Available online at www.elixirpublishers.com (Elixir International Journal)

Liquid Crystal Technology

Elixir Liquid Crystal Tech. 60 (2013) 16113-16116

ISSN: 2229-712X

Review of Enterprise Informatization Capability and Competitive Advantages

Xiaodong Liu and Shaobo Ji

School of Management, Dalian University of Technology, Dalian 116024, China P.R.

ARTICLE INFO

Article history:

Received: 6 January 2013;

Received in revised form:

17 June 2013;

Accepted: 27 June 2013;

Keywords

Enterprise informatization capability;

Competitive advantage,

E-supply chain management.

ABSTRACT

Enterprise informatization is a procedure in which IT is applied into the field of enterprise production, technology, and management, to improve the cost-effectiveness of exploration of informational resources and obtain financial profits. Enterprise informatization consists of three main aspects, the automation and flexibility of production, the integrative management and the systemic organization. The capacity of enterprise informatization is a resources-based capability, which has technical, manageable and organizational properties; it is divided into the three categories, which include information technology capability, information organizing capability and information innovation capability. Enterprise informatization capability can improve business performances, in this study we do the research on informatization capability how to increase enterprise's competitive advantages in synergy, integration of customer relationship management, e-supply chain management, as well as global opportunities.

Introduction

The birth and development of information technology(IT) is an important revolution in the history of human society since the Industrial Revolution. Driven by IT, human society goes from the industrial age into the information age. Computers and Internets have penetrated into every corner of human society. The IT innovation has changed the way people work, entertain and live, which enables human-beings to enjoy the civilization of the information era. Among all the applied IT fields, e-business is a very important mainstream. As a bearer and producer of the society and industry, enterprises have a long history of applying IT into the production management. How to apply IT and assess its value in business management has also become one important issue in the academy of management. Although some studies previously had doubts on the value of IT (Carr, 2003), and others had a discussion on "productivity paradox" of IT investments (Brynjolfsson, 1993 ; Dewan &Kreemer, 1998), yet IT can really help enterprises significantly reduce the cost of managements, increase productivity, and improve decision-making quality (Barua、Kriebel & Mukhopadhyay, 1995). Some of the investments on IT can help companies to favorably compete and gain strategic merits. For example, Wal-Mart's supply chain management information system is of great significance to take a leadership in competitions and maintain advancement (Johnson, 2002 ; Zhu&Kreamer, 2005). Over the last decade, the implementations of informatization in some outstanding domestic and international enterprises also proves the trade value of IT. Therefore, investments in IT and utilization of informatization have become a vital option facing many competitive enterprises in the era of globalization.

Informatization is a process of maximizing the use of information resources to meet the social needs, thus accelerating the development of various fields and finally entering the information society by means of the exploration of information technology, information industry, and the configuration of information specialists (Harrington S J, 2005). In the 21st century, IT is both a basic requirement and an important way to lead competitive advantages for every enterprise. Extensive applications of IT make profound impacts on business processes, organizational structure and the internal management, and thus in the competitive environment that enterprises face, enterprises must effectively utilize IT to create new competitive advantages, enabling them to advance and progress in the rapidly-changing marketing environment. Dell Inc. has been able to maintain its leadership position in the personal computer market for more than a decade. At the heart of Dell's strategy is its high velocity built-to-order production model for direct sales. The firm is continually improving the performance of its production system, as well as introducing further initiatives that leverage its core advantage.

In 1990s, just within ten years, the Chinese enterprise experienced a large-scale transformation of informatization. A considerable number of Chinese enterprises invested in or purchased ERP, CRM, and E-commerce. In such a short period of time, a substantial number of Chinese enterprises rapidly completed the transition from manual operation to information technology. At present almost all the medium to large-sized enterprises in China have ERP system and the small-sized enterprises are not left behind. Quite a few scholars study informatization and competitiveness of enterprises. Hambrick D.C(1984) first studied the IT and enterprise competitiveness; Porter (1985) attributed the competitive advantage to three forms, cost-leading, difference and focus, as well as pointed out that competitive advantage was mainly reflected by the cost-related competitive advantage. Zhu K(2006) highlighted the Porter's "cost-competitive advantage" theory, but theorized that competitive advantage of strategic information systems largely lies in the differentiation of the products. All these studies lay the foundation of information technology and competitiveness.

But these studies seldom explored the relations between information capabilities and competitive advantages as well as the mechanism whereby how information capabilities can lead to competitive advantage. Solving these issues is of importance

Tele:

E-mail addresses: lxd@dlnu.edu.cn

to our further understanding of information capabilities, such that it is necessary to do further study in this field. The identification of information capabilities as an organizational capability created by the interaction of IT capability, information organizing capability, and information innovation capability are explicated in the following paragraphs. This study is also to evaluate and interpret the mechanism between information capabilities and competitive advantages by an examination of the links between IT resources and firm performance such as integration of customer relationship management (CRM), and E-Supply chain management. And we hope our works will be helpful and provide a good basis for the future research.

