

A study on adoption of supply chain maturity model for enhancement of supply chain performance in industries.

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Abstract: The improvement of overall effectiveness of supply chain is a significant challenge. The complexity of relationships within a supply chain, and the number of issues regarding pressure that need to be clarified and administered is a great task. Every industry aims to maintain higher supply chain performance. The Supply Chain Performance determines level of profitability of the Industries. Higher the performance, higher will be the profitability. This paper attempts to study the adoption of Supply Chain Maturity model to enhance higher Supply Chain Performance which would control the supply chain pressure. This is an exploratory based research carried out with the intent of finding the impact of maturity model on Supply Chain performance in the presence of supply chain pressure through intensive literature. The study acknowledges the fact that, when a company achieves a higher maturity level and maturity model it moves towards superior performance. Higher the level of maturity, higher would be the level of performance. Higher level of maturity enables positive control over supply chain pressure and there by higher performance. The industry will be benefit when it adopts supply chain maturity model which is empirically proven and mitigation supply chain pressure is the new observation done. The paper is based upon the secondary data and purely a conceptual study.

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1. Introduction

Today's competitive market's great challenge is demanding customers. Every industries competition is ultimately based upon their level of investments in scale, scope, brand equity, and in their ability to deploy these assets. It's the time to enrich in capabilities to encounter the growing competition. Thus Supply chain management is gaining importance in the current situation to improve the business process towards cost control and customer satisfaction. As Vorst and Beulens (2002) defines "Supply Chain Management is the integrated planning, co-ordination and control of all business processes and activities in the supply chain to deliver superior consumer value at minimum cost to the end-consumer while satisfying requirements of other stakeholders." The purpose of supply chain management is to improve collaboration and thrust among the supply chain partners. In the recent years, researches are increasingly focused upon the key areas of supply chain maturity and in development of the performance measures for strategic management of supply chain processes (Gunasekaran et al., 2001).

To compete successfully in the global free market, the corporate must have adequate knowledge of scientific management in minimizing cost and

maximizing customer service. This requires efficient supply chain. Due to this new business approach, many firms are handling processes as strategic assets. In a supply chain, processes are viewed as assets requiring investment and development as they mature. Business process proposes that a process has a lifecycle that is assessed and it is followed by process maturity. The concept of supply chain maturity witnesses five different stages like adhoc, defined, integrated and extended levels (Fisher., 2004). The Supply Chain Operational Reference (SCOR) framework was to explain the concept of maturity where the ad-hoc stage represents the most primitive stage of any supply chain and the extended stage refers to the most matured multi-firm supply chains. Maturity models are valuable frameworks for corporate leadership. They are used for evaluating the current situation based upon key competitive factors, setting the goals pertaining to which factors are implemented next and identifying the items considered more critical for improvement actions and priority resource. This maturity model enhances effective supply chain performance and simultaneously controls the uncertainties.

In recent years measuring performance has gained higher attention from researchers and

practitioners. Measuring the supply chain performance is vital for all industries. The performance of a supply chain network decides the company's success and is therefore, it is critical to develop a mature supply chain approach for the transparency of clear supply and demand collaboration. Here, the concept uncertainty arises as a critical factor that has to be faced with agility in supply chain.

This paper tries to bring out a proposition that with maturity model, performance can be increased and supply chain pressure can be controlled. The paper's structure is as follows: first, maturity model, supply chain uncertainty, supply chain performance were reviewed. Second the conceptualization of adopting supply chain maturity model to control supply uncertainty and enhance supply chain performance is discussed. Third, the practical use is briefly described. Finally, conclusions are drawn.

2. REVIEW OF LITERATURE

Supply Chain Maturity:

A maturity model is a framework that describes a specific area of interest, a number of levels of sophistication at which activities in the area can be carried out. Maturity models help organizations to assess a specific area against a norm to identify lack of efficiency that can have a negative impact on business benefits. The current day competition is based upon the companies' capabilities, or "complex bundles of skills and accumulated knowledge, exercised through organizational processes" (Day, 1994), rather than their strategic assets. It is implied that maturity model enables control over pressure. Lockamy and McCormack, (2004), Netland et al, 2007; Srai and Gregory, (2005) have contributed a noticeable research in explaining the models of supply chain maturity. SCMAT (Supply Chain Maturity Assessment Test) was conducted at the Spanish clothing manufacturer Zara to show the need for quick assessment tool for mapping the maturity of the company's supply chain operations. The maturity model aims to aid companies to benchmark the maturity of their operations relative to industry best practice, and assumes that companies pass through a number of maturity levels (Adhoc, Defined, Linked, Integrated and Extended) before reaching best practice. (Lockamy and McCormack, 2004)

The maturity model concept is probably best known within information technology and software development in particular, where the Capability Maturity Model (CMM) describes stages in the use of information technology. The disciplines where maturity models have been developed are technology, innovation, R&D effectiveness, collaboration,

reliability, quality management, product design, knowledge management, service operations etc. (Netland et al, 2007).

