Toward a Unified View of Electronic Commerce, Electronic Business, and Collaborative Commerce: A Knowledge Management Approach

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Electronic commerce (e-commerce) has become a major factor in determining the future survival or success of organizations. The definitions of e-commerce are many and diverse. In addition to these, there are varied notions of electronic business (e-business) and collaborative commerce (c-commerce). Here, we structure the existing five-fold e-commerce taxonomy to accommodate various e-business and c-commerce perspectives as well. From this, we synthesize an integrated over-arching definition of e-business. However, the result has a limitation. To overcome it, we advance a knowledge-management view that explicitly recognizes e-business as being based on e-knowledge: processes and technologies for managing knowledge. We contend that the knowledge-oriented perspective of e-commerce/c-commerce/e-business is beneficial in furnishing a common, organized, and unified foundation for understanding and managing electronic organizations in the knowledge e-conomy. Copyright © 2000 John Wiley & Sons, Ltd.

INTRODUCTION

Electronic commerce (e-commerce) has become a major factor determining future survival or success of organizations. It is changing the shape of competition, speed of action, and nature of leadership (Kalakota and Robinson, 1999). The advent of the World Wide Web represents a turning point in electronic commerce, allowing organizations to achieve better economies of scale and scope. E-commerce is an infrastructure for a new way of doing business and gaining competitive advantage in the customer age (Fingar, Kumar and Sharma, 2000).

Three distinct interrelated classes of electronic commerce applications can be distinguished: consumer-to-business, business-to-business, and intraorganizational (Kalakota and Whinston, 1996). Nevertheless, electronic commerce means different things to different people. These varied e-commerce perspectives coupled with notions of electronic business (e-business) and collaborative commerce (c-commerce) combine to present a confusing picture. Gray Eichorn, President and CEO of Open Market, says, ‘I don’t have a clue; it doesn’t mean anything. To me, it’s e-gads. We refer to Internet commerce, meaning using the Internet to do business’ (High Latitude, 1999).

E-commerce is commonly defined as using technology to enable buy-sell transactions (Holsapple and Singh, 2000a). In everyday usage, the terms Internet commerce and Web-commerce are often interchanged with e-commerce (Fingar,
even though e-commerce transactions are not limited to the Internet or Web. This common view of e-commerce is quite narrow and precludes other important non-commercial transactions, information exchanges, and intraorganizational activities (Perry and Schneider, 2000). More recently, the term e-business has become a central theme at the heart of business strategy. It refers to transformation and streamlining an organization’s value chain activities through use of Internet technologies. However, many managers still view e-business as simply buying and selling goods on the Internet (Kalakota and Robinson, 1999). GartnerGroup (1999a) has identified a complex form of e-business called c-commerce, referring to collaborative and fluid interaction of a community of employees, business partners, and customers designed to take advantage of new trading opportunities made possible by the Internet. This paper introduces a taxonomy for understanding the nature and relationships among e-commerce, c-commerce, and e-business.

As a field of study and research, e-commerce cuts across every functional business discipline. It pervades practically every aspect of management. To help make sense out of the many perspectives on e-commerce, Holsapple and Singh (2000a) developed a taxonomy of e-commerce definitions for systematically considering what an organization needs to address in its quest for competitiveness in the ubiquitous e-commerce world. This paper extends the taxonomy to accommodate e-business and c-commerce perspectives. Perspectives are very important because they influence and guide the nature or focus of both business practice and research efforts—more so for a young dynamic field such as this. Based on observed relationships among the taxonomy’s five categories, a single integrated perspective on e-commerce, c-commerce, and e-business in synthesized. We then extend this perspective by adopting a knowledge management orientation. The result is a unified view that clarifies relationships among the competing conventional conceptualizations, offering a structure for guiding both research and practice.

