Harnessing Information Systems &Technology with Supply Chain Management for Performance Excellence in Retail Sector

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ARTICLEDETAILS	ABSTRACT
History *Revised format: Nov 2017* *AvailableOnline: Dec 2017*	**Purpose:** Retailers are revolutionizing the ways they manage their operations and supply chains to meet customer's ever changing needs. Advancements in Information Technology (IT) and Information System (IS) are supporting the companies to achieve this goal. Core activities of a retailer; stock management, category & space management, forecasting, negotiation and tracking all depends upon efficient supply chain management (SCM). These tasks cannot be executed without the proper implementation of IT/IS solutions at various levels of organizations. The purpose of this paper is to focus on critical SCM performances and to highlight how IT/IS system can help the retailers to overcome the challenges of modern day retail business.
Keywords *Information Technology,* *Information System,* *Supply Chain Management,* *Retail Management*	
JEL Classification: *O14, R41*	

1. Introduction

In today's business environment companies strive to achieve competitiveness by effective operations and financial management. The competence in the supply chain management (SCM) is the core of company's operations excellence (Chou et al, 2004). Over the years the advancement and use of Information Technology (IT) has not only enhanced the productivity almost in every industry, it has also revolutionized the relationship within the organization and with all external stakeholders (Harsono, 2014). It will be not wrong to say that today's Supply Chain Management (SCM) is dependent upon effective IT solutions. The activities of supply chain, their structure and underlying decision making for the optimal IT solution differ for each industry and even, in some situations, for the same industry with Business to Business (B2B) and Business to Customer (B2C) segregation.

The purpose of this paper is to examine the concept and key performance measures for an effective SCM in the retail industry. The paper highlights how new advancements in IT are enabling effective SCM system. The integration of IT enabled SCM systems have also revolutionized the retail industry. For competitive advantage the key activities of a retailer; the productivity, information sharing, category management and collaboration & forecasting cannot be facilitated through efficiently incorporating IT solution in their supply chain.

2. Consequences of Poor SCM

According to Berman and Evans (2012) in the delivery chain from manufacturer to customer SCM in retailing represents the logistic aspect. For a retailer the SCM includes providing and selling the products as per customer requirement. Although it seems simple however the whole process includes planning, managing, purchasing, distribution & replenishment of products and goods in a distributed geographical environment. The role of IT for SCM in retail becomes more significant to manage communication and track information and data among vendors, distributors, operations team and other external stakeholders.

The implementation of poor SCM strategies can have drastic and negative impacts on the organization value (Sridharan et al, 2005). The consequences of poor SCM can result in inefficiency either due to poor inventory management, shelf management, forecasting and distribution errors. At the time the retailer may be running surplus of some items while having shortage of other critical items. This shortfall of inventory management can easily lead out the retailers to more serious "stock out problem". Poor forecasting can affect the demand and supply information across SCM chain. This limits the capability to predict requirement of products and items. Distribution delays can hinder deliveries on time from the suppliers to the customer. These shortfalls contribute to not only financial losses faced by retailers but also damage the reputation, lose customers and lead to customer's dissatisfaction. These factors can be highlighted through the curious case of J.C. Penney. From 2011 – 2013 when the economy was coming out of recession the company losses were almost $3 Billion due to inefficient SCM and failure to incorporate efficient IT solutions according to customer requirements.

3. Methodology

In order to undertake this research the primary tool used for data collection was interviews with the aid of questionnaires. In order to improve data quality one-to-one interview sessions were held. The natures of those interviews were semi-structured. The target audience consists of supply chain, logistic and category managers from leading retailers and manufacturers of the country. The rationale behind development of questionnaire was to collect information regarding key performances measures in retail supply chain management. The questionnaire was designed to collect relevant and elaborative information by utilizing minimum time. Furthermore the data collected was analyzed by using Microsoft Excel. Extra Add-in with the name of Analysis Tool Pack was installed to perform descriptive data analysis.

4. Measuring Retail SCM Performances

There are variety of performance evaluation techniques and frameworks for SCM with the underline criteria of reducing costs, adding value and improving customer satisfaction. Since in many organizations a high cost and budget is involved with the supply chain activities, performance measurement of these activities is very critical (Lankford, 2004).For retail management these measured can be classified as:

1. Effective inventory or Stock management.
2. Category & Space management.
3. Continuous collaboration & forecasting.
4. Supplier negotiation and management.