Maturity test is a self-assessment test which involves comparing activities of the firm against a model for business excellence through their study illustrated the use of supply chain maturity model as a valuable analysis framework with a good theoretical basis. Their research suggested that process performance collected using SCOR area is strongly related to supply chain maturity. The study also focused on certain performance measures such as cycle times and inventory levels where continuous improvement efforts are possible. These cycle time and inventory are subject to uncertainty. The above reviews trust that in the corporate practical scenario when there is higher supply chain maturity level it would lead to superior performance. Higher supply chain maturity level is possible by following means of adopting maturity model. This clearly gives a focus that when there is Supply chain maturity the business house would move towards good performance level.

When maturity model is developed in an organization institutionalization takes place where policies, standard and organization structure is clearly observed. A maturity model indicates that predictability, capability, effectiveness and control efficiency are remarkable of the organization. Insight into the literature enables a proposition adopting maturity model to enhance the supply chain performance and thereby control uncertainty.

Supply chain pressure:

Uncertainty crops due to the interdependency of activities in a supply chain. It refers 'if one activity fails, the chain is disrupted, creating poor performance and destabilizing the workload in other areas, thereby jeopardizing the effectiveness of the supply chain'. It is those events and variables that have a random and unpredictable variation, impacting the very existence of a Business (Lenz 1980; Turner 1993). The continuous effect of uncertainty is referred here as supply chain pressure. The well-known causes of supply chain pressure irrespective of their nature of industry are business pressure, legal pressure, technology pressure, Logistics & transportation pressure and Information pressure. It includes the uncertainties that prevail in normal course of business due to demand, supply and customer also.

"supply chain uncertainty refers to decision making situations in the supply chain in which the decision maker does not know definitely what to decide as he is indistinct about the objectives; lacks information about the supply chain or its

environment; lacks information processing capabilities; is unable to accurately predict the impact of possible control actions on supply chain behavior; or lacks effective control actions (non-controllability)" - Vorst and Beulens(2002). In their research paper focused on the concepts of uncertainty in supply chain decision making process and in developing a generic list of indicators for the sources of uncertainty for Supply Chain Maturity. To be reliable in an uncertain and changing environment, firms must be able to quickly respond to changes. The ability to do this in a useful time frame is called agility. An important factor to be noted is that any measure taken to increase agility will lead to increase in complexity, which works against agility.

Today's markets are becoming hyper competitive and include players from all corners of the globe who are increasingly more demanding in their requirements; product life cycles are getting compressed and new manufacturing technologies are cropping up which resulted in the great out-sourcing wave. Supply chain pressure has become the major force impacting the Supply Chain. Most of researches have been done on uncertainty. This paper is tries to coin the term supply chain pressure rather than uncertainty in wider perspective. Some researchers classify uncertainty on the basis of the source of the uncertainty. Many researches Classified uncertainty into the following five sub dimensions - volatility in marketing practices, product obsolescence rate, unpredictability of competitors, unpredictability of demands and tastes, and change in production or service modes. Gupta & Wilemon (1990) proposed four uncertainty factors- 1) increased global competition, 2) continuous development of new technologies that quickly cause existing products to be obsolete, 3) changing customer demand needs and requirements which truncate product life cycles, and 4) increasing need for involvement of external organizations such as suppliers and customers. Li Suhong 2002; and Zhang's 2001; Some Studies envisioned uncertainty as unexpected changes in customers, suppliers, competitors, and technology. Mason-Jones and Towill (1998) state that, 'those companies which cope best with uncertainty are most likely to produce internationally competitive bottom-line performances'. They are capable of handling the supply chain pressure.

Supply chain performance:

Supply Chain Performance is the core success of efficient supply chain practice. The usage of the best practices to enhance the business performance of companies has become a vital topic of discussion of researchers in recent years. Maturity models developed to aid companies in benchmarking the

operations also serve as a parameter to measure the supply chain performance. Srai and Gregory (2005) have developed the supply chain capability map based on the resource view to measure performance. Lee (2004), comment that supply chain partners share risk, costs and rewards when improving supply chain performance. The supply chain council (2001) suggests that key performance indicators are automatically measured and reported in the same format throughout the supply chain providing consistency and comparability. The key performance management system translates supply chain strategy into objectives, metrics, initiatives, and tasks customized to each group and individual in the supply chain. The SCOR model (Supply chain Operations Reference Model) a cross-functional framework developed by Supply chain Council provides a high-level model of supply chain operations such as Plan, Source, Make, Deliver and Return (Huang et al.,2004). This SCOR model would be used to guide companies on modeling their processes and then benchmarking performance against other supply chains. The companies can use the SCOR to devise improvement plans and can improve their performance as well as their benchmarks. The literature shows that performance is the focus of organization and there is positive impact of maturity model on supply chain performance.