Following a summary of the e-commerce taxonomy, we examine representative definitions of c-commerce and e-business. Their relationships to e-commerce taxonomy’s categories are discussed. Subsuming all the notions, we then advance an e-knowledge perspective of e-business, explicitly recognizing the ties to knowledge management processes and technologies. We conclude by noting implications for practice, research, and study.

TAXONOMY OF ELECTRONIC COMMERCE DEFINITIONS: A SUMMARY

To find a best, most inclusive, comprehensive characterization of electronic commerce, Holsapple and Singh (2000a) collected representative e-commerce definitions from diverse print and electronic sources. Examples appear in Table 1. However, no single definition appeared to dominate or encompass all others. Nevertheless, an interpretive analysis revealed that the definitions clustered around five distinct themes, resulting in an e-commerce taxonomy.

Here we summarize the taxonomy’s five categories of e-commerce: trading view, information exchange view, activity view, effects view, and value chain view. Each perspective has value as a lens for viewing the e-commerce landscape.

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. For example, shopping services allow a consumer to seek and purchase goods or services through electronic networks. 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. This e-commerce view, illustrated in Figure 1, is probably the one that springs to the popular mind when the term ‘electronic commerce’ is used.

Information exchange view
E-commerce not only enables exchange of money for products and services, but does so via exchanges of information. Information can be considered as characterizing the substance of a market transaction, and can itself be the commodity being bought and sold. Beyond this, information transfer can occur prior to a transaction (e.g. to support underlying decisions) or following a trade (e.g. to assess it). Figure 2 conveys the information exchange emphasis found in many e-commerce definitions.

Activity view
A third class of e-commerce definitions is composed of those that recognize the use of technology in accomplishing a variety of business activities.
including, but not limited to trading. As Figure 3 suggests, the notion of ’commerce’ is extended to encompass not only the use of technologies for transaction execution but also for presale and postsale efforts, decision support, maintaining/cultivating business relationships plus a host of ancillary activities (e.g. satisfying legal/regulatory requirements).

### Table 1. Representative e-commerce definitions

<table>
<thead>
<tr>
<th>Definition</th>
<th>Source</th>
<th>Focus</th>
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<tbody>
<tr>
<td>Electronic commerce is the use of computer networks to conduct business — basically the buying and selling of goods and services — electronically with one’s suppliers, customers, and/or competitors.</td>
<td>Hayashi (1996)</td>
<td>Trading View</td>
</tr>
<tr>
<td>Electronic commerce is the use of telecommunication networks for the purpose of linking organizations and/or individuals that engage in some form of computer-mediated commercial trading relationship. It incorporates things like buying and selling over such platforms as the Internet, EDI, Interorganizational Systems such as EFT, Point of Sales Systems etc.</td>
<td>Steinfeld (1997)</td>
<td>Trading View</td>
</tr>
<tr>
<td>Electronic commerce has been used to describe a wide variety of business—related transactions, but is at its core the data used for conducting day-to-day business operations with suppliers and customers.</td>
<td>Coburn (1995)</td>
<td>Information Exchange View</td>
</tr>
<tr>
<td>Electronic commerce can be defined as commercial activities conducted through an exchange of information generated, stored, or communicated by electronic, optical, or analogous means, including electronic data interchange (EDI), e-mail, and so forth.</td>
<td>UN Reference Number A/50/17 (1995)</td>
<td>Information Exchange View</td>
</tr>
<tr>
<td>Electronic commerce is an integrative concept, designed to draw together a wide range of business support services, including inter—organizational e-mail; directories; trading support systems for commodities; products, customized products and custom-built goods and services; ordering and logistics support systems; settlement support systems; and management and statistical reporting systems.</td>
<td>Clarke (1997)</td>
<td>Activity View</td>
</tr>
<tr>
<td>Broadly defined, electronic commerce is a modern business methodology that addresses the needs of organizations, merchants, and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery.</td>
<td>Kalakota and Whinston (1996)</td>
<td>Effects View</td>
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<tr>
<td>Electronic commerce refers to the conduct of business between two or more companies, using an integrated set of electronic tools to streamline business processes and reduce cycle time. These tools include EDI, imaging, bar coding, e-mail, workflow management systems, and any other tools that may be appropriate to streamline a given business relationship.</td>
<td>Benesko (1994)</td>
<td>Effects View</td>
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<td>Electronic commerce is commerce which is enabled by WWW-era technologies, to permit the seamless integration of information, communication, and logistical technology along the entire value chain of business processes from the suppliers of raw goods and services to the final customers.</td>
<td>Becker, Ferris, and Osborn (1998)</td>
<td>Value Chain View</td>
</tr>
<tr>
<td>Electronic commerce denotes the seamless application of information and communication technology from its point of origin to its endpoint along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal. These processes may be partial or complete and may encompass business-to-business as well as business-to-consumer and consumer-to-business transactions.</td>
<td>Wigand (1997)</td>
<td>Value Chain View</td>
</tr>
</tbody>
</table>
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 (technology-based information exchanges). As Figure 4 indicates, a fourth category of definitions emphasizes the why aspect of e-commerce: its goals, reasons and effects. Effects of e-commerce appear in all areas of business, from customer service to logistics to new product design. It facilitates new types of business processes for reaching and interacting with customers, suppliers, and partners. It can reduce overhead costs in managing orders and interacting with trading partners, maintain/increase market shares, lower product cycle times, facilitate collaboration, improve service quality, reduce response times and so forth.