Properties of enterprises informatization capability

Enterprise informatization is a procedure in which information technology (IT) is applied into the field of enterprise production, technology, and management, to improve the cost-effectiveness of exploration of informational resources and obtain financial profits. Due to the extensive use of information technology, the integrated management of corporate material flow, capital flow, personnel flow and information flow is improved and strengthened, which brings great challenges on traditional business concepts and management models, and brings a fundamental revolution to enterprises. Competitiveness of an enterprise is a sum of the abilities to supply products or services in a competitive market more constantly and effectively than usual, and obtain profits and excel in its own development. IT enables enterprises to greatly reduce operating costs, create more business profits, and enhance the competitiveness.

Enterprise informatization consists of three main aspects, the first is the automation and flexibility of production , the second is the integrated management, this means that based on the construction of the information infrastructure or the internal network and information system in the enterprise, modern scientific management methods and means need to be systemically integrated to realize an optimal management system. The third aspect is the systemic organization, that is, organization or reconstruction of an enterprise with the ability to adapt to the environment, and optimization of the management of business activities within the framework of certain organizations and processes (e.g., BPR). The capacity of enterprise informatization is "a resources-based capability", which should have the following properties.

● Technical

The object that enterprise informatization deals with is the information of the enterprise business and management, and the technical tools are derived from IT. As such, informatization capability is based upon the IT capability.

● Manageable

Informatization is a process that IT gradually penetrates and integrates with the management. It is not a simple capability to configure information resources, but also a capability to multi-manage a variety of reservation led by the informational resources. Thus, the capacity of informatization is also a capacity of management and processing.

● Organizational

The application of IT in the enterprise has re-shaped the relationship among employees, especially makes informal relationship develop much better. Such changes are the basis of the increase in the efficiency of information technology. Therefore, informatization is often accompanied by organizational changes. Put together, the informatization capability is also an organizational capability.

As can be seen from the above mentioned, enterprise informatization capability is an integrated capability. It is based on information resources which are not confined to a single resource, it is involved in the management, organization, and processing. It is the basis of learning capability and innovation capability of an enterprise. As such, the enterprise informatization capability is referred to the ability to turn information resources into strategic resources via changing in the management, organization, and processing that supports the enterprise-wide competition.

The enterprise informatization capability is divided into the following three categories:

● Information technology capability

IT is introduced from the outside of the enterprise. This capability involves resources, technology, learning, and innovation, which includes IT infrastructure, learning ability and flexibility.

● Information organizing capability

This capacity is the performance of diffusions of the main technology and controls of information resources in the organization of enterprise, including informational planning and control capability as well as IT diffusion capacity.

● Information innovation capability

This capability refers to processing management and business innovation, including the capabilities of innovation and applications of IT.

The following figure shows the components of enterprise informatization capability.

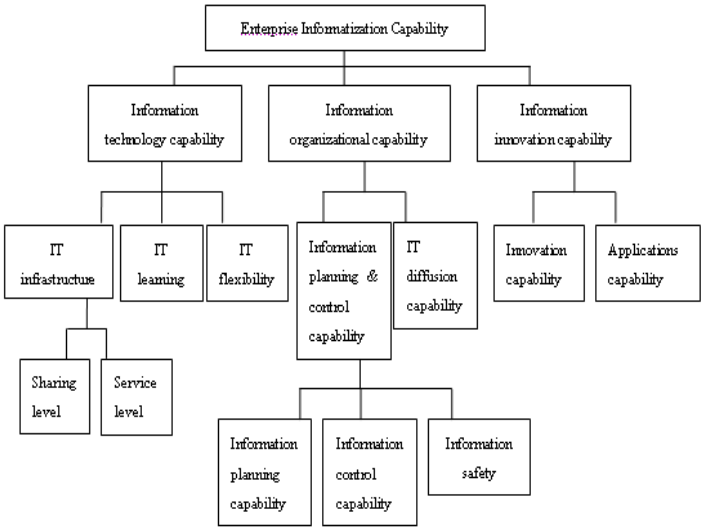

Figure 1. Enterprise informatization capability system

The enterprise informatization capability and competitive advantages

Competitive advantage is rooted in the deployment and use of idiosyncratic valuable and inimitable resources and capabilities. Firms leverage two distinct strategic mechanisms, resource-selecting and capability-building(Makadok, 2001). Resource-selecting mechanism creates economic rents when firms apply superior information and knowledge to gain advantage from resources in the marketplace. Firms that have superior knowledge capabilities do better on acquiring resources and building capabilities. Capability-building refers to the ability of firms to build unique competencies and capabilities that leverage their resources. These capabilities are embedded, making them comparatively more valuable and inimitable, and

therefore superior to resources as determinants of long-term performances.