3. Adoption of supply chain maturity model:

The literature emphasis that today's competitive scenario of industry needs business process orientation basically to grow to the level of maturity model to enhance supply chain performance. The maturity model develops the industries predictability, capability, effectiveness and efficiency in decision making. It faces the various stages namely, Adhoc, Defined, Linked, Integrated and extended that ensures the maturity of the organization. The supply chain pressure is in the form of business, Legal, information, technology, demand or supply. The elements of maturity model predictability, capability, control and effectiveness help to reduce uncertainty and ensure supply chain performance. The model would be significant contribution to the sectors of Information Technology, automobile, manufacturing, textiles and service. From the insight into the above literature, the following proposition is arrived

Adoption of maturity model enables enhanced supply chain performance and controls supply chain pressure.

This conceptual model illustrates the impact of supply chain maturity on supply chain performance in the presence of supply chain pressure. The performance of a supply chain depends on the level of control of supply chain pressure by

developing high level of supply chain maturity. It is from this model we infer the following propositions. Supply chain maturity indicates as a parameter to measure the capability map based on measure performance. Higher the maturity level of a supply chain the better will be its ability to handle disruptions – uncertainty collectively termed as supply chain pressure.

The conceptual model

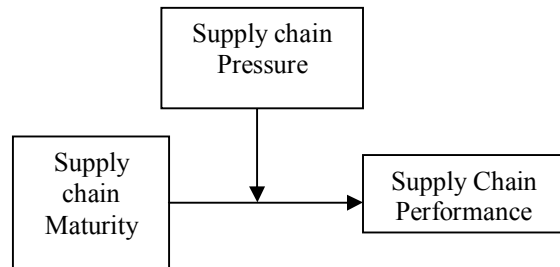


Fig.1 - The impact of supply chain maturity on supply chain performance in the presence of supply chain pressure.

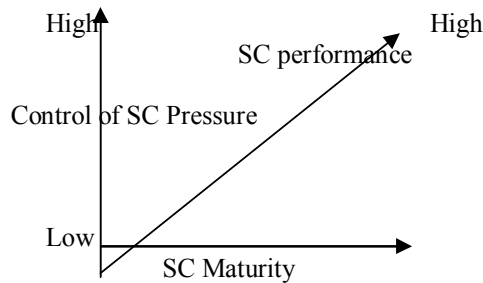


Fig.2- Supply Chain Maturity Graph.

This paper illustrates the impact of supply chain maturity model as a valuable frame work to ensure supply chain performance. It indicates that supply chain pressure reduces supply chain performance. Supply chain pressure is inevitable, but mitigating them proves the efficiency of the corporate. Perhaps when there is supply chain maturity model, supply chain pressure can be controlled and there would be positive impact over supply chain performance. This model is an attempt to propose that supply chain maturity level will have positive impact in controlling pressure. The key components of Supply chain maturity that is predictability, capability, effectiveness and efficiency in decision making will positively mitigate the pressure that arise in the form of business, legal, technology, Logistics and Competition which leads to Supply chain Performance.

‘Every corporate would attempt to a high supply chain performance’. This is possible by the variable ‘supply chain maturity’ which has positive

impact on existing independent variable ‘supply chain pressure.’

When there is high level of supply chain Maturity it significantly reduces the level of pressure. Supply chain with lower levels of maturity will result in higher pressure which has negative impact on supply chain performance.

The study suggests that high level Supply Chain Maturity enables high level of control over supply chain pressure, ultimately moving towards high level of supply chain performance.

4. CONCLUSION:

Various reviews brings out that maturity level is an aid to corporate to bench mark their operations relative towards industry best practice. Supply chain pressure is observed ‘if one activity fails the chain is disrupted, creating poor performance and destabilizing the workload in other areas, thereby jeopardizing the effectiveness of the supply chain. The study brings out that maturity model improves the corporate to maintain high performance level by mitigating the supply chain pressure. The graph illustrates the impact of the variables discussed. This paper suggests that mitigation of supply chain pressures in a supply chain and performance systems, through maturity models developed from an innovative PMS perspective, can significantly contribute to the theory and practice of supply chain management.

Maturity models, supported by SCOR (supply chain operation reference model), enable access to a complete process definition and measurement system. By implementing the model, company can improve its performance by looking for a superior maturity level in its supply chain processes. High maturity level has positive impact on supply chain pressure, hence supply chain performance. This model will contribute to the industries performance when tested empirically. All industries like manufacturing, information technology, automobile, food, textile, pharmaceutical, agriculture etc., are towards higher supply chain performance through efficient supply chain management. This is remarkable contribution for industries.

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