Value-chain view

A fifth group of e-commerce definitions clusters around the value-chain concept. The value chain model identifies technologically and economically

![Figure 1](image1.png) The taxonomy's trading view

![Figure 2](image2.png) The taxonomy's information exchange view

![Figure 3](image3.png) The taxonomy's activity view

![Figure 4](image4.png) The taxonomy's effects view
distinct activities (called ‘value activities’) that an organization performs in the course of doing business (Porter, 1985).

The class of definitions depicted by Figure 5 sees e-commerce as the value-creating use of technology. It supports or performs value activities (which overlay trading and other business activities) in an effort to enhance competitiveness. An extended value chain incorporates value chains of other entities such as suppliers and /or consumers and is commonly called a supply chain. Even though it is not explicitly recognized in definitions underlying this category, use of technology in implementing supply chains fits as part of the value chain view of e-commerce. Thus, when we refer to value chains we mean both internal and extended value chains.

OTHER PERSPECTIVES

Two notions generally advanced as distinct from e-commerce are collaborative commerce and electronic business. Here, we present a representative assortment of c-commerce and e-business definitions. These are analyzed with respect to the e-commerce taxonomy, showing that they are not only compatible with the taxonomy but help give additional structure to it.

Collaborative commerce

According to GartnerGroup, the e-commerce world of businesses shifting their operations to the Internet is fast evolving into a virtual strategy called c-commerce, in which companies deal with multiple, ever-changing partners (McCarthy, 1999). Collaboration has emerged as a critical business practice for improving performance of the value chain. Collaboration seeks to synchronize business-to-business and business-to-consumer trading partners. This synchronization is a strategic initiative to achieve efficiencies previously targeted through such efforts as Just-in-Time, Quick Response, Efficient Consumer Response, Enterprise Resource Planning and others (Dynamic Web Enterprises, 1999).

Most c-commerce definitions (see Table 2 for examples) emphasize the importance of exchanging information. Consequently, they focus on its distribution in the conduct of e-commerce (e.g. messages passed electronically between trading partners, 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, better decisions. Judith Hurwitz, president and CEO of Hurwitz Group, states that ‘A dynamic, inter-enterprise business infrastructure that links product and process information across organizations, divisions, and applications is how companies will succeed in the 21st century’ (PTC.com, 1999).

