INFORMATION RISK MANAGEMENT IN SMALL AND MEDIUM ENTERPRISES IN INDIA

ASHWIN.P.KARTHIK, ADITHYA VARMA, KRITHIKA RAVINDRAN, S.GOPINATH

Information Technology Department & Mechanical Engineering Department, Sri Venkateswara College Of Engineering,India

Email-ashwinkarthik1994@gmail.com,adithyavarma15@gmail.com,krithikaravindran18@gmail.com,sgopi@svce.ac.in

Abstract: The purpose of this research is to investigate the supply chain information risk factors existing in small and medium manufacturing industries (SME) in India. The small scale segment is a manifestation of India's socio-economic development model and has met with the country's long term expectations in terms of contribution to GDP, major part of Indian industrial base, employment and exports. Small scale industries contribute about 10% of total GDP. The SME industries are supported by the government and financial institutions like MSME,TIIC, SBI etc. in terms of technical and financial assistance. Even then SME's are lagging in infrastructure and communication systems etc. In order to analyse the information risk factors in SME, the conceptual model was designed with two independent variable such as internal integration and external integration and top management commitment as a moderating factor. The performance is measured from the technical performance and customer related performance.

Keywords:GDP (Gross Domestic Product), SME (Small and Medium Enterprises), SCM (Supply Chain Management),ERP (Enterprise Resource Planning), CUG (Closed User Groups)

1. INTRODUCTION

Developing information systems for supply chain management is not an easy task for any kind of organization. There have been few efforts on creating an efficient information system, but only a few of them have succeeded and others have led to failure. Even those who had succeeded in designing have sometimes failed in implementation. The critical success or the failure factors that are relevant to other types of information systems may not significantly apply to that of in supply chain management. So this has been provided by improving the deliverables and therefore increasing the number of customers, by understanding the genesis for successful implementation. [1]

Today business environment worldwide is experiencing a shift towards a knowledge-based economy where the performance of an enterprise depends much on the performance of its partners in the value chain. It has been recognised that high transactional cost will be involved if information cannot be effectively and efficiently communicated with customers externally and with suppliers internally .Value in a supply chain is generated by lowering the firm's or partner's cost of sourcing or sales or increasing the service level. This can be achieved by using information technologies designed to manage complex information flows within or between firms. The use of information technology to share data between buyers and suppliers has resulted in the growth of virtual supply chains.

Today, the understanding about various information risks like virus, worms, and trojans has increased and organisations have become more cautious in their approach towards managing information. But the efforts to manage information risks generally focus within the organisational boundaries and are fragmented in their approach, while the increased stress to work on real time information facilitated by intranet, extranet demand new initiatives to manage these risks. [2]

The term "information systems" has been defined to denote any of a wide combination of computer hardware, communication technology and software designed to handle information related to one or more business processes. [3]

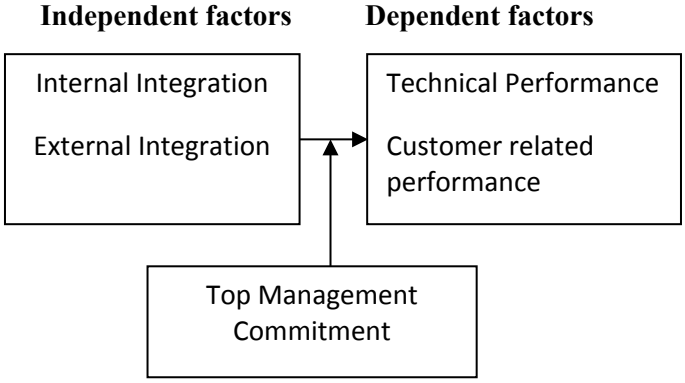
The term "supply chain" is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers .[4]

However, IT investment in the supply chain process does not guarantee a stronger organizational performance[5], but implementation of IT in the SCM can enable a firm to develop and accumulate knowledge stores about its customers, suppliers, and market demands, which in turn influences firm performance.[6]

