

Synchronization of Supply Chain Drivers to Improve Retail Operations

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Abstract: A process of planning, executing and controlling the interdependencies of activities carried out by different supply chain members or business units in order to create value for the end customer is known as supply chain management. Synchronization of Supply Chain means the adjustment that causes something to occur or recur in unison. The concept of supply chain integration consists of information sharing, logistics coordination and organisational relationship linkage. Best in class supply chain systems are good to have but can't result in the retail industry's profitability as the whole supply chain and its linking systems are needed to be in sync to get the desired result. This paper is aimed at understanding the criticality of synchronization of Supply chain drivers to achieve the best fit in efficiency and effectiveness of retail operations

1. Introduction

Recent years have seen drastic changes in global businesses as communication and coordination process management and technologies have advanced. Phenomenon is attributable to the consumer fickle demands and more customized market requirements both. On these premises, it is widely believed that the development of supply chain management (SCM) can effectively provide better value to the end customers in terms of innovative or cost-conscious products and services, and at the same time to maximize total supply chain profitability (Chopra and Meindl, 2003). However, supply chain members have varied and conflicting objectives. Thus, synchronization of supply chain drivers becomes so vitally important that it determines the whole chain's performance.

Supply chain management incorporates the principles of partnerships and development. Use of connections that exist between the links of the chain to provide information increases the efficiency of all members in the chain. According to Helms et al. (2000), "Supply chain management is a broader perspective of the business environment, as compared with more traditional approaches. Instead of managing a business as a group of virtually separate functions, supply chain management views these functions as closely connected links of a chain. The chain exists beyond the boundaries of the organization including suppliers and customers. Supply chain management involves the entire flow of the product from the purchase of raw materials (the supplier) to the purchase made by the final consumer". The concept of supply chain management is based on several key tenets. The key principle is that all strategy, decisions and measurements are made considering their effect on the entire supply chain, not just separate functions or organizations. This broader approach is based on partnerships and the sharing of information between the links in the chain.

Information is at the base of all the activities and today's organisation whether a manufacturing unit or retailing has become more of an information factory than anything else. The objective of every unit is to reduce cost and time for benefit of end customer, which can be achieved through knowledge and information sharing (information processing) across the departments or the supply chain partners.

Retail industry is at the helm of the activities, a virtual organization of multiple companies banding together to tackle a market opportunity. The key lies in mastering communications within teams of companies surpassing the challenges of department to department coordination within the same four walls.

2. Objective of the study

In today's internationalised economy Supply chains have become global. A company with its manufacturing base in India may be importing parts or raw materials from various countries. Vakil and Kain (2011) in their white paper on "The top 5 mistakes companies make in managing supply chain risk effectively" concluded that companies have adopted Lean and Just in Time (JIT) practices as well as Build to Order type capabilities in a big way – this means, that globally stretched supply chains are overly optimized to operational parameters like lead times and often have low levels of buffers that would help to withstand disruptions. Traditionally, supply chain management practices leave gaps because supply chain risk management is fundamentally different from every day operations management, mainly business metrics focus heavily on cost

reduction and inventory turns. When companies fail to recognize and appreciate these differences, they fail to manage risk effectively.

Effective management of the supply chain has been identified as a key success factor in retailing, to the extent that in modern retailing it is the supply chains that compete rather than companies (Hines, 2004).

The objectives of the study are:

- To find the impact of supply chain synchronisation in Indian Retail Industry.
- To analyse the impact of information sharing across the supply chain and its impact on the retail efficiency and profits as perceived by the industry experts
- To understand the criticality of synchronization of Supply chain drivers to achieve the best fit in efficiency and effectiveness of retail operations

3. Review of the Literature

The growth of the Indian retail sector particularly organized retail is dependent on the growth of the supply chain sector. The Indian Supply Chain Council have been formed to explore the challenges that a retailer faces and to find possible solutions for India. With the end consumer becoming more demanding and time conscious, the need for just-in-time services is increasing. With the expansion of retail, supply chain will take on an increasingly important role. In retail, where competition is intense and stakes are high, customer satisfaction is paramount. The study of the Institute for Supply Chain Management at the University of Munster with the support from McKinsey & Co. (Thonemann & Grobpietsch, 2004) addresses two questions: Which concepts and instruments of SCM really affect supply chain performance through statistical analysis of high and low performers?