Clearly, collaboration is not confined to trading activity. Broadly, e-commerce involves negotiated trading of valuable objects or services between multiple parties and includes all activities that each of the parties undertakes to complete the transaction (Perry and Schneider, 2000). Unlike e-commerce, 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. The activity view recognizes activities both across and within organization boundaries, ranging from tactical to strategic levels, entailing both business and consumer contacts, and includ-
ing both pre-transaction and post-transaction activities (Holsapple and Singh, 2000a). Even though c-commerce definitions do not mention these business activities explicitly, they are common and inherent in the very nature of collaborative commerce. Because of its main focus on technology for information exchange in conducting activities within collaborative community, c-commerce coalesces closely around the information exchange and activity views of the e-commerce taxonomy. This is not to say that c-commerce definitions entirely ignore remaining views of the taxonomy. For example, one definition refers to selling (Ward, 1999); organizations moving toward c-commerce are replacing traditional business trading relationships with constantly shifting alliances and fluid interactive collaboration designed to take advantage of new trading opportunities made possible by the Internet and other technologies (GartnerGroup, 1999a). Similarly, their definition refers to intended effects of c-commerce suggesting that it can promote enterprise agility and dynamic integration (GartnerGroup, 1999a). Although no direct mention of the value chain is made in the c-commerce definitions, collaboration is critical for improving performance in value chains.

Figure 6 illustrates the relationship between e-commerce and c-commerce in terms of the taxonomy. While all taxonomy classes derive from e-commerce definitions, the most commonly emphasized view of e-commerce is electronic support of trading. Conversely, for c-commerce the clear emphasis is on electronically supporting information exchange to foster collaborative business activities, with some relationship to the other three classes.

### Electronic business

Competitive issues driving businesses of all sizes and across all industry sectors call for nothing less than complete organizational metamorphosis. E-business is the way companies are fundamentally changing the way they do business using electronic technologies (Oracle Corp., 1999). E-business is much more than technology; it also involves a mind set (Electronic Business Inc., 1999). Sometimes e-business is equated with e-commerce, but many contend that e-commerce is only part of a much bigger picture (Dalton, 1999). E-business is the overall strategy, and e-commerce is an extremely important facet of e-business (Kalakota and Robinson, 1999).

E-business solutions are helping today’s companies do everything better, faster, and more efficiently. From forging strong customer relationships, to managing supply chains, to strengthening value provided to customers, to electronic dissemination of information, e-business is changing the way work is done (MySAP.com, 1999). The ‘e’ may come first in e-business, but it is the ‘business’ that is important (Pickering, 1999). No matter how powerful technology is it is only valuable to the extent that it supports business; e-business is more about business than technology (IBM Corp., 1999).

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Table 2. Representative c-commerce definitions

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<tr>
<th>Definition</th>
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<tr>
<td>Collaborative commerce occurs when organizations employ real-time collaboration tools to sell or support their products and services to other businesses, or directly to consumers.</td>
<td>Ward (1999)</td>
</tr>
<tr>
<td>Collaborative commerce enables manufacturers to automate information flows within a multi-channel distribution network, including manufacturers, distributors, dealers, service groups, and end consumers.</td>
<td>InSight (1999)</td>
</tr>
<tr>
<td>Collaborative commerce will provide a dynamic, Internet-based inter-enterprise business infrastructure that links product and process information and applications boundaries of internal organizations as well as suppliers, partners, and customers</td>
<td>Maynard (1999)</td>
</tr>
<tr>
<td>Collaborative commerce describes the collaborative and fluid interaction of a community of personnel, business partners, and customers that is joined together by Internet, component and integration technologies, resulting in agile but highly integrated ‘virtual’ multicompany enterprises.</td>
<td>Burdick (1999)</td>
</tr>
<tr>
<td>A key goal of c-commerce is to harness all product information and application assets into a Web-based framework and providing ubiquitous, personalized access to all participants in a given commerce community.</td>
<td></td>
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</table>
Examining e-business definitions (see Table 3 for examples) with respect to the e-commerce taxonomy leads to several observations. Taken together, e-commerce and c-commerce are mainly concerned with *what* is done (trading and other business activities) and *how* it is done (via technology-based information exchanges). Many of the e-business definitions, however, stress the *why* aspect because they explicitly define e-business in terms of its various outcomes and benefits. If e-business is the cause of a revolution in rules of business, its effect, in short, is structural transformation of an organization’s internal foundations to be more effective (Kalakota and Robinson, 1999). Essentially, e-business is technology-enabled transformation that dramatically increases efficiencies of traditional business processes (GartnerGroup, 1999b). These efficiencies are materialized in a variety of forms: maximized customer value, lower costs, improved quality of products and services, increased innovation, lower product cycle times, optimal trading opportunities, and so forth. Beyond efficiencies of traditional processes, it stimulates new processes as well. The e-business emphasis on such outcomes and benefits clearly aligns the notion of e-business with the taxonomy’s effects view illustrated in Figure 4.

