



Influence of Supply Chain Management on Production Cost and Productivity-A Case Study

Akash Nigam¹, Vineet Singh², Niraj Kumar³, Anurag Maheswari⁴

¹. G. L. Bajaj Institute of Technology & Management, INDIA

^{2,3,4} FET MJP Rohilkhand University Bareilly, INDIA

*Corresponding author E-mail akashdeep393@gmail.com

Abstract

Besides several other factors, in this study found that, production cost and productivity depends upon the supply chain management, because, it boosts some special objectives in the Plant/Company/Organization etc. The main objective governed by supply chain management is “The right quality, in quick way, at right time, in flexible and cheap way available at correct place. On the basis of this study, we conclude that production cost is found to decrease after supply chain management. On the other way the productivity is found to increase with supply chain management”.

Keyword: Production, Productivity, Supply Chain Management.

1. Introduction

The effective utilization supply chain management is depends upon the integration of supply chain in proper way, ensuring that all components of the supply chain work continuous and together, rather than cross –purpose. This work helps to understand how best supply chain management can be of

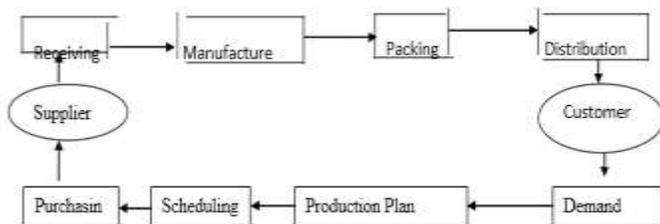


Figure 1: An - Example of a Supply Chain Management.

competitive benefits, whereas weakness in the supply chain management can disturb the performance of an organization. For perfect strategic framework, we identified transportation, inventory, information and funds as the key driver of good supply chain performance.

Packing Distribution

2. Literature Review

Hodder and Dincer [1] examined the international plant location problem and discovered a model to determine the best financial patterns, places, and raw material & finished product flows. **Lee** [2] applied principles of design for new product development. He has described a wide range of factors including logistics and manufacturing that should be used to support the design decisions contributed to the total supply chain cost. **Haug** [3] developed an international location model to analyze the global sourcing problem in high reputed organization. **Canel and Khumawala** [4] solved the international facility location problem with the help of a mixed integer programming model. The model consist a number of functions relating to supply chains, corporate tax rates, tariffs, and direct export incentives. **Tracey** [5] Proved, empirically the impact of SCM capabilities on the performance of business. He tested the importance of the supply chain management capabilities on market performance, product value, customer loyalty and financial performance. **Dasu and de la Torre** [6]

3. Company Profile and Organization Structure

This case study has been carried out on a gear manufacturing company situated in BHIWADI, RAJASTHAN. ABC Pvt. Ltd. Initiated in October, 2000. ABC is a private limited company, manufacturing gears. It is located at Bhiwadi, Rajasthan. The total land area - 8000 square meters.

described the production allocation processes and price-setting for multipoint organization and developed the best model for aforesaid process. **Dev**

[7] showed that the medium and small sized construction enterprise face challenges like low productivity and high fragmented structure. Many small and medium size industries enhance their business performance using the supply chain management. **Vidal and Goetschalckx** [8] developed a new model for supply chain to short out the multinational corporation relating problem. The global supply chain model simultaneously selects sets transfer prices, facility locations, and sets transfer prices and solved the problem. **Hadjinicola and Kumar**

[9] developed a supply chain model for boost the production and sales functions into a global supply chain and this model solved the marketing problems easily. **Hella Abidi et al.**

[10] identified the state of the art of management and performance measurement in global supply chains. **Anthony Alexander et al.** [11] examined the sustainable supply chain management research with the help of (DT) concepts.

The total covered area - 3500 square meters.

Employee Strength - 200.

Product Profile - 90% timing gear.

Annual production volume: 1 million.

Number of Equipment - 112.

Types of equipments (Major) - Turning Centers, Machining Centers, Hobbing, Shaving, Hoining, Heat treatment furnace etc.

Average life of the equipments: 15 years.

