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Study on key Issues and Critical Success Factors of e-Supply Chain Management in Health Care Services

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Abstract

Due to tremendous growth in information technology (IT) and economic globalization now the competition is among enterprises and their supply chains and not restricted to enterprises only. In the present global economic scenario, the organizations are forced to rethink their operations, alliances, partnerships and strategies to cope with these and similar changes. Supply chain competitiveness has been emerged as one of the strongest tool for gaining competitive advantages. Although healthcare industries have responded serious competitive challenges through their network alliance, the theoretical element for sustainable competitive advantage of healthcare supply chain has not been well examined. A supply chain is competitive if it is able to create and deliver value for its customers and its components. In the growing economy of India, supply chain competitiveness (SCC) is a real solution to the problems faced by organizations in this global environment, which now ultimately leads to a World of e-SCM (Electronic Supply Chain Management). The present paper discusses some of the e-supply chain competitiveness issues and presents roles of suppliers, manufacturers and distributors, some future perspectives of e-SCM with an aim to identify the critical issues related to supply chain competitiveness and presents roles of the major components of supply chain, altogether. The authors have also discussed the emerging challenges of healthcare supply chains and their impact in collaborative healthcare network for global markets.

Keywords

Economic Globalization, Competitiveness, Customer's Satisfaction, Electronic Supply Chain Management, Healthcare Industry, Healthcare Supply Chains, supply Chain Competitiveness

1. Introduction

competitive challenges through their network alliance. But the theoretical element for sustainable competitive advantage of healthcare supply chain has not been well examined. McKone-Sweet et al. [2005] established that these industries have recognized serious competitive challenges through their supply chain management. The serious obstacles still exist in implementing healthcare supply chain management including lack of executive support, misalignment of supply chain partners, lack of performance measures and inadequate education and training. Besides, with the lack of theory development, supply chain management in healthcare has not been well examined. This paper discusses the emerging challenges of healthcare supply chains and their need for understanding the upstream and downstream collaborative healthcare network for global markets. Supply Chain Competitiveness (SCC) refers, in general way, to gain competitive advantages by one supply chain on the other (competitive supply chain). According to Lim et al (2006) and Brotherton (2004) Supply chain competitiveness cannot be thought as a single unit, but it is an integrated effort of the components of supply chain as a whole. The major components of supply chain are suppliers, manufacturers, and distributors. SCC is an integrated effort of the major components which comprise it. Figure-1 shows these components of Supply Chain Competitiveness, below:

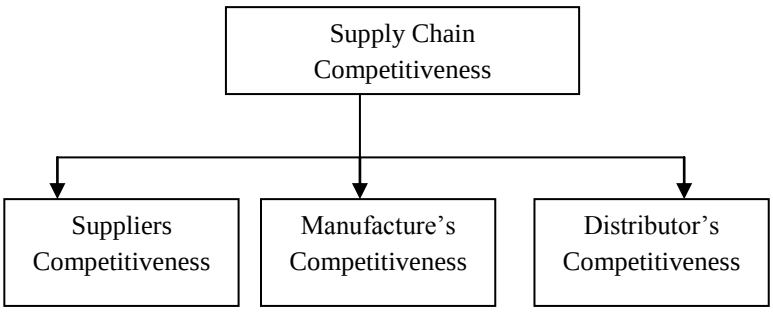

Figure 1: Components of Supply Chain Competitiveness [Ajay Verma et. al. / International Journal of Engineering Science and Technology, Vol. 2(11), 2010, 6209-6213]

The supply chain management deals with tangible products but the healthcare supply chain is different in that it focuses on intangible service aspects. There are some key elements of healthcare supply chains:

(i) Supply side (e.g., the feeding processes of diverse segments of healthcare customers) and demand side network (e.g., medical support services network);
(ii) Process flows (e.g., information flows, product/services flows and business processes flows);
(iii) Multiple outcomes (e.g., cost, quality, delivery,and customer value). The healthcare issues have become forefront in policy debates so the ailing healthcare supply chain has called for prescriptive solutions as well as descriptive assessment .

