Knowledge Management and Supply Chain Management for Creating E-business Strategy

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ABSTRACT
The basic objective of the paper is to reconcile the literature on knowledge management and supply Chain management in organizations. The paper build strategy formulation, the inputs to strategy formulation process are the results of evaluating e-business technology, the business environment, plus knowledge management and Supply-Chain management to dig out the important relationships and flows of activities. Theoretical relationships are enriched by the conclusions drawn from literature review. It includes Supply-Chain management and Knowledge management. By studying conceptual studies, we find that different components of Knowledge Management as Knowledge activities, Knowledge types, transformation of knowledge and technology have a significant positive effect in bringing strategies through transformation of knowledge into knowledge assets in organizations. The strategy diagram divides implementation into the technical and the business aspects.

Keywords are your own designated keywords which can be used for easy location of the manuscript using any search engines.
INTRODUCTION

Rubinstein-Montano et al. (2001) argued that many organizations are now engaging in Knowledge management (KM) in order to leverage both within their organization and externally to their customers and suppliers. KM is an important role in selecting the right information at the right time from several pertinent resources (Plakoyiannaki and Saren, 2006) while converting it to useful insight. Effective knowledge management can help the enterprise to accumulate core knowledge, build corporate intelligence and obtain a competitive competence.

Supply Chain Management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders (Lambert, et al., 1998). E-business is considered as a new business model that emerging in the Web-driven environment and has descended across the corporate world. Joyce and Winch (2005) draws upon the emergent knowledge of e-business model together with traditional strategy theory to provide a simple integrating framework for the evaluation and assessment of business models for e-business. E-business has become a core theme at the heart of business strategy (Chang and Graham, 2012). The implementation of their e-business application also can benefit from experience acquired from their KM practices (Habul et al. 2012).

The aim of this paper is to propose a conceptual model describing an integrated model for KM process, supply chain management, marketing for e-business and ICT design deployed. Under the conceptual model, we build e-business strategy in order to enhance organizational competition advantage. Then we propose an integrated conceptual model. Under the conceptual model, we build an integration competence framework, e-business implementation in order to enhance organizational competition advantage. A research conceptual framework denotes as Figure 1. Figure 1 includes the following components: (1) Knowledge and knowledge management, (2) Supply chain Management systems, (3) Marketing for e-business, (4) ICT design deployed, (5) Financial considerations and (6) building e-business strategy.

Figure 1: A conceptual framework of this research

KNOWLEDGE MANAGEMENT

Knowledge management is the process established to capture and use knowledge in an organization for the purpose of improving organization performance (Malhotra, 2000). KM is not only managing these knowledge assets, but managing the processes that act upon the assets. Knowledge management is concerned with the organization’s objectives (Rowley, 2002). Knowledge management are efficiency gains, cost saving and avoidance of re-inventing the wheel (Hashemi and Hajiheydari, 2011). Knowledge management success defined as-reusing knowledge to improve organizational effectiveness by providing the appropriate knowledge to those that need it when it is needed (Alhawari and Al-Jarrah, 2011). Managing customer knowledge has been the most important aspect of KM in many organization (Stefanou, et al 2003), and KM capabilities have been found to be crucial factors in successful CRM-implementation (Croteua, 2003). KM helps share knowledge to create new knowledge and provides BI with an understanding of business perspectives as well as estimation and outcome analysis (Shehzad. and Khan, 2013).

2.1 Knowledge management process

There are eight steps of a KM process: knowledge defines, knowledge capture, knowledge select, knowledge store, knowledge share, knowledge applies, knowledge creates and knowledge sells (Beckman, 1997). Parikh (2001) argued that the four processes are: (1) Knowledge acquisition, (2) Organization, (3) Dissemination and (4) Application. KM process is used for analyzing from knowledge creation to its application, a quantum of knowledge progresses through four primary stages: creation, diffusion, transfer and application of knowledge (Andriessen, 2004). In summary, Knowledge management process includes knowledge discovery, knowledge capture, and knowledge sharing and knowledge application.
SUPPLY CHAIN MANAGEMENT

Supply Chain Collaboration and Selling Chain have become both an important strategic and operational issue in e-business. Chang and Graham (2012) argued that the advent of supply chain collaboration creates the need, at the inter company level, to pay special attention to the understanding of collaboration in order to provide the chain members to create collaborative efforts successfully.