An effective supply chain co-ordinates various activities linked with information flow from raw material procurement, transformation and on-time delivery of finished products to end customers. Frohlick and Westbrook (2001) identified two forms of integration which is employed by manufacturers in the organization viz forward and backward integration. Forward integration involves integration of material and information in the forward direction between suppliers, manufacturers and customers. Backward integration involves the flow of information and data from customers towards the suppliers.

Heckmann et al (2003) conducted a survey which showed that, in organizations where SCM is part of the overall business strategy and therefore a CEO-level agenda item, the savings in the “cost to serve customers” are 8.0% compared with 4.4% for companies where SCM responsibilities reside lower in the organization. It has long been recognised that manufacturing strategy should be tailored to match the required “order winning criteria” in the market place (Hill, 1993). However, this idea of aligning the firm’s operations with market place requirements has not always been extended to the wider supply chain. It can be argued that sourcing strategy, operations strategy and route-to-market need to be appropriate to specific product/market condition. Excess of supply over demand is a characteristic of today’s market place with heightened global competition. In such situations there is a danger, due to the continual pressure to take out costs that sub-optimal supply chain decisions may be taken. For example, the introduction of “just-in-time” delivery may reduce inventory in the factory but increase it at the supplier whilst also increasing transport costs. What might look like a cost saving to one firm could mean increased costs to the supply chain as a whole.

“Supply chains compete, not companies” (Christopher, 1992) is the basis of existence of holistic SCM. A holistic approach to supply chain management (SCM) should be adopted to avoid sub-optimal supply chain decisions. Since, it is argued that this implies the existence of a climate wherein holistic SCM is possible. Indeed an early move in this direction was proposed by Kraljic (1983) when arguing that purchasing needed to be seen in the perspective of the wider supply chain. By definition, SCM demands a high level of “joined-up thinking”. In other words, the selection of suppliers, the location of facilities and the choice of distribution channels should all be driven by the goal of enabling the marketing objectives of the organisation to be achieved. In the ideal world, supply chains would be designed from the “customer backwards” rather than the conventional approach which tends to be from the “factory outwards”. The temptation is to create supply chains which are more focused upon “efficiency” goals than “effectiveness” goals. Thus, the typical supply chain strategy is likely to be aimed at achieving a smooth flow at minimum cost (Harrington, 1991; Scott and Westbrook, 1991).

One of the more interesting debates in recent years concerning supply chain strategy has centred on the relative merits of “lean” and “agile” philosophies. The idea of “lean thinking” has been expounded by Womack & Jones (1996) amongst others. The focus of lean thinking has been on the reduction or elimination of waste (muda). The origins of the lean approach can be traced to the Toyota Production System with its focus on the efficient use of resources through level scheduling (Ohno, 1988). It has been suggested (Christopher, 2000) that

lean concepts work well where demand is relatively stable and hence predictable and where variety is low. Conversely in those contexts where demand is volatile and the customer requirement for variety is high, a different approach is called for.

