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From E-Commerce to E-Knowledge

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Abstract

Electronic commerce (e-commerce) has become one of the major factors that determines the future survival or success of organizations. Like any new field, e-commerce is replete with confusion and lack of coherence. As if there aren't enough buzzwords in the e-commerce literature, new ones such as electronic business (e-business) and collaborative commerce (c-commerce) are created which further add to the confusion. Here, we extend the existing five-fold e-commerce taxonomy to accommodate various e-business and c-commerce perspectives as well. However, none of these perspectives explicitly acknowledges the role of knowledge and its management. We contend that these are the essence of e-commerce/c-commerce/e-business. Thus, the objective of this paper is to extend the taxonomy's traditional perspectives by advancing the e-knowledge view that explicitly recognizes the importance of knowledge management. A knowledge-oriented perspective of e-commerce/c-commerce/e-business is beneficial in furnishing a common, organized, and unified foundation for understanding and managing the electronic organization.

Introduction

Electronic commerce (e-commerce) is becoming a major factor in determining future survival or success of organizations. This multifaceted phenomenon can be approached from various perspectives such as those identified in the five-fold e-commerce taxonomy (Holsapple and Singh, 2000a). Here, we add structure to this taxonomy to accommodate electronic business (e-business) and collaborative commerce (c-commerce) perspectives as well. However, none of these perspectives explicitly acknowledges the role of knowledge and its management. Yet, the essence of e-commerce, c-commerce, and e-business is the use of technology to enable, support, and perform the representation and processing of knowledge. Thus, we extend the taxonomy's traditional perspectives by advancing the e-knowledge view, explicitly recognizing the fundamental importance of knowledge management as both the subject and context of e-commerce/c-commerce/e-business. The result is a common, organized, unified foundation for understanding, studying, and managing electronic organizations.

Summary of a Taxonomy of Electronic Commerce Definitions

To discern an inclusive, comprehensive characterization of what electronic commerce is, Holsapple & Singh (2000a) collected a wide variety of representative e-commerce definitions from diverse sources. Individually, each definition appears to have merit, but none subsumes all the others. However, the definitions can be organized into a taxonomy where all definitions in each category share a common theme (Holsapple and Singh, 2000a). The five categories are summarized here in a roughly increasing order from the narrowest to the broadest in scope.

Trading View: Insofar as the term "commerce" connotes market-based activities, e-commerce tends to be associated with computer-based means for performing commercial transactions - buying and selling. This view of e-commerce is concerned with what kind of buying-selling can be done electronically, what aspects of such transactions can be electronic, identification of enabling technologies, and exploration of electronic trading behaviors.

Although the emphasis is on trading relationships, a few of the definitions in this category hint at the importance of information in electronic transactions.

Information Exchange View: E-commerce involves not only trading products and services, but also the exchange of information. It can be considered as characterizing the substance of a market transaction. Information can itself be the commodity being bought and sold, and can also occur before a transaction (e.g., to enable it) or following a trade (e.g., to assess it).

Activity View: A third class of e-commerce definitions is comprised of those that go beyond trading, acknowledging the use of technology in accomplishing other business activities as well. In this view, the notion of "commerce" is extended to encompass both trading and non-trading activities: transaction execution, presale support, postsale efforts, and a host of ancillary activities.

Effects View: The foregoing categories are concerned with *what* and *how* aspects of e-commerce. They focus on what is done (trading, other activities) and how it is done (via technology-based information exchanges). None

stresses the *why* aspect of e-commerce. A fourth category of definitions emphasizes the goals and effects of conducting e-commerce, including better customer service, new product design, improved business processes, and reduced costs.

Value Chain View: A fifth group of e-commerce definitions sees the value chain as a basic tool for understanding the role of technology and information in achieving competitive advantage. They define e-commerce in terms of technologies that contribute to performance of economically distinct activities that an organization performs in the course of doing business. These value activities fall into nine generic categories: five primary and four secondary (Porter 1985). The primary activities of inbound logistics, operations, outbound logistics, marketing and sales, and service involve physical creation of products, their marketing and delivery to buyers, and their support and servicing after a sale. Secondary activities are development and operation of firm infrastructure, human resource management, technology development, and procurement. These support activities provide the inputs and infrastructure that allow the primary activities to take place.

Notions Related to E-commerce

Relatively new terms related to electronic commerce have emerged: *collaborative commerce* and *electronic business*. These notions are generally put forth as distinct from e-commerce.