Supply chain process

Supply Chain Management (SCM) is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders (Lambert et al. 1998). The processes of supply chain collaboration:

Purchase Order Processing: An effective collaborative application provides a comprehensive platform for managing and automating the purchase order process, resulting in faster cycle times and reduced errors that are an inevitable part of manual purchase order processing.

Release Processing: Automating the release process leads to a reduction in errors and results in real-time, accurate communication of requirements and the associated commitments from suppliers.

Supplier-Managed Inventory: supplier-managed inventory recognizes that suppliers often may have more knowledge and control over the logistical processes involved.

Kanban Process: The supplier can quickly and accurately determine requirements and be proactively alerted to exception situations such as a new or empty storage location.

Dynamic Replenishment: Dynamic replenishment is a process that enables suppliers to compare customer forecast or planning data with their own production plans to better match supply and demand.

Invoicing Processes: Invoice processes enable a complete closed-loop process for all supply side processes (purchase order, release, supplier-managed inventory, kanban, and dynamic replenishment).

Selling chain

The applications of selling chain management must automate processes across multiple user types and functional areas. Selling chain management is a broad set of sales/marketing solution that includes the following strategic areas: (1) data acquisition and analysis (such as data mining and warehousing), (2) marketing intelligence (such as business intelligence tools), sales force automation (SFA), customer services (such as CRM), (3) product catalog and pricing services, proposal/quote/contract management, order management, fulfillment, and the integration of back-office system (such as ERP) (SAP white paper, 2002).

E-BUSINESS AND APPLICATION

E-business is a broader term that encompasses electronically buying, selling, service customers, and interacting with business partner and intermediaries over the Internet. E-business describes a marketplace where businesses are using web-based and other network computing-based technologies to transform their internal business processes and their external business relationships.

E-business applications

E-business applications are supported by the following five support areas.

- People: People include sellers, buyers, intermediaries, information systems specialists, other employees, and other participants comprise an important support area.
- Public policy: This includes legal and policy and regulatory issues, such as privacy protection and taxation that are determined by governments. Part of public policy is the issue of technical standards, which are established by governance and/ or industry-mandated policy-making groups.
- Marketing and advertisement: E-business usually requires the support of marketing and advertising. This is especially important in business to customer (B2C) online transactions, in which the buyers and sellers usually do not know each other.
- Support service: Many services are needed to support e-business. These range from contact creation to payments to order delivery.
- Business partnerships: Joint ventures, exchanges, business partnerships of various types are common in e-business. These occur frequently throughout the supply chain (i.e. the interactions between a company and its suppliers, customers and other partners)

E-BUSINESS

All of the participants in business to business (B2B) e-business are either business or other organizations. Supply chain management (SCM) is a complex process requires the coordination of many activities so that the shipment of goods and
services from suppliers through to customers is done efficiently and effectively for all parties concerned. SCM aims to minimize inventory level, optimize production and increase throughput, decrease manufacturing time, optimize logistics and distribution, streamline order fulfillment, and overall reduce the costs associated with these activities. According to Norris et al. (2000) e-supply chain management (e-SCM) is the collaborative use of technology to enhance B2B processes and improvement speed, agility, real time control, and customer satisfaction.

Customer relationship management process provides the structure for how the relationship with the customer is developed and maintained. Management identifies key customers and customer groups to be targeted as part of the firm’s business mission (Berry and Parasuraman, 1991).

Enterprise Resource Planning (ERP) system which makes business process more efficiency and business management more simplified is one of the most important information to organizations. Business worked to improve their efficiency and reduced their lead time to customer.

BUILDING E-BUSINESS STRATEGY

There have been many different views of the contents of an e-business strategy, such as focusing on technology (Anice et al., 2001), knowledge process (Norton, 2001; Charleworth, 2011), supply chain management (Al-Nahas, 2006; Julta et al., 2001), financial considerations (Levenburg and Magal, 2004), and markets (Jarvenpaa and Tiller, 2001). Furthermore, to clearly define an appropriate e-business strategy, different models or frameworks were developed to support strategy formulation and implementation. Chaffey (2009) established the Generic e-Business Strategy Process Model, which defined the elements of an e-business strategy and its development in a dynamic manner, and could be used as a guide for organizations to determine e-business strategic issues at a high level. Figure 2 denoted as E-Business Strategy Formulation.