Agility is concerned primarily with responsiveness. It is about the ability to match supply and demand in turbulent and unpredictable markets. In essence, it is about being demand-driven rather than forecast-driven. Agility is a business-wide capability that embraces organisational structures, logistics processes and, in particular, mind-sets. A key characteristic of an agile organisation is flexibility. Indeed, the origins of agility as a business concept lie in flexible manufacturing systems. Later this idea of manufacturing flexibility was extended into the wider business context (Nagel & Dove, 1991) and the concept of agility as a supply chain philosophy was born. In reality the two approaches can complement each other, and in many cases there is a requirement for a “hybrid” lean/agile strategy to be adopted (Christopher & Towill, 2000). Hence, it is our contention that the issue is not “Lean versus Agile” rather it is the judicious selection and integration of appropriate aspects of these paradigms appropriate to the particular supply chain strategy. In some cases, the two ideas of lean and agile can be brought together as a hybrid “leagile” solution (Naylor et al., 1999)

One such “hybrid” solution is to utilise lean principles when designing supply chains for predictable standard products and agile principles for unpredictable or “special” products. Or again it may be that total demand for a product can be separated as “base” and “surge” demand. Base demand is more predictable and less risky so lean principles can be applied, using agile approaches to cope with surge demand. An example of this separation of base and surge demand is the multiple pipeline solution implemented by the Griffin Manufacturing Co. (Stratton and Roy Warburton, 2001). Their approach is shown in Table II, and seeks an optimal blend of in-sourcing and out-sourcing in meeting both baseline and surge demands. In 1999, the resulting balance worked out at 80 per cent production in Honduras, and 20 per cent production in the USA. It is also likely that products may well require different kinds of pipeline according to their position within the product life cycle (Christopher and Towill, 2000).

The key dimensions of this taxonomy are replenishment lead-times and predictability/variability of demand. Whilst previous taxonomies have tended to focus on the nature of the product and its life cycle, we suggest that these can be further enriched by the use of lead-time and demand variability measures. A study by SAP (2003) on the economic impact of supply chain malfunction, mainly production delays and shipping delays, on shareholder value. The evidence collected from 838 supply chain glitches from 1989 to 2001 shows there is a direct linkage between supply chain performance and shareholder value. On average, the initial news report of a production or shipping delay is associated with nearly 11% decrease in stock price. The study then goes on to discuss how to deal with supply chain glitches. The key is to develop adaptive supply chain capabilities, including better forecasting and planning and real-time visibility, to reduce the likelihood of glitches, develop the ability to predict glitches, reduce the lag between the occurrence and detection of glitches, and reduce the time it takes to resolve glitches.

Kent and Mentzer (2003) studied the investment in inter-organizational information technology on the long term supply chain relationship. Behavioural variables like trust, commitment, dependence and long term relationship were evaluated. The study suggested that if retailers perceive their suppliers are investing in Inter organizational information technology, the retailer will be more committed to the relationship. From a managerial perspective, the finding that logistics efficiency is a significant consequence of relationship commitment based on trust and perceived supplier investment in Inter-organizational information technology has definite supply chain management implications. Sarkar (1999) suggested a pull type inventory management strategy equipped with automatic replenishment system and made for an order kind of system over the traditional push type to cut down the costs associated with inventory management. Kamat (1999) in his study on different strategies for inventory management opined that demand forecasting and just-in-time method were helpful in reducing the inventories in store, sales and in process. Further, he also stated that the demand forecasting strategy can be executed within 14 to 21 weeks while the just-in-time strategy can be executed within 5 to 10 weeks. The study also gives a general conclusion that the costs associated with inventory management can be attacked only with the help of proper and long-term strategies particularly in the field of supply chain management. Bhattacharjee (1999) in his study on strategies for supply chain management by Hindustan Lever Ltd. (HLL) in India found that HLL came out with a net strategy of ‘zero’ working capital and near zero stock, which ultimately led to reduction in inventories located into a mere 5 to 6 per cent from the earlier 22 to 24 per cent of annual turnover.