2. LITERATURE REVIEW

The two key components of the supply chain are Electronic Commerce (e-Commerce) and the role of Small-to-Medium-sized Enterprises (SMEs). SMEs use e-Commerce in their day-to-day business activities to merge completely with the supply chains. They offer examples of small businesses operating at a local or regional level as well as with national and international supply chains. The benefits and issues of e-Commerce for SMEs are analysed with respect to supply chain management. The actual requirements for SMEs to receive a more associated position with both customers and suppliers are studied. As globalization has made the present business scenario more competitive with increasing challenges, customer expectations, and expanding market there is constant pressure on companies to cut down the cost across the supply chain, minimize inventory, widen logistics operations, augment product variety, improvise delivery schedules and quality, and decrease material flow time. In order to attain these goals, organizations are increasingly adopting Enterprise Resource Planning (ERP) systems. The most important aspect of ERP software is that core corporate activities, such as manufacturing, HRs, finance, and supply chain management have been automated and improved considerably by employing the best practices, in order to facilitate greater managerial control, fast decision making, and considerable decrease of business operational cost[7] [8].Though there are surveys on various features of ERP utilizations in companies, very little has been reported on managing risks and unpredictability of ERP projects. The value in a supply chain is produced by lowering the firm's cost of sourcing or sales or increasing the service level. This is achieved by deploying information technologies designed to manage complex information flows within or between firms [9].It has resulted in the sharing of data between buyers and suppliers which in turn has increased growth of virtual supply chains [10][11] where the main driver would be information instead of the actual physical flow of goods. This has led to the emergence of information supply chain that focuses on the management of information flows and represents the principles of managing technology and processes in an optimal way [12].Eventually, supply chains emerge as an example of an IT-enabled inter-organisational configuration, where the coordination of logistics processes between organisations is the key to good performance [13]. Thus, on the whole, it is studied that SMEs can actively use e-Commerce technologies for bonding and developing their roles in the supply chain. The substantial benefits of e-Commerce include faster communication, more effective dissemination and collection of information, and closer relationships throughout the supply chain whereas the major issues are technology incompatibilities and a lack of understanding of potential benefits. ERP will help managers to successfully plan, implement and operate ERP systems using risk management framework. The success factors are commitment from top management, re-engineering of the existing processes, selecting the right system, and integrating ERP with other business information systems. The appropriate identification of risks is a major challenge. The effective project management of ERP projects requires integration of risk management with scope, time and cost management. The supply chain and information management is yet to formalise risks associated with information in a supply chain. It has made efforts to contribute an integrated framework for information risks mitigation and quantification. The framework will guide the supply chain and IT managers to understand and manage risks related to information in a supply chain.[13]

3. CONCEPTUAL MODEL



3.1. ELEMENTS OF CONCEPTUAL MODEL

In this conceptual model Internal integration and the external integrations are the constructs acting as independent variable. The technical performance and the customer related performance are acting as dependent variables. Whereas ,the top management commitment is a moderating factor.

4. INFORMATIONAL RISK

The information risk can be defined as "the probability of loss arising because of incorrect, incomplete, or illegal access to information" and information risk management as "the management of information risks in supply chain through coordination or collaboration among the supply chain partners so as to ensure profitability and continuity". [2]

The information risk is classified into internal integration related to the communication between the departments within the organization and the external integration is related to communication between the suppliers and customers with the organization.