IT design deployed

The following are the major infrastructure elements and tools of e-supply chains:

- Electronic data interchange (EDI): EDI is the major tool used by large corporations to facilitate supply chain relationships. Many companies are shifting from relational EDI to Internet-based EDI.
- Extranets: Their major purpose is to support inter-organizational communication and collaboration.
- Intranets: These are the corporate internal networks for communication and collaboration.
- Corporate portals: These provide a gateway for external and internal collaboration, communication, and information search.
- Workflow systems and tools: These are systems that manage the flow of information in organization.
- Groupware and other collaborative tools: a large number of tools facilitate collaboration and communication between two parties and among numbers of small as well large groups.

![Figure 1: E-Business Strategy Formulation](image)

Economic theories of e-business

This framework provides a robust explanation of the basic economics of e-business. On this basis, it discusses how information and communications technology (ICT) can be designed and deployed in order to reduce the costs of
transactions and hence to change the structure and dynamics of markets for products and services exchanged through e-business (Cordella, et al., 2011).

- ICT refers to all the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions.

- The basic assumption of transaction cost theory is that economic agents (buyers and sellers) face costs to make the exchange of goods and services possible (Picot et al., 1997). Transaction costs are mostly related to information processing costs: not all the information needed by buyers and sellers about the object of the exchange is available; it is costly to process the available information, etc.

- ICTs facilitate access to this information and ICT uses to reduce the transaction costs. If you consider the market as a network of exchanges and contracts between buyers and sellers, both cooperation and conflict should be taken into account because individuals might withhold information during the process of exchange (Cordella, et al., 2011).

- ICT supports many business activities and, as a result, it can lead to changes in market configurations; in particular, it changes the role of intermediaries in matching supply and demand.

**Business environment**

Needle (1994) identifies the environmental factors as the economy, the state, technology, labor and cultural factors. All of these factors need consideration in developing a business strategy.

- E-business can give an organization the opportunity to spread its reach and hence the spread of any economic analysis needs to be broader.

- The state influences the economy and sets the regulatory framework within which business operates. E-business is generally seen as a positive development by organizations and there can be initiatives to assist companies in its adoption.

- The labor market will determine if an organization of the people and skills it needs for its operations. The regulation of the labor market and the strength of trade unions can also be a determinant in restructuring a company. For e-business the availability of people with the requisite technical skills can be an issue.

- Culture varies in different countries and an appropriate way to operate in one country would not necessarily be successful in another country. For an organization wishing to use internet e-business the availability of home computers and the acceptance of their use for e-business, within a society, are important factors.

**Supply chain management in E-business strategy**

The Global Supply Chain Forum (GSCF), developed a definition of supply chain management. The following eight supply chain management processes are included in the GSCF framework:

- Customer Relationship Management - provides the structure for how relationships with customers are developed and maintained. Cross-functional customer teams tailor product and service agreements to meet the needs of key accounts, and segments of other customers (Croxton et al. 2001).

- Customer Service Management - provides the firm’s face to the customer, a single source of customer information, and the key point of contact for administering the product service agreements (Bolumole, Knemeyer, and Lambert 2003).

- Demand Management – provides the structure for balancing the customers’ requirements with supply chain capabilities, including reducing demand variability and increasing supply chain flexibility (Croxton et al. 2002).

- Order Fulfillment – includes all activities necessary to define customer requirements, design a network, and enable the firm to meet customer requests while minimizing the total delivered cost (Croxton 2003).

- Manufacturing Flow Management - includes all activities necessary to obtain, implement and manage manufacturing flexibility and move products through the plants in the supply chain (Goldhsby and García-Dastugue 2003).

- Supplier Relationship Management - provides the structure for how relationships with suppliers are developed and maintained. Cross-functional teams tailor product and service agreements with key suppliers (Croxton et al. 2001).

- Product Development and Commercialization – provides the structure for developing and bringing to market new products jointly with customers and suppliers (Rogers, Lambert, and Knemeyer 2004).

- Returns Management – includes all activities related to returns, reverse logistics, gate keeping, and avoidance (Rogers et al. 2002)

**Knowledge management in E-business strategy**

- Knowledge flows are corporate culture, knowledge sharing, building a term culture, creating concepts and methodology, innovation, and knowledge creation (Dervisoglu and Berber, 2013). Knowledge flows can also be represented and assessed through the knowledge life cycle.

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**E-BUSINESS STRATEGIES IMPLEMENTATION**

The strategy diagram divides implementation into the technical and the business aspects.

