	0.019	0000	0.200	0.219
7.	J. K. Industries	0.020	0.250	0.500	0.770
8.	Laxmi Engineering Works	0.020	0.167	0.100	0.287
9.	Manav Engineering	0.025	0.100	0.330	0.450
10.	Perfect Engineering Works.	0.016	2.000	0.500	2.516
11.	Plast Mould Industries	0.003	0.025	0.200	0.228



Manufacturing Units (Others)

Sr. No.	Company Name	Days of Raw Materials	Days of Work In Process	Days of Finished Goods	Length of SC
1.	Amar Art Products	0.063	0000	1.200	1.267
2.	B. M. Chawhan & Son	0.012	0000	0.083	0.095
3.	Bhartia Pulverisers	0.008	0000	0.500	0.508
4.	Carbon Processors	0.019	0000	0.500	0.520
5.	Daliya Cement Udyog	0.008	0000	0.200	0.208
6.	Haryana Coasted Papers Ltd.	0.017	0.056	0.330	0.406
7.	India Explosives Ltd	0.006	0000	0000	0.006

Chemical Units

Sr. No.	Company Name	Days of Raw Materials	Days of Work In Process	Days of Finished Goods	Length of SC
1.	Abhideep Chemical Pvt. Ltd.	0.021	0.107	0000	0.128
2.	Aditya Air products	0.014	0000	0.100	0.114
3.	Protect Traffice Device Pvt. Ltd.	0.066	0000	0.063	0.129
4.	Multi Organics Pvt. Ltd.	0.008	0.200	0.083	0.290

Casting / Fabrication Units

Sr. No.	Company Name	Days of Raw Materials	Days of Work In Process	Days of Finished Goods	Length of SC
1.	Bohra Cement Products	0.025	0.100	0.333	0.458
2.	Chandrapur Cement Products	0.008	0.017	3.030	3.055
3.	Decorative Paper Board Pvt. Ltd.	0.056	0.013	0.813	0.882
4.	Economic Cement Co.	0.080	0.040	3.333	3.453
5.	Pima Controls Pvt. Ltd.	0.050	0.067	0.050	0.167
6.	Hemac Precision	0.100	0000	0.200	0.300
7.	Kaveri Industrial Fabrication & Casting	0.100	0000	0.200	0.320
8.	Kushal Plastic	0.020	0.110	0.333	0.463
9.	Maharashtra Carbon Pvt. Ltd.	0.030	0.667	1.493	2.190
10.	Perfect Tech-aids Pvt. Ltd.	0.025	0.045	1.250	1.320
11.	Wirecloth industries	0.025	0.005	0.100	0.130
12.	Pfizer Ltd.	0.020	0.188	0.167	0.374

Maintenance / Packaging Units

Sr. No.	Company Name	Days of Raw Materials	Days of Work In Process	Days of Finished Goods	Length of SC
1.	Anupam Plastic	0.013	0.025	0.090	0.127
2.	Balaji Gunny Bags	0.046	0000	0.001	0.047
3.	Bhardwaj Engineers	0.001	0.630	7.600	8.231
4.	Ginni Paper Products	0.001	0.063	0.114	0.178
5.	Perfect International Pvt. Ltd.	0.014	0.087	0000	0.101
6.	Perfect Packing Industries	0.100	0000	0.042	1.420



Agri Product Units (Others)

Sr. No.	Company Name	Days of Raw Materials	Days of Work In Process	Days of Finished Goods	Length of SC
1.	Dinshaws Dairy Foods Limited	0.114	0000	0.500	0.614
2.	Perfect Oil Pvt. Ltd.	0.025	0000	0.253	0.278
3.	Pikman Auto Ancillary Pvt. Ltd.	0.030	0.667	1.493	2.100
4.	Saurabh Oils	0.010	0.034	7.090	7.140

It is observed that 7 out of 11 engineering units (64%) have more length of supply chain due to a larger value of DFG as compared to values of DRM & DWIP. To reduce the length of supply chain, DFG should be reduced. The corresponding percentages for the remaining units are 86%, 50%, 83%, 67% & 100% respectively.

Conclusion

1. Gathering basic information like initial investment, turnover, number of workers working, number of working shift, level of management participation and product categories researcher has come to the following conclusions.
2. Initial investment is required to start the business and to purchase plant and machinery. 52% of the units have invested more than 30 lakhs, where as 48% units understudy has invested less than 30 lakhs. It is concluded that more than 71% of the units have manpower less than 20 indicating majority of the units require less manpower and complexity is less as compared to the bigger firm present the same area.
3. It is also concluded that most of the units are engaged in job work with annual turnover more than 30 lakhs and falls in the category of intermittent production process and runs only first shift. Percentage of such units is 65.
4. If we look in the industry mix it is concluded that casting/fabrication units constitutes 27%, engineering units constitutes 25%, manufacturing 16%, maintenance/packaging units 14%, agri products and chemical units 9% each with the major business objective of profit maximization and other minor objective of increase returns on investment, turnover and maximization of customer satisfaction. Level of participation by the management in all the business activities is observed by the researcher at the time of personal interviews with the owners/managers. Participative decision making reduces engagement whereby profitability and productivity grows.

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