4.1 INTERNAL INTEGRATION

4.1.1. IT on Procurement

The use of the IT in managing purchasing in the Supply chains has developed rapidly over the last 10 Years. The research demonstrates that the IT is utilized in a variety of procurement applications including the communication with vendors, checking vendor price quotes, and making purchases from vendor catalogs. The other more popular use of the IT in supply chains is in order processing applications. The most frequent use of the IT here is in order placement and order status.[14]

4.1.2. IT on Operation

One of the most costly aspects of supply chains is the management of inventory. The research has shown that the most popular use of the IT in this area is the communication of stock outs by customers to vendors, or the notification of stock outs by companies to their customers. The IT has enabled companies to more quickly institute EDI information programs with their customers. Production scheduling has traditionally been the most difficult aspect of SCM. The IT has enabled firms to minimize the difficulty in their production scheduling by improving the communication between vendors, firms, and customers.[14]

4.1.3. IT on logistic

The most popular use of the IT in supply chains is in the management of transport. Transportation typically is the highest cost component in a supply chain, according to literature review. The research showed that the monitoring of pickups at regional distribution centres by carriers is the most popular application of the IT in this area. This is particularly important for a company, since tracking shipments to regional depots provides the firm with data on the reliability performance of the carriers it is using. In production and logistics, many parties are involved in coordinating all the processes that are involved in fulfilling a customer's order. To integrate Order Cycle, manufacturers, merchandisers, and their Trading partners are using IT.[14]

4.2 EXTERNAL INTEGRATION

External Integration are generally based on the following:

4.2.1 IT on customer relationships

Many management experts argue that, by focusing on total customer satisfaction, a company can improve its processes to deliver better service at a lower cost. The research shows that some of the companies use the IT to receive customer complaints, while the other utilize it for emergency notifications.[14]

4.2.2 IT on vendor relationships

Some researches express a positive relationship between an IT-based supply chain and organizational benefits. Their results show that IT decreases transaction costs between buyers and suppliers and creates a more relational/cooperative governance structure. Trust plays a key role in any organizational relationship that IT facilitates it. Trust exists when a party believes that its partner is reliable and benevolent. This can be obtained by IT. Studies recognize long-term orientation commitment as a predictor for successful interorganizational relationships. Long-term orientation refers to parties' willingness to exert effort in developing long-term relationships. Productivity gains in the supply chains are possible when firms are willing to make transaction or relation-specific investments, an important indication of commitment that was increased by IT. Several studies suggest that successful buyer supplier relationships are associated with high levels of information sharing. IT caused to open and collaborative information sharing lead to positive effects on inters firm relationship.[14]

4.2.2 External Logistics Integration

External logistics integration is of strategic importance, as it can have a significant impact on the agility of both the supplier and buyer firms. Collaborative interdepartmental integration

involves a predominantly informal process based on trust, mutual respect and information sharing, the joint ownership of decisions and collective responsibility for outcomes. [15]

4.3 TOP MANAGEMENT COMMITMENT

Top-level managers have a better understanding of the needs of SCM because they are the most cognisant of the firm's strategic imperative to remain competitive in the marketplace. Top management support, leadership and commitment to change are the important antecedents. [16]

4.3.1 AWARENESS OF TECHNOLOGY ADVANCEMENT.

Generally all companies should keep themselves updated with the technology that has been implemented related to their fields. Lack of awareness of technology will make them to stand in the same position whereas companies using it will improve its performances.

4.3.2 INTERESTED TO IMPROVE OR UPGRADE THEIR FACILITIES

The small scale entrepreneur mostly doesn't show any interest in improving their facilities. The more or like want to run the show with the existing facilities.

4.3.3 ALLOCATION OF FUND FOR TECHNOLOGY IMPROVEMENT.

Apart from awareness and interest, they should be willing and sufficient funding to upgrade their facilities .When their intension is to improve technology automatically the performance of the company increases. Technology is one of the factors directly proportional to the performance of the company.

4.3.4 INTERESTED TO IMPROVE THE GREEN ENVIRONMENT IN INDUSTRY

The small entrepreneurs expecting the production with quality, quantity and without delay and without improving the conducive environment for the employee and for all.

4.4 PERFORMANCE MEASURES

An important component in supply chain design and analysis is the establishment of appropriate performance measures. A performance measure or a set of performance measures is used to determine the efficiency and/or effectiveness of an existing system or compare competing alternative systems. [16]

4.4.1 TECHNICAL PERFORMANCE

The speedy information sharing between the suppliers and the customers to improve the quality, quantity and customer satisfaction, also it induces to reduce the price by avoiding non value added activity.