Another major 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, 1999b). 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 to continuously optimize its value chain positions. To achieve this, an enterprise must integrate its e-commerce, customer relationship, enterprise, supply chain, and logistics systems with its value chain processes and its business partner’s processes (GartnerGroup, 1999b).

The value chain view takes the stand that the unfolding world of e-business cuts across every functional field of business and pervades practically every aspect of management. E-business represents a new means of value adding and value creation for organizations and consumers. It has both an internal orientation (facilitating value activities) and an external orientation (linking value activities with those of suppliers and customers).

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-fold taxonomy. This is illustrated in Figure 7, which shows relationships among e-commerce, c-commerce, and e-business giving structure to the taxonomy.

E-business emerges as the broadest of the three concepts. It encompasses e-commerce in its popular (albeit narrow) sense of buying and selling. Hence, it indirectly relates to the taxonomy’s trading perspective. For a given business transaction, the flow of material is secondary to the flow of information that enables, facilitates, and guides it (Cook, Chung and Holsapple, 1995). Some e-business definitions explicitly or implicitly recognize this, thus relating e-business to the taxonomy’s information-exchange view. Because e-business allows customers, partners, and suppliers to seamlessly interact with organizations
using collaborative technology, it naturally encompasses all business activities performed by the collaborative commerce community. Some e-business definitions directly allude to this notion of collaboration, thereby relating e-business to the taxonomy’s activity view.

![Figure 7 Relationship between e-commerce, c-commerce, and e-business](image-url)
Relationship between e-commerce, c-commerce, and e-business

Our analysis of c-commerce and e-business shows that they are entirely consistent with the taxonomy. Indeed, we have found no definition of either notion that is outside the scope of the original taxonomy. Another interesting finding is the three-layer structure that these additional concepts contribute to the taxonomy. E-commerce, in its popular, narrow trading sense occupies the top layer with c-commerce on the next stratum. The broader connotation of c-commerce stems from the fact that collaboration cannot happen without shared activities among participants and necessarily involves information exchange.

E-business, with its main emphasis on value chain and intended effects, occupies the foundational layer of the triangle. It has the broadest meaning among the three concepts guiding the manifestation of trading, information exchange, and other business activities. As a consequence, e-business can be considered an over-arching concept and we refer to the structured taxonomy in Figure 7 as the e-business taxonomy. We use it in the discussion that follows to introduce an integrated definition of e-business. The taxonomy can be used by practitioners and researchers as a unified, relatively complete perspective for understanding the varied notions and their interrelationships.

Definitions control and guide the focus of research efforts, business practices, and educational initiatives. Without some kind of over-arching definition and structure for a field, ‘progress is but a fortunate combination of circumstances, research is fumbling in the dark, and the dissemination of knowledge is a cumbersome process’ (Vatter, 1947). Through its synthesis, Figure 7 suggests that it is possible to have a single unifying definition for e-commerce/c-commerce/e-business that accommodates all five views of the taxonomy. In this spirit, we advance the following definition of e-business, visually represented in Figure 8:

Electronic business is an approach to achieving business goals in which technology for information exchange enables or facilitates execution of activities in and across value chains, as well as supporting decision making that underlies those activities.