Figure -2, below shows key aspects of health care supply chains with supply network of diverse segments of healthcare customers, fuzzy frontend (e.g., diagnostics and preventive healthcare practices) and predictive back end (e.g., treatment and responsive healthcare practices).
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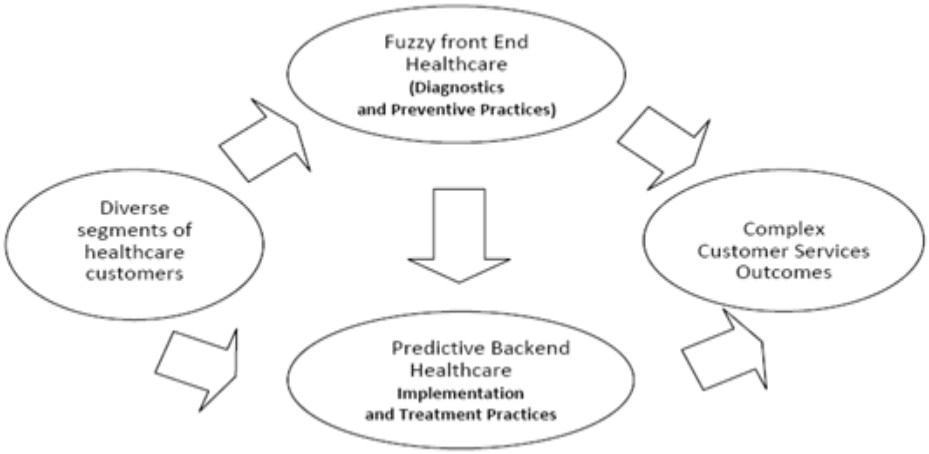

Figure 2: A Research Model of Healthcare Supply Chains [Paul Hong, Seung-Chul Kim, David Dobrzykowski

2. Heading-2 Some Issues in Health care Supply Chain Management

Wu et al (2009) and adler-Milstein and Bates(2012) proposed that the healthcare supply chain requires adequate support of IT with its increasing emphasis of paperless flows of information sharing. Due to increase in cost the healthcare supply chain requires drastic ways to improve their cost performance from functional level, intra and inter-organizational processes involving the extended network level. The healthcare organizations search for business models that provide them better strategic decisions for building more effective healthcare delivery system with solid financial performance requirements. In view of these call for healthcare supply chain models, the aim of this study is to provide both a general and a specific research model that defines the key dimensions of healthcare supply chain and useful to analyze the practical issues of healthcare supply chain.

The subject of supply chain and SCC have been explored by various researchers and practitioners from various perspectives viz. understanding, models, applications, analysis etc. there is a difference in opinion of different researchers as far as the concept is concerned. Supply chain can be defined in numerous ways.

Table -1, below presents some of the selected definitions of supply chain. The data here shows that there are few understandings available for SCC. Researchers have tried to identify different activities and strategies to achieve SCC. Different researchers have emphasized on different strategies for SCC.

Table 1: Different Definitions of Supply Chain Competitiveness [Ajay Verma et. al. / International Journal of Engineering Science and Technology, Vol. 2(11), 2010, 6209-6213]

S.No.	Author (year)	Definition
1	Christopher (1992)	The network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services delivered to the ultimate consumer.
2	La Londe and Masters (1994)	A set of firms that pass materials forward
3	Lambert *et al.*(1998)	The alignment of firms that brings products or services to market including the final customers as part of the supply chain.
4	Mentzer (2004)	A set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer.

Table 2: Roles and Issues of different components of supply chain [Ajay Verma et. al. / International Journal of Engineering Science and Technology, Vol. 2(11), 2010, 6209-6213]

Supply chain components	Typical roles	SCC issues
Suppliers	• Improving transportation facilities • Proper stocking and transportation of materials Improve delivery performance and time based agreements • Fulfilling demand/requirements • Inventory Management • Funds Management • Efficient supply of materials • Reducing Information Fluctuations using IT tools	• How to reduce lead times for better services to customers? • What ways of transportation is used? • How to provide better quality of materials? • How material be made available? • How to implement IT tools? • How to improve responsiveness to changing demands?
	• Proper communication • Continuous Monitoring • Market know-how's	• How to supply materials in time? • How to fulfill commitments and thus increasing trust and reliability? • How to reduce bullwhip effect?
Manufacturers	• Providing high quality products in right quantity • Fulfilling changing needs of the customer • Designing new and quality products • Making of forecasts of requirements • Intra organizational functions • Product scheduling and storage • Training for quality products • Information system • Controlling the operations • Transportation of goods • Implementation of TQM orientation in the organization • Integration of all the resources as well as departments • Using ERP, MRP and other decision support systems	• How to be agile and flexible? • How to satisfy customers? • How to manage demand? • How to implement information technology and other expert systems? • How to improve collaboration and cooperation? • How to manage product chain? • How strategic alliances and competitive partnership is achieved? • How to manage supply chain flow cycles? • How to improve product design and quality? • How to achieve competitive advantages?
Distributors	• Multiple channel transportation • Improved storages and stocks • Delivery of materials and finished goods in right quantity in right time • Managing Market demands • Proper information and communications • Improve delivery and packaging by IT and other communication systems • Modern material handling systems • Education and training	• What are the ways of competitive advantages? • How to reduce lead times?How to distribute products in time? • How to satisfy customers (retailers)? • How to handle changing requirements? • How networked distribution is achieved?