Wal-Mart adopted vertically integrated distribution system. It was one of the first retailers to adopt electronic scanners at the registers which were tied to an inventory control system such that it could know immediately which items were selling well. By 1988, Wal-Mart had the largest privately owned satellite communications network in the U.S. This helped the managers to have a complete picture of where goods were and how fast they were moving from the suppliers to frontend service and track all the costs involved

(Lichtenstein, 2005) resulting in reducing working capital costs. Morash et al (1996) explores the importance of strategic logistics capabilities to firm performance and competitive advantages. The primary focus of this research is whether strategic logistics capabilities contribute significantly to superior company performance and sustainable competitive advantages. The authors first define demand-oriented and supply-oriented logistics capabilities. Vickery et al (1999) investigates different dimensions of supply chain flexibilities and how they impact firm performance. The authors study the flexibilities under the environment uncertainties of volatility in marketing practices, product obsolescence rate, unpredictability of competitors, unpredictability of demand and tastes, and change in production or service modes.

Supply chain integration is operationalized based upon eight different kinds of activities that manufacturers commonly employ to integrate their operations with suppliers and customers: access to planning systems, sharing production plans, joint EDI access/networks, knowledge of inventory mix/levels, packaging customization, delivery frequencies, common logistics equipment/containers, and common use of third party logistics. Voss (1988) divides manufacturing success into three levels: marketplace competitive advantage, productivity increases, and non-productivity benefits. Statistical analysis strongly supports the hypothesis that companies with the greatest arcs of suppliers and customer integration, that is the highest degree of integration, will have the largest rates of performance improvement.

Vickery et al (2003) examines the performance implications of an integrated supply chain strategy, with customer service performance followed by financial performance as a performance construct. Statistical analysis shows that there is a positive relationship between integrative information technologies and supply chain integration. The positive relationship between supply chain integration and customer service is also supported. However, the link between integrative information technologies and customer service is indirect. Ellram (1999) has concluded that retailing logistics is at a very exciting turning point right now, on the brink of many important changes and opportunities. It appears that there is tremendous potential for the role of logistics in the retail sector to expand and evolve in the future. Those retailers who aggressively pursue the opportunities associated with a unified supply chain strategy and improved information management will likely enjoy improved customer service, and a more integrated logistics function. Integrating logistics could allow retailers to achieve an important gain in their competitive position.

4. Methodology & Data Collection

To collect the data on these supply chain drivers two structured questionnaires were prepared and were administered to the following set of respondents:

The sample includes two sets of data

- for industry experts on Retail and Information Technology in order to take their ratings and opinion on the supply chain drivers
- for customer feedbacks on their expectation from the retail industry in order to understand the other side of the supply chain performance as understood from customer perspective.

Sampling Plan

We have chosen the prominent retail companies first then the functional areas of supply chain in which these companies were working were shortlisted. Roughly, in each functional area we had sent questionnaires to approximately 20-25 experts. The target list of the first questionnaire was only Senior and Middle level executives of the Industry and questionnaire was sent to 106 Industry experts out of whom 32 responses have been received.

For customers, we had approached various retail organisations and took the customer data from them. Data was also taken from the known sources. Second questionnaire was sent to more than 500 retail customers and more than 150 customer responses were received. The questionnaires have quantitative questions on Supply Chain practices, qualitative aspects of SC strategy, and data on performance and structure.

5. Data & Analysis & Findings

Out of the responses received from experts, 16 executives are presently working in retail and 9 executives in IT of retail and rest 7 executives are working with FMCG companies. However, all of them had connection with Retail earlier some time.

Mapping supply chain objectives with business objectives on a five point scale:

1	Which of the following attributes you rate as important factor for increasing profit in Retail Industry?	Ratings
	Better sourcing / procurement	4.3
	Efficient Warehousing facilities	4.0
	Efficient Inventory management	4.5
	Efficient Transportation	3.8
	Best in class Information technology systems	3.8
	Effective Marketing & advertisements	2.8
)	Customer loyalty schemes	3.0
i)	Overall management	4.3