This definition follows from an integrated characterization of e-commerce (Holsapple and Singh, 2000a) and embraces each of the taxonomy’s five views and three layers. The definition does not try to enumerate pertinent technologies because they are numerous and subject to change. Nor does it enumerate possible business goals or activities in a value chain. The former involves various effects at multiple levels. The latter are well known and encompass the notion of trading;
they include both collaborative and non-collaborative activity.

By including activities both within and across value chains, the definition allows for both intra-organizational relationships and trans-organizational relationships (i.e. business-to-business and business-to-consumer). The integrated definition emphasizes that e-business involves not only electronic support for the execution of activities (i.e. transactions), but also electronic support for the decisions that shape these activities. Decision-making underlies each activity in a value chain, and can benefit from (or even require) the use of technology. Wilder (1999b) emphasizes the increased importance of technology for business decision-making in electronic organizations. An examination of decision support aspects of electronic commerce appears in Holsapple, Joshi and Singh (2000).

A KNOWLEDGE MANAGEMENT VIEW OF ELECTRONIC BUSINESS

Businesses operate in a knowledge-driven economy and increasingly function as knowledge-based organizations (Holsapple and Whinston, 1987; Drucker, 1993; Reich, 1998). 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, 1998a). Broadly speaking, knowledge management (KM) is concerned with making the right knowledge available to the right processors (human or computer) at the right times in the right presentations for the right cost (Holsapple and Joshi, 1999).

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 processes and technologies for managing it. E-business can be seen as part of an organization’s conduct of knowledge management, which includes such knowledge manipulation activities as acquiring, selecting, internalizing, generating, and externalizing knowledge (Holsapple and Joshi, 1999). These knowledge manipulation activities are linked into various patterns by knowledge flows. In many cases, both the manipulation activities and the flows that connect them can be electronically enabled, facilitated, or performed.

We contend that a KM-oriented perspective of e-business is beneficial in furnishing a common, organized, unified foundation for understanding and managing electronic organizations in the knowledge economy. However, knowledge management is not mentioned in any of the e-commerce definitions compiled to derive the taxonomy, nor in any of the c-commerce/e-business definitions found to structure it. Because KM goes well beyond the notion of information exchange, it follows that the taxonomy and e-business definition can be improved by incorporating it.

More than information is involved in the conduct of e-business. E-business employs multiple types of knowledge, of which information is just one kind. ‘All information is knowledge, not all knowledge is information’ (Machlup, 1980). Wilder (1999b) states that organizations are going through an e-transformation which is characterized by several factors and one of them is a rapid transfer of knowledge, both within companies and across the value chain. But the conduct of e-business involves more than transferal or exchange. Certainly, flows are important, but so is the processing that precedes and follows an exchange (e.g. deriving, discovering, assimilating, organizing, extracting knowledge). E-business can be seen as the electronic part of an organization’s conduct of KM.

Knowledge and knowledge management

Knowledge exists when there is a usable representation of something (Newell, 1982). Representations can be material, electrical, behavioral, mental, and so forth. It is not uncommon to see distinctions drawn between data, information, and knowledge. For example, data imbued with relevance is said to be information, and information imbued with context is said to be knowledge (Gantz, 1998). These classifications may be interesting, but they focus on only one type of knowledge: knowledge that describes the state of some world. Aside from this descriptive knowledge (‘know what’), there are other important types of knowledge that need to be managed (Holsapple, 1995). These include procedural knowledge, which is a step-by-step specification for accomplishing some task (‘know how’), and reasoning knowledge which specifies what conclusion can be drawn when a particular situation exists (‘know why’).