4.4.2 CUSTOMER REALTED PERFORMANCE

The customer would be satisfied only by on time delivery of product with the required quality and quantity.The information system speed up the decision making process and also improves the customer- supplier relationship.

5. CONCLUSION

The conceptual model is designed for informational risk in SME . The internal integration system like ERP, TALLY, INTRANET, RFID,CUG are not implemented fully and in some of the industries, the awareness of the integration systems are very less. In the case of external integration, customers are motivating to implement EDI and EXTRANET etc. Top management commitment is the only moderating factor which decides the technical and customer related performance of the supply chain management.

REFERENCES

[1] S. Flowers, "Information systems failure: identifying the critical failure factors", Failure and Lessons Learned in Information Technology Management 1 (1), pp. 19-29, 1997.

[2] Mohd Nishat Faisal, D.K. Banwet and Ravi Shankar Information risks management in supply chains: an assessment and mitigation framework

[3] S. Flowers, Software failure: management failure, Chichester,UK: John Wiley, 1996.

[4] M.J. Tarokh and J. Soroor, "ie-SCM: Intelligent Electronic Supply Chain Management", 2005 IEEE International Conference on Service Operations and Logistics, and Informatics, Beijing, China, August 2005.

[5] Lucas Jr. H. C. and Spitler V. K., "Technology use and performance: A field study of broker workstations," Decision Sciences, vol. 30, pp. 291-311, 1999.

[6] Tippins M. J. and Sohi R. S., "IT competency and firmperformance: Is organizational learning a missing link?,"Strategic Management Journal, vol. 24, pp. 745-761,2003.[7] Bancroft, N., Seip, H. and Sprengel, A. (1998), Implementing SAP R/3: How to Introduce a Large System into A Large Organization, Manning, Greenwich, CT.

[8] Holland, C. and Light, B. (1999), "A critical success factors model for ERP implementation", IEEE Software, May/June, pp. 30-5.

[9] Biehl, M. (2005), "Selecting internal and external supply chain functionality: the case of ERP systems versus electronic marketplaces", Journal of Enterprise Information Management, Vol. 18 No. 4, pp. 441-57.

[10] Yusuf, Y.Y., Gunasekaran, A., Adeleye, E.O. and Sivayoganathan, K. (2004), "Agile supply chain capabilities: determinants of competitive objectives", European Journal of Operational Research, Vol. 159 No. 2, pp. 379-92.

[11] Christopher, M. (2000), "The agile supply chain competing in volatile markets", Industrial Marketing Management, Vol. 29 No. 1, pp. 37-44.

[12]Bu´rca, S-d., Fynes, B. and Marshall, D. (2005), "Strategic technology adoption: extending ERP across the supply chain", Journal of Enterprise Information Management, Vol. 18 No. 4, pp. 427-40.

[13] Lewis, I. and Talalayevsky, A. (2004), "Improving the inter-organizational supply chain through optimization of information flows", Journal of Enterprise Information Management, Vol. 17 No. 3, pp. 229-37.

[14] Mehdi Fasanghari, Faculty Member of Iran Telecommunication Research Center (ITRC), Tehran, Iran fasanghari@itrc.ac.ir. "Assessing the impact of information technology on supply chain management",International Symposium on Electronic Commerce and Security. DOI 10.1109/ISECS.2008.208

[15] Romano, P. (2003) 'Co-ordination and integration mechanisms to manage logistic processes across supply networks', Journal of Purchasing & Supply Management, Vol. 9, pp.119–134.

[16] T.N. Srikantha Dath, Chandrasekharan Rajendran, K. Narashiman. An empirical study on supply chain management in India: the perspective of original equipment manufacturers and suppliers. ,European J. Industrial Engineering, Vol. 4, No. 1, 2010 Copyright © 2010 Inderscience Enterprises Ltd