2	What is the major difference in retail practice of organized retail and unorganized retail?	Ratings
(i)	Investment	2
(ii)	Location (Spread in most convenient locations)	4.5
(iii)	Finance	2.5
(iv)	Procurement	3.5
(v)	Commercial	2.75
(vi)	Quality	3
(vii)	Consistency	3.5
i)	Information Technology	2
(ix)	Relationship maintenance	4.75
(x)	Support of Govt. Policy	3.25
	Organised Retail	
(xi)	Investment	4.5
(xii)	Location (Spread in most convenient locations)	3.25
i)	Finance	3.75
v)	Procurement	4.5
(xv)	Commercial	4.25
i)	Quality	4
ii)	Consistency	4.25
iii)	Information Technology	4.25
κ)	Relationship maintenance	2.5
(xx)	Support of Govt. Policy	3.25

3	What support would improve the organised retail operations in India?	Ratings
	Government Policy of relaxed taxation for retail	4
	Easy Finance	3.75
	International procurement support	3.5
	Retail knowledge thru international experts	2.75
	Information technology initiatives	3.5
	Supply Chain improvements across retail chain	4.25
)	FDI in multi-brand retail	3.25

4	<i>Are data required for making decisions in the organisation available readily and adequate: Readiness</i>	Ratings
(i)	Organisation's data:- Departmental	3.5
(ii)	- Inter-departmental	3.25
(iii)	Competitors	2.75
(iv)	Supply Chain	3.5
(v)	<u>Quality</u>	
(vi)	Organisation's data:- Departmental	3.5
(vii)	- Inter-departmental	3.25
i)	Competitors	2.5
(ix)	Supply Chain	3.25

5	<i>Best in class Information Technology systems should be implemented in following functions in order of priority to get retail efficiency improvement:</i>	Ratings
	Planning	4.75
	Inventory Management	4.75
	Warehouse Management	4.25
	Business Intelligence / Decision Support System	4.25
	Transport Management	3.75
	Collaborative planning in supply chain	4.25
	Customer focussed IT systems	3.75
i)	Integrated Human Resource Management with other retail functions	3
	E-commerce	3.75
	M-commerce	3.5
	Other support functions	3

6	<i>How do you prioritise KPIs of Inventory Management practice in Retail</i>	Ratings
	Avoidance of Stock outs	4.75
	Avoidance of Dead Stocks	4.25
	Planning Forecasting & Replenishment	4.25
	Vendor Management	4.25
	Supply demand synchronisation across supply chain	4

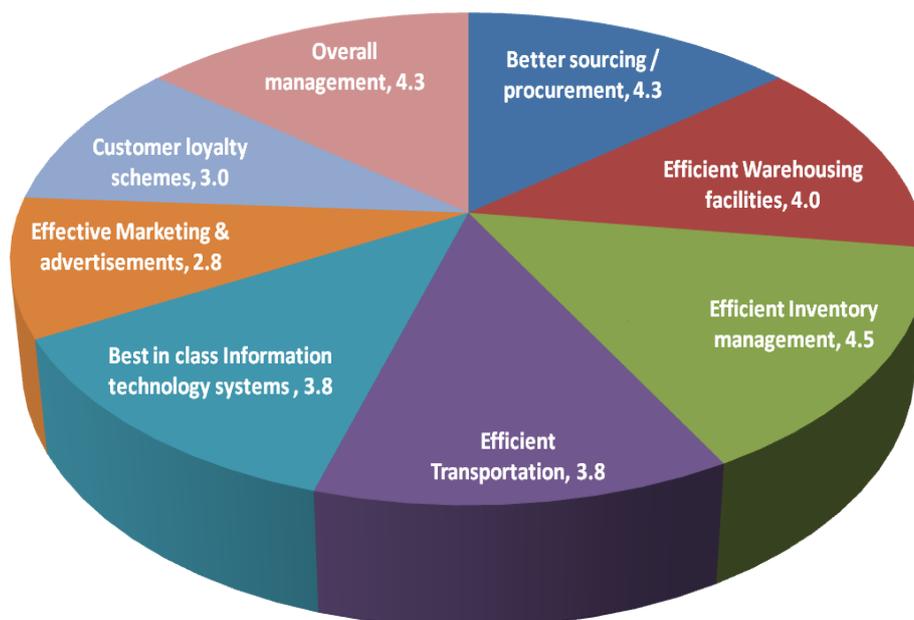
7	<i>How do you prioritise KPIs of Warehouse Management practice in Retail</i>	Ratings
	Warehouse occupancy	4
	In stock damages	4
	Shipping accuracy (picking , packing)	4.25
	Cross docking	4
	Synchronisation of warehouse management across retail supply chain partners	3.75