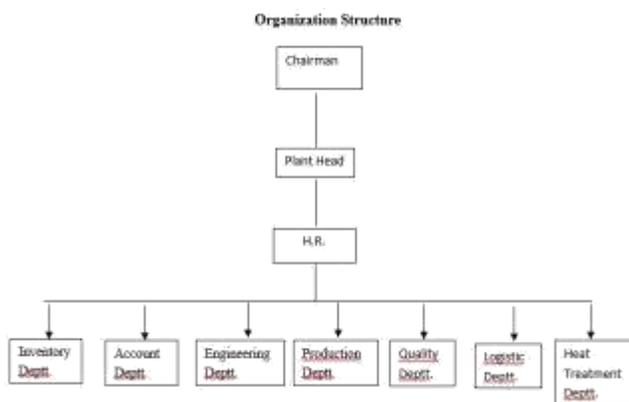


Figure 2: Organization Structure of ABC.

4. Results: taking the objectives in to consideration, we have set the following targets as shown below in

Table 1: Supply Chain Management Target Table

| Description of Target Parameters | Units | Bench Mark | Target |
|----------------------------------|--------------------|-----------------------|------------|
| Main Subordinate | | | March,2017 |
| Increase In Profit | | | |
| 1.0 - Profit Amount | Millions of Rupees | 259.77(year 2010-11) | 682.1 |
| Increase in Sales | | | |
| 2.0 - SalesTurnover turnover | Millions of Rupees | 2503.70(year 2010-11) | 3683.0 |
| Decrease in Production | | | |
| 3.0 - Cost Cost | % of Sales | 75.10 | 69.45 |

| | | | | |
|-----------------------------|-----|--------------------|------|------|
| Increase Plant Productivity | 4.0 | Millions of rupees | 0.27 | 0.36 |
|-----------------------------|-----|--------------------|------|------|

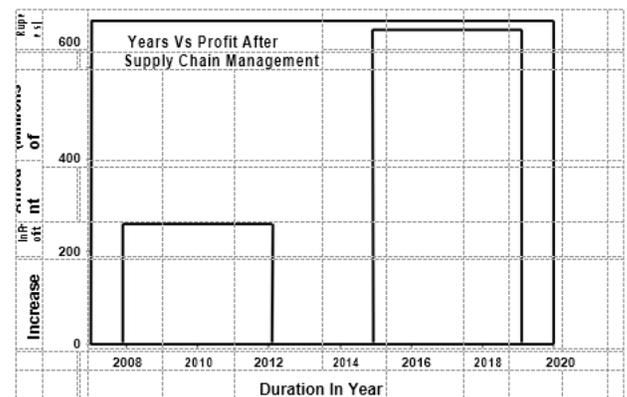


Figure 3: Variation of Profit Vs Year.

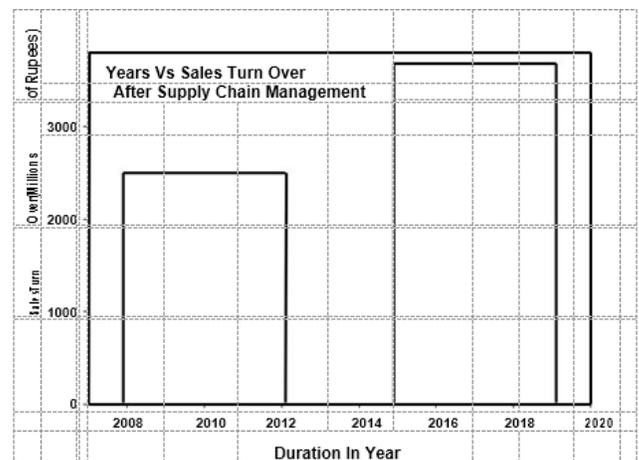


Figure 4: Variation of Sales Turn Over Vs Year.



Figure 5: Variation of Production Cost Vs Year.

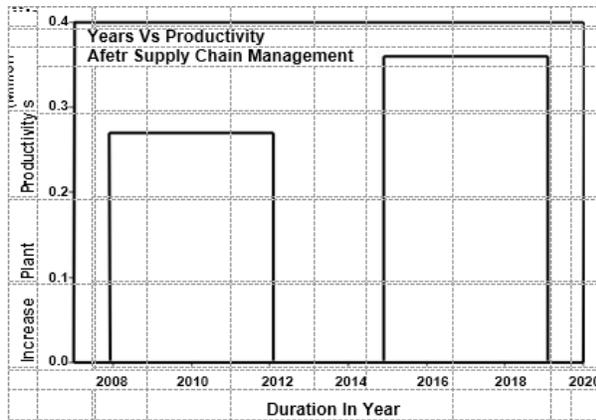


Figure 6 Variation of Productivity Vs Year.