Collaborative Commerce

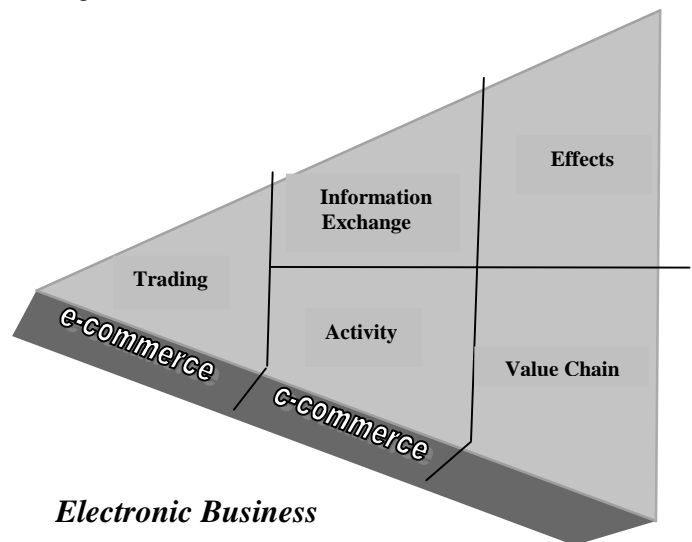
According to Gartner Group, the e-commerce world, in which businesses are shifting their operations to the Internet, is fast evolving into a virtual strategy called c-commerce, in which companies trade with multiple, ever-changing partners (McCarthy 1999). Collaboration has emerged as a critical business practice for improving the performance of the value chain. Collaboration seeks to synchronize business-to-business and business-to-consumer trading partners.

Most c-commerce definitions emphasize the importance of exchanging information. Consequently, they focus on its distribution in the conduct of e-commerce (e.g., as messages passed electronically between trading partners and electronic information transfer within a business). On a broader scale, the definitions recognize a new paradigm shift sweeping the business world today: that information is not just a supporting element of the value-adding process, but a source of value itself; that organizations apply useful information to make more timely and better informed decisions.

It is obvious that collaboration is not confined to trading activity. After all, commerce is defined as a negotiated trading of valuable objects or services between at least two parties and includes all activities that each of the parties undertakes to complete the transaction (Perry & Schneider 2000). Unlike e-commerce, the trading activity does not receive any particular emphasis in c-commerce. Using collaborative tools, components, and integration technologies, c-commerce is concerned with information exchanges that pervade all collaborative activities in a community of participants (including, but not limited to, the activity of trading). This coincides with the taxonomy's activity view of e-commerce.

Figure 1 illustrates how c-commerce helps structure the taxonomy. While e-commerce can be seen as encompassing all of the taxonomy's five classes, the most commonly emphasized view is electronic support of trading. While c-commerce also relates to all five classes, there is a clear emphasis on electronic support of information exchange for conducting commerce activities in a collaborative community.

Figure 1. From e-commerce to c-commerce.



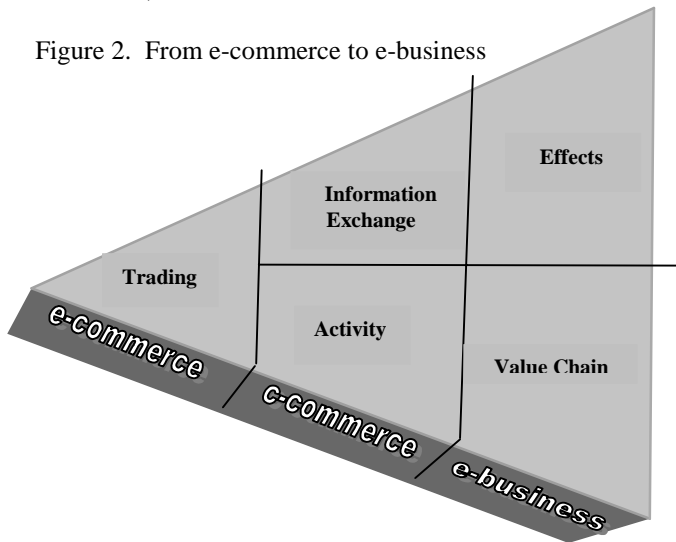
Electronic Business

E-business is sometimes equated with e-commerce, but others contend that e-commerce is only part of this much bigger picture (Dalton 1999, Kalakota and Robinson 1999). E-business is about overall strategy and redefining old business models. Examining e-business definitions with respect to the e-commerce taxonomy gives rise to the following observations. Taken together, e-commerce and c-commerce are mainly concerned with *what* is done (trading transactions, other business activities) and *how* it is done (via technology-based information exchanges). Many e-business definitions, however, stress the *why* aspect *because* they explicitly define e-business in terms of its various outcomes and benefits.

Another central point in e-business definitions is recognition of the value chain and value adding activities.

Competitive advantage is obviously not achieved by simply emulating competitors; it is achieved by matching customer desires to value chain competencies (GartnerGroup 1999). Both sides of the equation can be modified by value-enhancing processes through the use of e-business technologies and techniques. An electronic business uses technology in an effort at continuous optimization of its value chain positions. Because of its concentration on the benefits of conducting business and achieving competitive advantage via value chain management, the notion of e-business relates closely to the effects and value chain views of the five-view taxonomy. This is illustrated in Figure 2, which serves to illustrate the distinctions between the e-commerce, c-commerce, and e-business.