Knowledge management is concerned with
Knowledge management and electronic business

The present economy has been variously described as the network economy, the digital economy, and the knowledge economy. At the intersection of these concepts we find the e-commerce/e-business phenomenon. The explicit sale of knowledge is widespread and the implicit sale of knowledge (via incorporation into bundles of goods and services) is ubiquitous (Stewart, 1998b). Electronic business is an important facilitator, enabler, and driver of the knowledge economy. Success in this economy requires effective management of an enterprise’s knowledge resources. We use the term e-knowledge to refer to technology and attendant strategy that helps accomplish knowledge manipulation activities and the flows among them.

As Figure 9 suggests, KM underpins the entire value chain and is instrumental in achieving various business effects. Knowledge and its manipulation are inherent in every business activity and subsume the limited notion of information exchanges. The decision making that underlies every trade is a knowledge-management episode. Figure 9 also suggests that e-knowledge is a foundation for e-business, although it may also have some non-business (e.g. recreational) manifestations. We contend that both practitioners and researchers should be aware of and can benefit from a view that relates e-business to the knowledge-driven economy:

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.

As Figure 10 shows, we have adapted the integrated e-business definition by substituting for information-exchange technology the richer concept of e-knowledge. In this view, e-business deals not only with descriptive knowledge (i.e. information), but also with procedural and reasoning knowledge. For instance, it includes applet processing which involves transfer of procedural knowledge (as distinct from information) from a server to a client. In this view, e-business also involves more than transfer. For example, it includes generation of knowledge by online calculators or expert systems.
The unifying definition establishes a connection between two megatrends reshaping the business world: e-business and knowledge management. It has been observed that ‘...the very nature of organizations is changing from an emphasis on working with materials to an emphasis on working with knowledge and we will eventually come to view work with material goods as a secondary or almost incidental aspect of an organization’s mission. Furthermore, managing an organization’s human and financial resources will also become exercises in knowledge management’ (Holsapple and Whinston, 1987). E-business occurs in a world of these knowledge-based organizations, employing technology for representing and processing knowledge throughout a network of value chains.

Figure 9  Relationships between e-commerce, c-commerce, e-business, and e-knowledge

Figure 10 Knowledge-management view of electronic business
An organization’s e-business and knowledge management initiatives need to be aligned on the common ground of e-knowledge.

CONCLUSION

E-commerce, c-commerce, and e-business have diverse meanings. These are often poorly, partially, or narrowly understood. This paper introduces an organized way of viewing the e-confusion by structuring a five-fold taxonomy and synthesizing an integrated perspective of e-business. This integrated perspective does have a limitation: it is based on the concept of information exchange shared by e-commerce, c-commerce, and e-business definitions. But this concept is only part of a much more extensive one known as knowledge management.

To further the emergence of e-businesses, identifying and managing knowledge in an e-business is one of the critical issues academics and practitioners need to consider (Braganza and Lambert, 1999). Toward this end, we have extended the taxonomy to reflect the knowledge management setting in which e-commerce/c-commerce/e-business occurs, and we have introduced a knowledge-oriented definition of e-business as a common, organized, and unified foundation for understanding and managing the modern electronic organization. The result is a unified, over-arching perspective that brings the inter-related notions of e-commerce, c-commerce, e-business, and e-knowledge together under one umbrella.

This perspective recognizes that e-business happens in a knowledge-driven economy, that it deals with types of knowledge other than information, and that it can involve more than transfers between knowledge manipulation activities. That is, e-business can be seen as being based on e-knowledge: technologies and attendant strategies for representing and processing knowledge. It should be noted that there are many non-technological approaches to managing knowledge; these are outside the immediate scope of e-business.

The KM view of electronic 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. Further research is needed to investigate what activities in the conduct of KM are potential sources of competitive advantage via electronic business practices.

REFERENCES


Holsapple CW, Singh M. 2000b. The knowledge chain. Third Annual Conference of the Southern Association for Information Systems (SAIS), 31 March–2 April 1, Atlanta, Georgia.