Information capability is a resource that generates competitive value only when it leverages or enables pre-existing firm resources and skills. Although the enabling role of IT with respect to several organizational intangibles such as product quality, customer service, market orientation, knowledge assets, organizational memory, organizational learning, and synergy. Here we take a few examples to show how IT capabilities improve business performances.

Synergy

Synergy refers to the sharing of resources and capabilities across organizational divisions. Beyond operational efficiencies, knowledge and information sharing across functional units enable firms to be more flexible and to respond faster to market needs. As Brown and Dugui point out, information technologies geared toward creating organizational synergies can aid in the delivery of needed resources by removing the physical, spatial, and temporal limitations to communication. As a result, problems which used to take two weeks to be solved are now solved overnight. Technologies such as CAD/CAM permit inter-organizational design teams to share engineering drawings and foster greater cooperation in buyer-supplier relationships(M. Bensaou,1997).

Integration of customer relationship management (CRM)

The development of information capabilities speeds up the integration process of world economy, the applications of Internet, Intranet and E-commerce change completely the situation that enterprise faces. In order to keep a position in the dynamic and changeable market, the enterprises of all nations are trying to seek various efficient ways to strengthen their own core competition. Many enterprises apply BPR(Business Process Reengineering) to redesign the core business process, optimize resources disposition by applying ERP (Enterprise Resources Planning) and manage all links of the whole supply chain by using system methods in the form of supply chain. CRM plays a role in facing customers in the enterprises' platform. To the departments of sales, marketing service and technological support in an enterprise, CRM makes it true to share the information and automation for different business departments. CRM can improve and mediate the previous business process, reach the needs of customers and cut down the operation cost in operation flows, in order to reserve the real customers, look for the talent customers and earn more margins.

As to front-office areas such as sales, marketing, customer service and technology support, by means of information capabilities, CRM provides an information auto-platform shared by all business organizations of the enterprise. It enables the enterprise to meet the need of customers better in their all business linked with coordinating and improving the original business process, leading to remain current customers, explore potential customers and improve their own ability of gaining profit. On the other hand, CRM can provide such information as customer demand, market segmentation, product sales and feedback for back-office areas associated with finance, manufacturing, purchasing and warehousing.

E-Supply chain management

The prevalence of E-Commerce has profound effects on enterprise's supply chain. Traditional supply chain was based on linear value chain. Based on the knowledge of the value chain changing, it is appropriate to define the supply chain in internet economy as a production network formed of successive supplier-customer links and proceeding through value creation activities of any member to ensure that either product or service can reach the end customer. Electronic supply chain is a large, dynamic integrated network of complex but well-defined relationship with multiple channels in the business, which deliver accurate and effective information to everyone in the network. With advanced informatization capability, electronic supply chain management (E-SCM) has apparent differentiable features, which can manifest as followings.

(1) Whole value chain network connection

E-SCM connects not only directional supplier and customer of the enterprise but also the in-directional, while E-SCM also connects competitors and potential entrants. This integrative mode assures enterprise to construct a flexible, effective and healthful value chain network.

(2) Virtual integration of collaborative value creation

E-SCM utilizes advanced informatization capability to break through the boundary of individual companies and makes company promote and facilitate the virtual collaborative value creation through the integration and regulation of resources in the network of supply chain network.

(3) Dynamic integration of business processes and intelligence

E-SCM emphasizes the end-to-end coordination and optimization of business activities about internal enterprise, inter-enterprise and customer and the whole synchronous and real-time control over the enterprise operations and processes.

(4) Multi-levels and extensive integration of information flows

Through advanced informatization capability, E-SCM facilitates information shared within enterprise or inter-enterprise about customers, partners and competitors but also ensures information flows effective and seamless connection. This kind of integration is to provide not only a shared interface but also a connect channel for information flows on both operation and management levels during all periods of business activities.

Global marketing opportunities

The goal of enterprises is to effectively realize resources integration across space and time. Therefore, openness, expansiveness, compatibility, and safety are the goals that enterprises integration management systems are to achieve. Internet-based information technology and its further development will have great effects on the evolution of manufacture and organization management mode. Understanding the emerging and interaction of IT and evolution of modem production or organization management mode is the objective of related studies on businesses and integrated information capabilities, which will also be helpful to enterprises agility and adaptation to global market and competition. Achievement of this goal depends not only on advanced and mature information technologies but also on effective employment of IT.