SCC refers, in general way, to gain competitive advantages by one supply chain on the other (competitive supply chain/chains). Achieving SCC is not a simple task. SCC comprised of competitiveness of all the supply chain components like suppliers, manufacturers, distributors and retailers. A firm gains competitive advantage by performing strategically important activities more cheaply or better than its competitors. Many attributes have been defined to explain the determinants of SCC. Many researchers have tried to describe SCC and a wide range of strategies have been considered for the same. Gruen (1997) argued that companies may compete if they develop and manage cooperation and collaboration partnerships. The same statement given by Lalonde (1997) who emphasizes on inter-firm cooperation to satisfy customers as the power in supply chains has shifted downstream toward the customer or end users. Mentzer, argued that competitive advantage can be obtained not just through the products sold, but also through the way in which we manage the flows in a supply chain [Mentzer (2004)]. He presented twelve drivers of supply chain competitive advantage which are, according to him, necessary for supply chain to be competitive. According to [Chopra and Meindl (2006)], a company's competitive strategy defines, relative to its competitors, the set of customer needs that it seeks to satisfy through its products and services. The impact of different components of supply chain can be recognized in achieving SCC. The different components of supply chain have to be competitive enough so that the overall competitiveness can be achieved. Lalonde proposed that the information and communication are the most profound and influencing changes that affect the companies as well as the SCC [Lalonde and Powers (1993)] He advised to use of internet and other communication systems for improving SCC According to Lalonde, organizations must be quick, agile, and flexible to compete efficiently, which cannot be obtained without coordination of the companies in supply chains .Lalonde (1997) emphasizes on inter-firm cooperation to satisfy customers. Hitt suggested information, intelligence and expertise as the critical organizational sources for competitive advantage [Hitt et al (1999)]. On one hand, Lambert emphasized on the importance of cooperation and coordination for achieving SCC [Lambert and Cooper, (2000)] on the other hand Pine, emphasized on mass customization for gaining competitiveness of supply chains [Pine, (1993)]. Fig. 2 represents efforts to achieve SCC, outcome in the form of achieved SCC and benefits of achieving SCC. Table 2: below shows the roles of different components in SCC.

3. Some Identified Critical Success Factors in e-Supply Chain Management in Health Care Services

To support the main research question, "How have the drivers in healthcare supply chains impact the healthcare supply chain policies and strategic decisions, healthcare supply chain practices for desirable healthcare supply chain outcomes?", this model further explores the following additional questions.

(i) What are the key drivers that influence the scope of healthcare policies and strategic decisions and the nature of healthcare supply chain practices? Healthcare supply chain policies and strategic decision respond to the external factors that foster, demand and encourages doing long-term and short term direction and solutions.
(ii) What are supply chain policies and strategic decisions? What are its essential dimensions? Supply Chain policies are not random, spontaneous, and irregular but rather strategic, disciplined, and collaborative.
(iii) What are the key aspects of healthcare supply chain practices? Effective healthcare supply chain practices require careful assessment and examinations in relation to drivers, policies and strategic decisions. Table-3, below shows some Dimensions of Antecedents, Creativity, Translation Mechanisms and Innovative Outcomes of e-SCM Competitiveness in HealthCare Services.

Table 3: some Dimensions of Antecedents, Creativity, Translation Mechanisms and Innovative Outcomes [Paul Hong, Seung-Chul Kim, David Dobrzykowski]

Constructs	Definition	Essential Factors	Literature Base
Drivers of Healthcare Supply Chain Management	Factors that influence healthcare supply chain policies, strategic decisions and healthcare supply chain practices	Demographic factors, Technological Factors, Government healthcare policies, Market pressures	Adler-Milstein and Bates (2010); Koh(2011); Adler-Milstein and Jha (2008); Vermeulen, et al (2010); Hong and Kim (2012)
Healthcare Supply Chain Policies and Strategy	Healthcare Policies of government sectors and strategic decisions of healthcare organizations	Healthcare Policy Priorities, Strategic Intent, Investment Decision Criteria, Market Positioning	Rugera nd Kim(2007); Wendt (2009); Bohmer (2010); Kaufman(2011); McKone-Sweet, et al., (2005); Lee.(2010). Jun, et al., (2010);
Healthcare Supply Chain Practices	Intra and inter-healthcare organizational practices	Network Collaboration, Healthcare Business Practices, Information Sharing Practices, Preventive and Treatment Practices, Value-Driven Practices	Wu, et al., (2009); Helfert (2009); Pfannstiel (2011); Kaufman, Nathan S.. (2011); McKone-Sweet, et al., (2005).
Healthcare Supply Chain Outcomes	Tangible and intangible outcomes which reflect healthcare organizational performance goals.	Customer-based Outcomes, Business Outcomes, Socially Responsible Outcomes	Hyer, et al.(2009); Kumar, et al.(2011); Forsyth et al (1971); Liao et al (2010).