Effective inventory or stock management is a key parameter for effective retail operational. Managing inventory manually can result in inaccuracy. One of the major bottlenecks in managing retail SCM is the inventory record inaccuracy. The financial impacts of the inaccurate inventory levels could be very drastic and it has direct impact on the retail operations and management. Inventory inaccuracies also hinder the implementation of decision support system for automated ordering & forecasting. In addition, the prevention and correction measures for the inventory cannot be implemented seamlessly till we have picture of true inventory. (DeHoratius et al, 2008)

Category Management Process includes managing the products by assigning them to various categories. The category manager is responsible for managing the assigned category as an individual business unit. The category management umbrella consists of assortment planning, pricing, merchandising strategy,

promotion management & space management. Improvement in the category management can have direct impact on retail productivity. Allocating the appropriate space to each category can also affect the stock level and the supply chain of key categories. According to Weng and Gerchak (2001) the demand rates by retailers depends on the shelf or display space dedicated to the products.

To improve the SCM and on-shelf availability Levy and Weitz (2011) suggests to continuously sharing business information between retailers & suppliers. The exchange of demand & forecasting information in a collaborative way has a direct impact on optimal SCM and can result in:
• Improved customer satisfaction
• On shelf availability
• Product quality
• Pricing

The forecasting models with proper integration of historical and market data can improve the decision making in procurement by managing customer demands.

Supplier negotiation and management is backbone in retail SCM. The result of successful negotiation process is a commitment. This business commitment could result in contract agreement. These contract agreements have a direct impact on level of business, stock management, logistic planning, pricing and ordering mechanism (LI et al, 2003). The negotiation attribute could vary from supplier to supplier due to the nature of the assortment. Managing the competition among suppliers, development of private labels and automated ordering process can significantly reduce the inventory and out of stock problems through the process of negotiation and supplier management.

5. SCM and IT
In this era of globalization, businesses are operating in highly competitive environment. In order to gain competitive advantage and to operate efficiently organizations are focusing more on effective and efficient SCM. Over the past years the advancements in the IT with the development of accessible, practical and affordable means of operating SCM activities, enable the organization to streamline their procurements, logistics, inventories and customer satisfaction levels.

The importance of IT enabled SCM is highlighted by the fact that several large companies spend estimated 50% of their annual capital expenditure on various IT/IS solutions. The reason behind this significant investment: research shows that the investments in the IT/IS systems for efficient SCM has a positive effect on the firms productivity. Moreover, in the rapid changing business environment investments in the IT/IS system for SCM is more for the reason of survival for the organization rather than competitive advantage. Therefore nowadays the emerging trend for the companies is to invest in IT/IS for SCM excellence.

IT is not only facilitating the SCM activates through the use of software only, the advancement in the internet enabled the new endeavor in "e-technologies". As a result new developments in the form of e-business and e-supply chain management are assisting the implementation and integration of SCM activities more efficiently (Talluri, 2000). On the other hand, advancement in telecommunication and internet increased the richness of communication between firms as well as with customers.

6. Achieving SCM excellence in Retail Management
According to Lockamy (2008) the organization needs a subtle change in their business focus and operations to enjoy the benefits of effective SCM. Moreover, the organizations are required to overcome the significant SCM barriers that exist in the form of insufficient communication, lack of common goal, IT infrastructure and functionally-oriented performance metrics.
Implementing the IT solution in retail at the Head office, store and warehouse levels is a tricky task.

Organizations need to have the right mix of technology at these levels for effective design and implementation of SCM.

There is no doubt that organizations opt for better technological solution for their SCM operations but they need to be very careful in their implementation approach. In 2001 Nike blamed their problem of access inventories and delays to i2, the vendor of their SCM system, which costs the company around $100 Million in sales. Another famous example of ineffective supply chain implementation is Hershey Food Corporation. The company spends $112 million in their supply chain management system which included software and computer system from SAP AG, Manugistics, and Siebel Systems. It is estimated that the company will lose $150 million in the next year due to delays and implementation inefficiencies caused by the new system (Sridharan et al, 2005).

So the question is how can retailers achieve the benefits of effective SCM through proper implementation of IT solutions?

Although the contribution of IT span and facilitate all the activities involved in retail management such as accounting, finance, controlling and human resource. However this paper analyzes impact of IT on the key performance measurement in retail SCM already discussed in section 4.