8	<i>How do you prioritise KPIs of Transportation Management practice in Retail</i>	Ratings
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	On-time deliveries	4.25
	Transportation cost in Rs / Km	4.5
	In transit damages	4.25
	Reverse logistics	3.25
	Synchronisation of transport management across retail supply chain partners	4

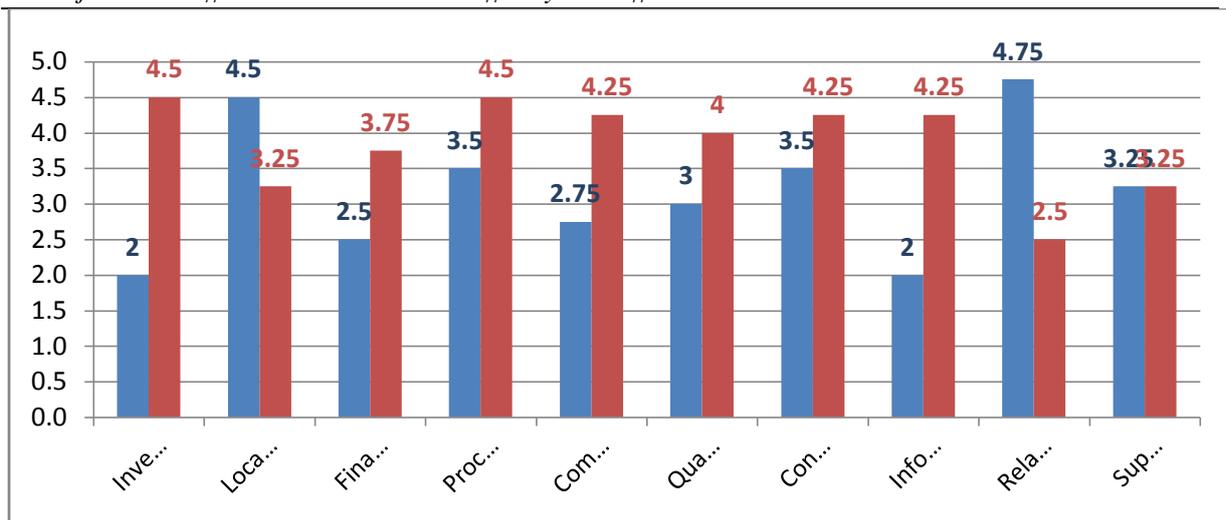
9	How do you compare IT implementation in Indian retailers' vis-à-vis International retailers	Ratings
	Rating of IT implementation	2
	Improvement direction A better	1.25

Which of the following attributes you rate as important factor for increasing profit in Retail Industry.