What are healthcare supply chain outcomes? Desirable healthcare supply chain outcomes are the results of healthcare supply chain policies and strategic decisions and healthcare supply chain practices. The above questions are further explored in the form of the following propositions. Drivers of Healthcare Supply Chain (e.g., competitive pressures, resource constraints, technological complexity, and outsourcing/open network availability) influence Healthcare Supply Chain Strategy (e.g., Environmental Scanning, Competitive Analysis, Leadership, Clarity of Strategic Intent, Resource Commitment). Firms are sensitive to (aware of) their external environment and thus respond not in random fashion but in strategic ways. To the extent of how these external pressures are communicated and experienced, they formulate deliberate organizational goals, plans and actions to respond to these pressures. Now we will describe some propositions:

Proposition-1:
Certain factors like drivers influence the level of healthcare supply chain policies and strategic decisions. Drivers of Healthcare Supply Chain (e.g., competitive pressures, resource constraints, technological complexity, and outsourcing/open network availability) influence Healthcare Supply Chain Practices (e.g., Customer/Supplier Involvement, Cross-functional collaboration, knowledge sharing). Functional managers and employees are also sensitive and aware of their external environment pressures and changing market conditions and customer requirements. Thus, to the extent of how these external pressures are communicated and experienced, they respond in ways to address these external demands in their own organizational and functional practices.

Proposition-2:
Certain factors like drivers, also influence the nature of healthcare supply chain practices Healthcare Supply Chain Strategy (e.g., Environmental Scanning, Competitive Analysis, Leadership, Clarity of Strategic Intent, Resource Commitment) influence Healthcare Supply Chain Practices (e.g. Customer/Supplier Involvement, Cross-functional collaboration, knowledge sharing). Strategy details are formulated by senior managers and then these are communicated to functional managers so that these organizational goals and action plans are implemented in functional, operational and organizational processes. Thus, to the extent of Healthcare Supply Chain strategy details are communicated, understood and accepted, functional managers and organizational members respond in ways to implement strategic goals in their own organizational and functional practices.

Proposition-3:
The extent/characteristics of healthcare policies and strategic decisions influence the nature of healthcare

supply chain practices. Healthcare Supply Chain Strategy (e.g., Environmental Scanning, Competitive Analysis, Leadership, Clarity of Strategic Intent, and Resource Commitment) impacts Outcomes of Healthcare Supply Chain such as Innovation Performance outcomes, Financial Performance, Competitive Position. Strategy details by nature are goal-driven. Thus, senior managers are evaluated not based on what they intend or planned to do but what organizations have actually achieved in terms of performance outcomes. Thus, to the extent of Healthcare Supply Chain strategy details are communicated, understood and accepted, performance outcomes are measured and reported for competitive advantage.

Proposition-4:

The extent/characteristics of healthcare policies and strategic decisions directly impact the innovative outcomes Healthcare Supply Chain Practices e.g., Customer/Supplier Involvement, Cross-functional collaboration and knowledge sharing impact Outcomes of Healthcare Supply Chain like Innovation Performance outcomes, Financial Performance and Competitive Position. Healthcare Supply Chain practices implement strategic goal details. Thus, functional managers and members in organizations do not merely work but toward attaining these strategic goals in the form of achieving tangible outcomes. To the extent of Healthcare Supply Chain practices are implemented toward achieving specific tangible goals, performance outcomes are measured and reported for competitive advantage.

Proposition-5:

The nature of healthcare supply chain practices mechanisms influence innovative outcomes.

4. Conclusion and Future Scope

In the present paper the authors tried to explore several unique contributions for healthcare supply chain research as well as it will be beneficial for those doing research in the general supply chain management field also. The authors have provided healthcare supply chain framework and key dimensions for further study. Supply chain management is one of the strongest approaches used to gain competitive advantages by the firms now days. SCC can be obtained by integrated efforts of all the components of the supply chain. This paper emphasized on the requirement of integrated efforts of the components and then throws some light on the roles and issues of the supply chain components. The paper presents an insight of SCC and identified important issues related to it. As a future scope, these issues are to be explored in the light of some empirical analysis. This paper presents some guidelines to the academicians, researchers and practicing managers to better understand the nature and components of supply chain and their roles and issues to be considered to gain SCC. The future work can be comprised of identifying the variables of supply chain competitiveness and empirically analyzing those variables so as to validate the results.

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