Figure 2. From e-commerce to e-business



E-commerce, in its popular but narrow sense of buying and selling expands into c-commerce that lies on the next stratum underneath e-commerce with its main focus on activity and information exchange perspectives, which expands into e-business, with its main emphasis on the value chain and intended effects. Because e-business is an over-arching concept beyond e-commerce and c-commerce, we refer to the structured taxonomy in Figure 2 as the e-business taxonomy.

A Knowledge Management View of E-business

Businesses operate in a knowledge-driven economy and increasingly function as knowledge-based organizations. This is an economy where the value of knowledge as input and output is growing; knowledge is a key ingredient of what is bought and sold (both explicitly and implicitly); knowledge resources are rising in importance relative to traditionally recognized resources (e.g., financial, material); and new technologies and techniques for managing knowledge resources are emerging (Stewart, 1998). Accepting the proposition that e-business occurs within and among knowledge-based

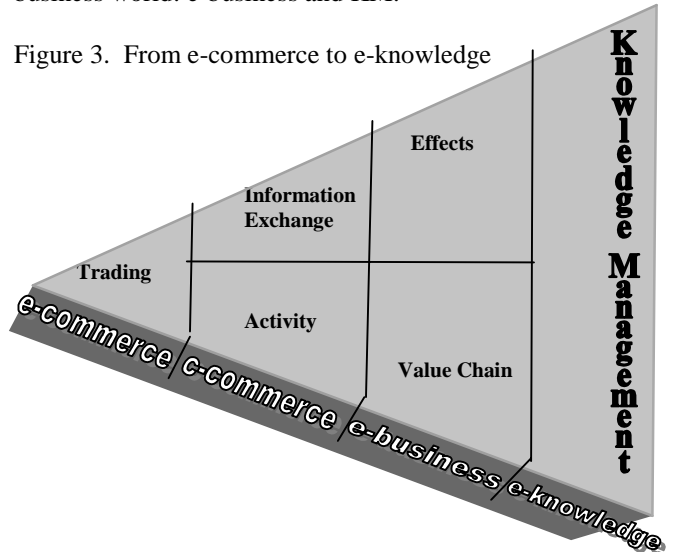
organizations in the knowledge-driven economy, it is important for e-business perspectives to explicitly recognize knowledge, plus the processes and technologies for managing it.

Although it goes well beyond the notion of information exchange, knowledge management (KM) is not mentioned in definitions for any of the perspectives identified in Figure 2. Within the bounds of its environmental, resource, and managerial constraints, an organization's conduct of KM encompasses such activities as acquiring, selecting, internalizing, generating, and externalizing (Holsapple & Joshi 2000). The human and electronic processors that perform these knowledge manipulation activities are linked in various patterns by knowledge flows. We introduce the term e-knowledge to refer to electronic support or performance of knowledge manipulation activities and the flows that connect them. This leads to a KM view of e-business:

Electronic business is an approach to achieving business goals in which e-knowledge enables or facilitates the execution of activities in and across value chains, as well as the making of decisions that underlie those activities.

Illustrated in Figure 3, this view of e-business is grounded in KM and embraces all of the taxonomy's perspectives. It is a unifying definition, establishing a connection between two megatrends reshaping the business world: e-business and KM.

Figure 3. From e-commerce to e-knowledge



It sees e-business as being based on e-knowledge: technologies for representing and processing knowledge. It sees e-knowledge as instrumental for implementing value activities, supporting decision making that underpins these implementations, and achieving business goals through enhanced performance of one or more value activities. Just as there are non-technological aspects for each of the five cells in Figure 2, there are many non-technological aspects

to managing knowledge. Although some pundits equate e-business to business, human aspects must not be ignored.

Conclusion

This paper traces the progression from e-commerce to e-knowledge, yielding an extended taxonomy to reflect the knowledge management setting in which e-commerce/c-commerce/e-business/ occurs. Also, the knowledge-oriented definition of e-business furnishes a unified, overarching perspective that brings the interrelated notions of e-commerce, c-commerce, e-business, and e-knowledge together under one umbrella. These can contribute to frame and guide both study and research along the entire progression.

The KM view of e-business indicates that e-knowledge enables and/or facilitates the implementation of value activities. E-knowledge can also support the making of decisions that underpin these implementations. Thus, such technologies can contribute to a firm's competitiveness by enhancing the performance and outcome of one or more value activities. For instance, they highlight the need to investigate what activities in the conduct of KM are potential sources of competitive advantage via electronic business practices (Holsapple and Singh 2000b).

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