6.1 Inventory & Stock Management

In stock management many parties are involved IT is helping suppliers, merchandisers, and managers in the efficient and collaborative processing of the order and operations management. In addition to automating the ordering process the advance IT tools are helping supply chain or logistic managers in meeting and monitoring the arrival times of the shipments and to take preventive and precautionary step in the case of shipment delays.

### 6.2 Procurement & Category Management

The role of IT applications and systems are very critical in procurement & category management. The supporting applications facilitate run time communication between procurement teams, store teams, manufacturer and category managers by analyzing stock and price analysis. The historical analysis gives insight to the sales pattern and consumer behavior which streamlines the process of procurement. The IT enables application has made this process more structured and analytical.

By integrating the internal data sources (retail sales and category data) with external data sources (market research & survey) gives a holistic view and tracking for business performance measurement (BPM).

6.3 Supplier Negotiation & Management

Continuous collaboration and communication with supplier is a key element of retail management. Since various marketing and branding elements such as shelf space, branding space or number of promotions are part of supplier contracts. IT applications are enabling various decision support systems for supplier selection, tracking, and negotiations. Based on various criteria's the Top suppliers are also selected by the intelligent system to be the category captain.

The advancement in networking and communication system has also facilitated the process of vendor negotiations where negotiation can took place remotely. Various studies also highlighted the fact that IT is also the contributing factor is decreasing the IT transaction cost between buyer- supplier and have positive effect on the that relationship and business.
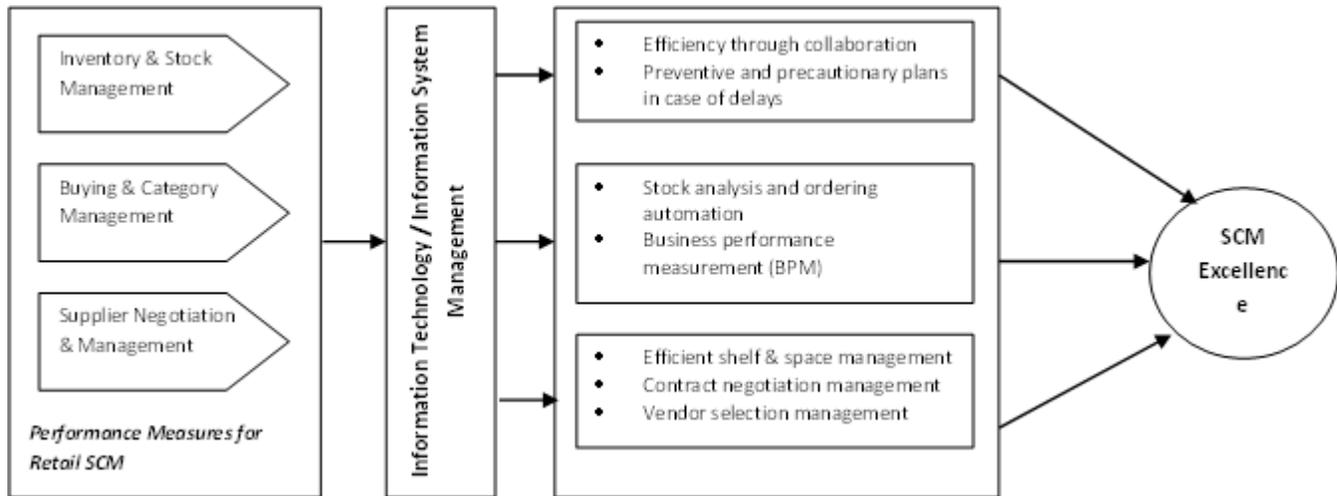
Figure 1: Framework for achieving SCM excellence in retail sector

7. Conclusion

Information Technology brings a drastic and revolutionary change in the way supply chain is managed in retail industry. The paper explores the drastic impact of managing the SCM inefficiently. Since in retail industry the supplier side is more dominant the retailers have to manage their SCM in order to take competitive advantage. The performance measure that can result in better profitability, meeting customer demands and achieving organizational goals could be achieved by supply chain excellence. The developments in Information System (ERP systems and e-business) have significantly shaped the efficiency, responsiveness, effectiveness of supply chain activities in retail. Various IT and IS system are enabling the collaborating environment between buyer - supplier and also resulting in intelligent system for forecasting and decision making. In today's business environment any sustainable SCM system cannot be managed without use of IT/IS for retail management.

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