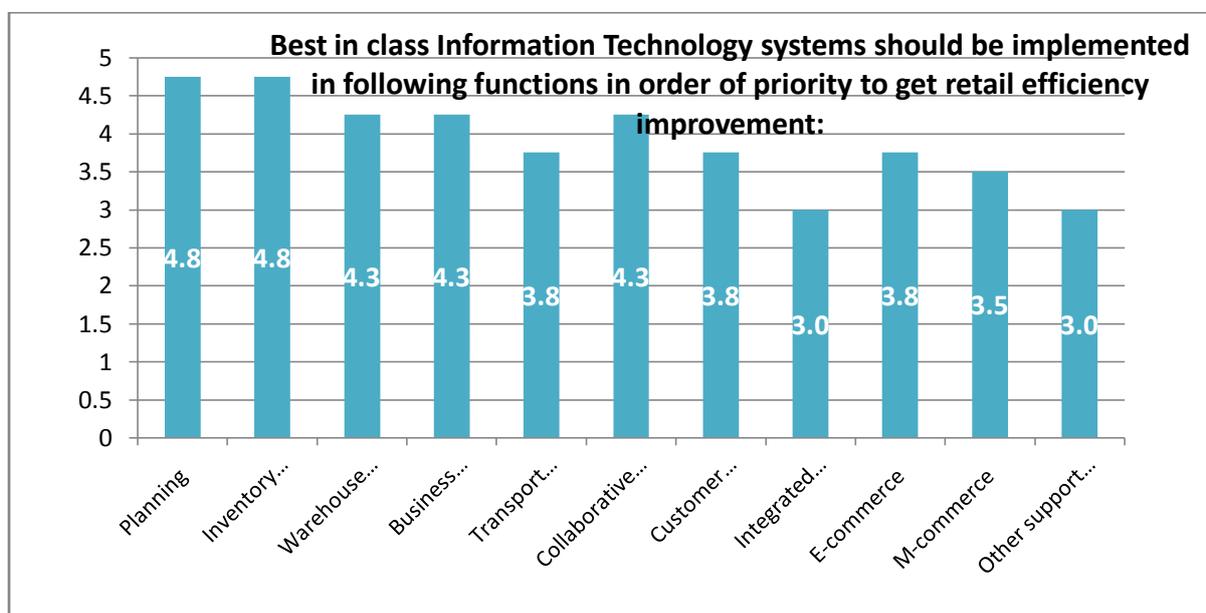


The above pie chart shows that the attributes which are rated as important factor for increasing profit in Retail Industry are Efficient Inventory management (rating 4.5), Better sourcing / procurement & Overall management (rating 4.3), Efficient Warehousing facilities (rating 4.0), Efficient Transportation & Best in class Information technology systems (rating 3.8). However, Effective Marketing & advertisements got a lower rating of 2.8 and Customer loyalty schemes got a lower rating of 3.0. Industry experts felt that having the best IT systems will not serve the purpose of synchronization but the Retail profits are more a function of Inventory and overall management. However, Better sourcing and Inventory sync can only be achieved effectively through Information Technology initiative

Comparative analysis of Organised and Unorganised retail



Organized retail (Brown colour bars) in India has the upper hand in terms of investment and procurement, while unorganised retail has better relationship and spread to cater to needs of the customers



Planning is at the base of all supply chain systems and the first point to plug the gaps expected in the SC coordination as it is rated in above graph.

However, business Intelligence and decision making only plugs in the existing gaps in the whole chain

6. Conclusion

- There is a huge gap between the Retail Industry’s present state of the supply chain systems and the expected state of the SC systems as rated by the experts. Experts feel the need of best in class IT systems can’t increase the profit but at the same time they feel that Inventory management is most critical of the all the supply chain process to increase the profits in retail industry.
- The broad analysis of the views of the customers reveals that their orientation is more towards the supply chain related factors than advertising and loyalty. Such as customers have rated need for good IT systems as one of the major requirement along with fast and accurate billing at the stores.
- Customers are also equally concern about the quality of the product at the stores and the after sales services but are less interested in shopping through social networking web-sites
- Thus we can see the need for synchronisation of the supply chain drivers is evident from the collected data for retail industry.

- It is good to see a majority of companies believe supply chain planning software will improve substantially in coming years. We predict much tighter integration with execution will be part of that evolution.