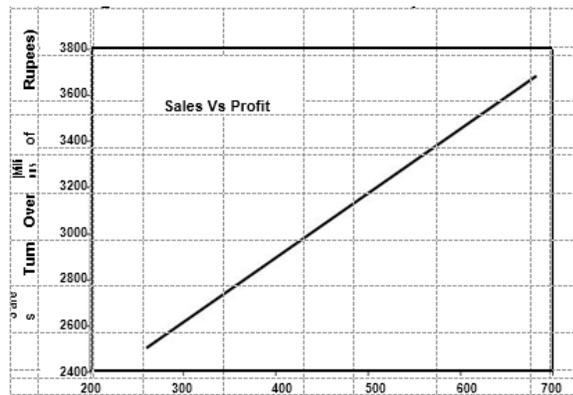


Figure 7 Correlation between Sales and Profit.

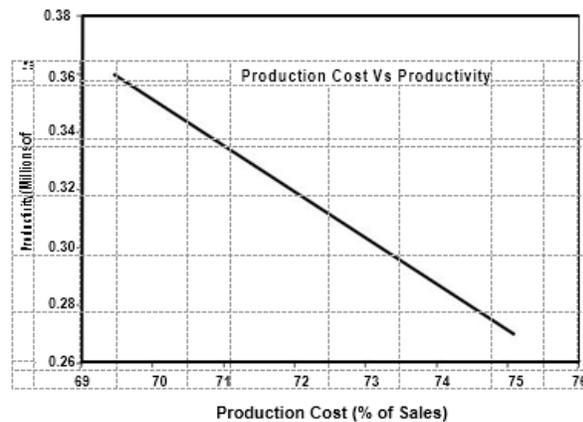


Figure 8 Correlation between Productivity and Production Cost.

5. Conclusions

Profit and Sales Turn Over is found to increase drastically after the application of Supply Chain Management in company from 2010.

Production cost is found to decrease drastically after the adoption of Supply Chain Management in company from 2010.

Productivity is found to increase drastically after the implementation of Supply Chain Management in company from 2010.

Figure 7 showed that sales turn over and profit is directly proportional to each other.

Figure 8 showed that production cost and productivity is reciprocal to each other.

References

- [1] Hodder, J.E. & Dincer, M.C., (1986) A multifactor model for international plant location and financing under uncertainty. *Computers and Operations Research* 13, 601–609.
- [2] Lee, L. H., Gasser M.M., "Product Universality and Design for Supply Chain Management", *Product Planning and control: An International Journal*, Vol. 6, No. 3, pp. 270-277.
- [3] Haug, P., (1992) An international location and production transfer model for high technology multinational enterprises. *International Journal of Production Research* 30, 559–572.
- [4] Canel, C. & Khumawala, B.M., (1997) Multi-period international facilities location: an algorithm and application. *International Journal of Production Research* 35, 1891–1910.
- [5] Tracy M., (2005), "The Impact of Supply Chain Management Capabilities on Business Performance", *Supply Chain Management: An International Journal*, Vol. 10, pp. 179-191.
- [6] Dasu, S. & de la Torre, J., (1997) Optimizing an international network of partially owned plants under conditions of trade liberalization. *Management Science* 43, 313–333.
- [7] Dev P.K., (2008) Relationship Characteristics within the Supply Chain of Small and Medium Sized Construction Enterprises in Thailand", *International Journal of Manufacturing Technology and Management*, Vol. 15, No.1pp. 103-116.
- [8] Vidal, C.J. & Goetschalckx, M., (2001) A global supply chain model with transfer pricing and transportation cost allocation. *European Journal of Operational Research* 129, 134–158.
- [9] Hadjinicola, G.C. & Kumar, K.R. (2002) Modeling manufacturing and marketing options in international operations. *International Journal of Production Economics* 75, 287–304.
- [10] Nagurney et al.(2003) Dynamics of global supply chain super networks. *Mathematical and Computer Modelling* 37, 963–983.
- [11] Hella Abidi, Sander de Leeuw, Matthias Klumpp, (2014) "Humanitarian supply chain performance management: a systematic literature review", *Supply Chain Management: An International Journal*, 19 Issue: 5/6, pp.592-608.
- [12] Anthony Alexander, Helen Walker, Mohamed Naim, (2014) "Decision theory in sustainable supply chain management: a literature review", *Supply Chain Management: An International Journal*, 19 Issue: 5/6, pp.504-522.