**Technical implementation**

The approach to technical implementation of an e-business system depends on the business objectives, business requirements and the technologies that have selected. Technology is but one of the essential components of e-business. Key concepts in this area are: networks and the internet

1. **Networking standards**

   There are several types of networks. Some important ones include (Carvalho and Monnerat, 2008):
   - Local area networks (LANs) – a network covering a small physical area, such as a small office
   - Wide area networks (WANs) – a network that covers a broad geographical area
   - Virtual private networks (VPNs) – commonly used to secure communications through the public internet
   - Internet works (e.g. intranets, extranets and the internet).

   Client computers provide the interface to human users and perform local processing – think of your personal computer at home. Servers, on the other hand, are computers dedicated to providing services across the network. Email is an example of a service commonly delivered by servers.

   Firewalls can be used to protect the security of information flowing over an intranet or extranet. Firewalls are software on servers where a company’s network interfaces with the internet. Firewalls are required to prevent unauthorized users from accessing private network.

   The Internet Protocol communicates these chunks of data using a technique known as packet-switching

2. **The web**

   The web is part of the internet – a very important part – but there’s more to the internet than just the web. The web is based on the Hypertext Markup Language (HTML) standard, which is how we publish information on web pages (Carvalho and Monnerat, 2008).

3. **Web 2.0**

   From the technical perspective, web 2.0 is different in terms of the extent to which it relies on certain new scripts and technologies. There are two in particular – Javascript and Ajax.

   Javascript is a scripting language uses in web design to write functions that enhance user interfaces and the dynamics of web pages (Cordella et al., 2011). Javascript makes pages more interactive by permitting, for example, a web form to validate that the information a user has entered into forms is acceptable before submitting it to a server (Mohan and Kaushil, 2014). Javascript is behind most of the pop-up boxes that we encounter online. Ajax stands for ‘asynchronous JavaScript and XML’ (don’t worry about remembering that) and is a new approach to designing web applications (Smets, 2011). Ajax is actually a set of technologies, not a single technology, that work together to retrieve data from servers ‘asynchronously’ that is, with no timing requirements for the transmission of data).

4. **Peer-to-peer networks**

   Peer-to-peer networks are composed of users, known as peers, who share their computing resources with other peers, without the involvement of intermediaries such as network hosts or servers. Peers are thus both suppliers and consumers of resources. P2P networks are ad-hoc networks in the sense that new nodes (peers) can be added or existing ones removed without a significant impact on the performance

   Skype, the successful start-up company providing a free software application to make voice calls over the internet, runs on a P2P model. It uses P2P networks to transfer its Voice over Internet Protocol (VoIP) data from caller to caller

5. **Cloud computing**

   Cloud computing enables users to access and use web applications that reside in vast data centers located around the world instead of on their own personal computers. Because most network diagrams denote the internet as a cloud, It is called ‘cloud computing’.

   Cloud computing is similar to the client/server architecture in that the ‘cloud’ consists client/server models and the cloud computing model is that the software and the data reside on the servers in the cloud, and not on the client machines, as is the case with traditional client/server architectures (Wang et al., 2008).

6. **Mobile computing and m-commerce**
There are a wide range of products and services that open up when we begin to treat the mobile phone as a networked computer: (Mohan and Kaushik, 2014).

- Mobile ticketing – the replacement of paper tickets with electronic tickets that can be sent to a mobile phone or personal data assistant (PDA) via a text message or short message service (SMS).
- Mobile vouchers – offering discounts to customers directly through their mobile phones. When combined with location-based services, mobile vouchers can be sent to customers as they pass certain retail areas.
- Location-based services – mobile phone service providers constantly triangulate a user’s location in a certain area and this location data can be used for marketing purposes (e.g. directing customers to a particular restaurant nearby).
- Mobile banking – using mobile phones to conduct basic banking activities such as transfers, balance checks and payments.
- Mobile marketing and advertising – marketing directly to customers through their mobile phones.