Marketing opportunities and management decisions are based on information. Current Internet technology does pretty well on global information sharing, and it has become a part of our society. But it still has much to be desired in terms of deeper or more complicated applications, interaction and product data sharing. From ISP, ICP to ASP, center of Internet industry is moving from information browsing or searching to enterprise application system integration. Traditional process integration theories, such as concurrent engineering, workflow management, BPR, supply chain management are focused more on the border than the inner part of enterprises. With the help of software engineering and artificial intelligence, management

integration system will become more humanization and efficiency.

Many researches are proving that advanced informatization capability will promote cross-space and cross-department communication and coalition in order to integrate knowledge resources of corporations in a more significant way, which is not only feasible but also necessary. With the help of Internet, Businesses easily build up the information platform with much more partners, so corporations can easy get much more marketing opportunities.

Conclusion

Superior informatization capability leads to improved firm performances, it can improve firm's competitive advantages, which include business process reengineering, ERP-enabled business integration, customer relationship management, electronic commerce, electronic business, and electronic supply chain management initiatives etc. This analysis has important implications for both researchers and managers. Future research will need to explore, in much more detail, the exact nature of these managerial IT skills, how they develop and evolve in a firm, and how they can be used to leverage a firm's technical IT skills to create sustained competitive advantage.

References

[1] A. T. Chatfield and N. Bjorn-Andersen, The impact of IOS-Enabled business process change on business outcomes: Transformation of the value chain of Japan airlines. Journal of management information system,1997(14:1):13-40.

[2] Baron R.M., Kenny D.A. The Moderator-Mediator Variable Distinction In Social Psychological Research: Conceptual, Strategic And Statistical Conderations. Journal Of Personality And Social Psychology, 1986, 51(6):117-11823.

[3] Bensaou M. Interorganizational cooperation: The role of information technology. Information Systems Research, 107-124, 1997(8).

[4] Brynjolfsson, E. The Productivity Paradox of Information Technology. Communications Of The ACM, 1993, 36(12).

[5] Carr, N.G. IT Doesn' T Matter. Harvard Business Review. 2003, 81(5):19-32.

[6] Dehning, T. Stratopoulos, Determinants of a sustainable competitive advantage due to an IT-enabled strategy. Journal of strategic information system, 2003(12). 7-28.

[7] Dewan, S., Kreemer, K.L. International Dimensions Of The Productivity Paradox. Communications Of The ACM, 1998, 41(8).

[8] Davenport, T. H.. Putting The Enterprise Into The Enterprise System. Havard Business Review, July, 1998, 121-131.

[9] Hambrick, D.C., Mason, P.A.. Upper Echelons: The Organization As A Reflection Of Its Top Management[J]. The Academy Of Management Review, 1984, 9(2):193-206.

[10] Harrington S J, Guimaraes T. Corporate Culture, Absorptive Capacity And IT Success. Information And Organization 2005, 15(1):39-63.

[11] Johnson, B. Retail: The Wal-Mart Effect. The Mckinsey Quartly, 2002(1):67-89.

[12] N. B. Duncan, Capturing flexibility of information technology infrastructure: A study of resource characteristics and their measure. Journal of management information system, 37-56, 1995(12:2). (Reed and DeFillipi 1990)

[13] R. Makadok, Toward a synthesis of the resource-based and dynamic-capability views of creation. Strategic management journal, 2001(22):387-402.

[14] R. M. Grant, The resources based theory of competitive advantage. Management review, 114-135,1991(33).

[15] R. Reed, Casual ambiguity, barriers to imitation and sustainable competitive advantage. Academy management review, 1990(15:1).:88-102.

[16] S. Brown and P. Duguid, Organizational learning and communities of practice toward a unified view of working, learning and innovation. Organization Science, 1991(2): 40-57.

[17] V. Sambamurthy and R. W. Zmud, At the heart of success: Organization wide management competencies, in steps to the future: fresh thinking on the management of IT-based organizational transformation. Jossey-Bass, San Francisco 1997 (9) :143-163,

[18] V. Sambamurthy, Business strategy in hyper-competitive environments: Rethinking the logic of IT differentiation. Cincinnati: Pinnaflex, 2000(9): 245-261.

[19] W. M. Cohen, D.A. Levinthal, Absorptive capacity: A new perspective on learning and innovation. Administrative science quarterly, 1990(35):128-152.

[20] W. S. Schulze, The two resource-based models of the firm: definitions and implications for research. Academy of management best paper proceedings, 1992.

[21] Zeng Qingfeng, Huang Lihua, Research on firm performance effected from IT capabilities (in Chinese). Management information system, 2003, No.5. 28-35.

[22] Zhu K. Kreamer. And Sean Xu. The Process Of Innovation Assimilation By Firms In Different Countries: A Technology Diffusion Perspective On E-Business[J]. Management Science, 2006, 52(10):1557-1576.