7. References

- [1]. Ayers James B. and Kennedy Keith, (2003). *Transformation in Manufacturing/Distribution through Proactive Systems*. CGR Management consultants, Auerbach Publications, pp 2-4
- [2]. Chopra, S. and Meindl, P. (2003), *Supply Chain Management: Strategy, Planning and Operation*, 2nd ed., Prentice-Hall, Upper Saddle River, NJ.
- [3]. Christopher Martin, Peck Helen, and Towill Denis (2006) "A taxonomy for selecting global supply chain strategies" *The International Journal of Logistics Management* Vol. 17 No. 2, 2006 pp. 277-287, Emerald Group Publishing Limited www.emeraldinsight.com/0957-4093.htm
- [4]. Ellram M Lisa, Londe J. La Bernard and Weber Margaret Mary (1999). "Retail Logistics". *International Journal of Physical Distribution & Logistics Management*, Vol. 29 No. 7/8, 1999, pp. 477-494. # MCB University Press, 0960-0035
- [5]. Heckmann, P., D. Shorten., and H. Engel. (2003), *Capturing the Value of Supply Chain Management*. Strategy+Business enews, Booz Allen Hamilton Inc.
- [6]. Helms, Marilyn M., Ettkin Lawrence P., and Chapman Sharon (2000), "Supply chain forecasting Collaborative forecasting supports supply chain management", *Business Process Management Journal*, Vol. 6 No. 5, 2000, pp. 392-407. # MCB University Press, 1463-7154
- [7]. Hines, T. (2004), "The emergence of supply chain management as a critical success factor for retail organisations", in Bruce, M., Moore, C. and Birtwistle, G. (Eds), *International Retail Marketing*, Elsevier Butterworth-Heinemann, Oxford.
- [8]. John L. Kent and John T. Mentzer (2003), "The effect of Investment in inter organisational information technology in a retail supply chain", *Journal of business Logistics*, Vol. 24, No. 12. Samridhi Tanwar, Neeraj Kaushik, V.K. Kaushik (2008), "Venturing of retail with Information and Communication Technology: An Indian Perspective", *Journal of Marketing and Communication*, /vo. 4 Issue 2.
- [9]. Frohlich, M., Westbrook, R., 2001. Acs of integration: An International Study of Supply Chain Strategies. *Journal of Operations Management* 19(2), 185-200.
- [10]. Sarkar, B.K., 1999, Strategies for cost management. *Business Today* (Seventh Anniversary Special issue) 7th January
- [11]. Vinay Kamat, 1999, Strategies for cost management. *Business Today* (Seventh Anniversary issue) 7th January.
- [12]. Bhattacharjee, P., 1999, Strategy HLL's Revamp of its supply chain system. *Business World*, 19th July.
- [13]. Morash, E. A., C. L.M. Droge, and S. K. Vickery. 1996. Strategic logistics capabilities for competitive advantage and firm success. *Journal of Business Logistics* vol. 17, Iss. 1; p. 1-22
- [14]. SAP. 2003. Quantifying the Impact of Supply Chain Glitches on Shareholder Value. SAP whitepaper, mySAP supply chain management.
- [15]. Thonemann, U. and J. Grobpietsch. 2004. Supply Chain Champions: What Factors Can Give Superior Supply Chain Performance? Presentation in Logicon 2004.
- [16]. Vakil Bindiya and Kain Hannah (2011) "The top 5 mistakes companies make in managing supply chain risk effectively", Resilinc Corporation and Alom.
- [17]. Vickery, S., R. Calantone, and C. Droge. 1999. Supply chain flexibility: An empirical study. *Journal of Supply Chain Management* vol. 35, iss. 3; p. 25-33.
- [18]. Vickery, S. K., J. Jayaram, C. Droge, and R. Calantone. 2003. The Effects of an Integrative Supply Chain Strategy on Customer Service and Financial Performance: An Analysis of Direct Versus Indirect Relationships. *Journal of Operations Management* 21 523-539.