(7) Technologies for supply chain management

- EDI is a generic term that refers to the structured exchange of data or documents between organizations using information technology. It is a format that pre-dates the internet, with various international technical standards. And despite the current of innovation that has taken place in e-business over the past couple of decades, the EDI format is still widely used by many companies in their supply chain activities.
- Radio frequency identification (RFID) is a so-called ‘automatic identification’ technology, which permits the identification of items without direct human intervention. Its predecessor, bar coding technology, relied on line-of-sight transmission of data along the supply chain and often required human beings to intervene in the process.
- RFID offers many potential advantages over previous supply chain technologies. For one, by automating the process, it can reduce labor costs. The RFID tags themselves allow significantly larger amounts of data to be stored on the products (e.g. serial number, color, size, price), leading to better intelligence along the supply chain.
- RFID also permits asset tracking, which can help reduce shrinkage and, in the case of a product being recalled, allows partners to locate and remove faulty goods quickly. Depending on how it is implemented, RFID can help facilitate item-level tracking, whereby tags are stored in each individual product (as opposed to pallet or case-level tracking). Item-level tracking opens up many opportunities for increased intelligence along the supply chain, for example in terms of theft detection, stock monitoring and product customization (Smets-Solanes et al., 2011).
- A software technology that is particularly important to large organizations, both internally and for communicating along the supply chain, is that of enterprise resource planning (ERP) systems. Considered as internal systems, these are of limited interest to e-business, which is fundamentally inter-organizational. However, using EDI protocols and extranets, the ERP systems of the companies along the supply chain can be connected together and hence can ‘talk to each other’ in order to provide seamless communication between the various departments of different companies.

(8) Security technologies for e-business.

- One important way to secure data is by encrypting it. Based on cryptography, encryption is the process of using algorithms (detailed sets of instructions) to make information unreadable to anyone except those who have special knowledge in the form of a ‘key’. This key makes information readable again, through a process called decryption. Encryption can be used to protect data as it moves around networks or while it sits on storage devices.
- Another business application that uses encryption is the digital signature. These are not actually signatures in the normal sense, but rather a way of using mathematical techniques to secure digital messages or documents. Digital signatures provide assurances to the recipient that a message is from a known sender, and that it has not been tampered with (Mohan and Kaush, 2014).
- Transport layer security (TLS) and secure sockets layer (SSL) are protocols for transmitting information privately over the internet. These protocols have many important B2C applications.

Business implementation

It is important that the design process considers.

- The ease of use of the system by the intended end users; always an important factor in system design but crucial if the end users are to be members of the public with perhaps limited computer literacy and the option to switch to an alternative web sit if not satisfied.
- As well as building its e-shop the organization needs to put place the business infrastructure to support the new e-business facility.
- The back office systems: customers of an online service quite reasonably expect a rapid response and the back office systems need to be able to meet this requirement front and integrate with information systems.
- The approach to design for internet e-business system would sensibly be based on a prototyping lifecycle as the design of the user interface is crucial to the success of the overall project.
• Most organizations moving into e-business will take a staged approach. Initial implementations may have limited functionality and be offered to a limited audience.

EVALUATION
To evaluate a Web site using the model the following statements should be assessed (Whitely, 2001).

• Company information: the web site gives me all the information a person could reasonably require on the company before understanding an e-business transaction.

• Customer information: The requirements to provide customer information are appropriate and there is good reassurance about the security and use of the information.

• Product information: The web site contains all the product information which a person could reasonably require before undertaking on e-business transaction.

• Negotiation: The web site allows all the customization of the product / price that user could reasonably expect.

• Order: The web site provides as comprehensive a range of options for ordering the product or service as could reasonably be expected by the user.

• Payment: The web site provides as good a range of payment option as could reasonably be expected.

• Delivery: The web site provides as wide a selection of delivery options as could reasonably be expected which are generally satisfactory, convenient and reassuring.

• After-sales service: Overall the after-sales customer support service on offer is excellent.

• Aesthetic effect: Overall the website is aesthetically pleasing.

• Performance: Overall the site loaded quickly and operated without error.

• Ease of use: Overall the site was extremely easy to navigate and to use.

• Innovation: The web site is extremely innovative.

• Community: The web site is excellent at fostering community among its customers.

CONCLUSION
The methodology for e-strategy creation presented in this paper supports a larger work on e-Business readiness framework, such as knowledge management, supply chain management, business environment, IT design deployed, and Economic theories. The framework defines components and metrics instrumental in the creation and implementation of e-Business in a company, an industry, and on a country level. This paper provides an introduction to the background technological knowledge needed to understand more specific aspects e-business discussed elsewhere in the subject guide. As technology evolves, more applications are developed, and learning’s increase for e-Business, we expect the framework and supporting methodologies to also evolve.

REFERENCES


