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Brief Communication

The role of knowledge content in e-commerce

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Introduction

Amidst the current explosion of activity in electronic commerce (e-commerce), there can be a tendency to focus upon technology and related systems almost to the exclusion of anything else. Nonetheless, in emphasising the profound manner in which e-commerce was affecting key business processes and relationships, an executive at BP Amoco recently declared that this was more than simply a means of automating payments or reducing the cost of data transmission. Rather, he argued, e-commerce had to do with knowledge and its dissemination and with the way companies understand their business and interact with suppliers and customers [1].

This message is an important one for business, especially given the conventional wisdom regarding *disintermediation.* E-commerce, the theory stated, would put an end to those brokers and intermediaries that proliferated in the old economy, resulting in totally transparent markets where information and knowledge were available to all. As any competent information professional could have predicted, life in the new economy is not so simple and intermediaries are alive and well. This is because, in today's economy, content, i.e. information and knowledge, not only underpins business transactions but also, in many cases, comprises and typifies those transactions.

The success of electronic business depends on a number of things; not least, the value proposition, the market, management and the technology available. However, just as important would be the information that is available to customers and potential customers and, critically, the ability of entrepreneurs to turn this into knowledge for existing and potential customers. This paper focuses on some of the links between customer knowledge and the management of that knowledge that facilitate the conduct of e-commerce.

Information and knowledge

For present purposes, 'information' will be taken to mean data to which some meaning has been added and 'knowledge' as information placed in context and given added value through the addition of judgement and/or action. Much of the difference between these two concepts resides in the fact that, whereas information is all around us, knowledge emerges from creative connections drawn by recipients, including, in this case, buyers and sellers of goods and services. E-commerce depends on two manifestations of this relationship. First, there is the application of digital technologies and business processes to the delivery of information about traditional, non-digital goods and services. Second, there is the delivery of information and knowledge packaged as digital goods and services. It is important to identify the kinds of information necessary to the conduct of e-commerce and some of

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the means by which it can be turned into knowledge for the enhancement of customer relationships.

Information for management

The range of information types necessary to the successful planning and operation of an electronic enterprise is both dynamic and potentially endless. Some obvious examples include:
(1) information about target customers, particularly the most profitable ones, and the three or four primary things they are likely to want;
(2) information about critical business partners, distributors, resellers and other third-party channels and on how they could help in adding value to business processes;
(3) the communication steps, transaction events and information flows that are part of these third-party business processes;
(4) cost information: about quantifiable costs, e.g. the costs of closing sales or of customer service and support, or about intangibles, e.g. customer defection rates or the proportion of customers that contributes the majority of profits [2].

Turning information into customer knowledge

Customer knowledge can be derived from data that originate in transaction systems and, as such, can be about business customers as well as consumers. It can also emerge from interaction among people: as facts, lessons learned or observations. This knowledge can be structured (as in databases or workflow systems) or unstructured (as in documents). It can also be held in people's heads, as tacit knowledge. Strategies that can be employed to help to turn information into knowledge include:
(1) ensuring transparency of all information for all stakeholders: staff, business partners and customers;
(2) empowering customers, by enabling them to serve themselves, to change the status of information on the site and, indeed, to design their own products through an online interactive environment;
(3) providing personalised service, by tailoring the information to the needs of individual customers, while encouraging them to respond with detailed information about their individual interests and preferences;

(4) fostering community, by enabling customers to communicate and share experiences with one another electronically, helping them to learn from each other and to gain insights and ideas about the products that they are buying and using [3].

Customer knowledge

Current views of the significance of the customer knowledge base would hold that:
(1) the successful competitor will not be the one with most customers, but the one with the most knowledge about individual customer needs;
(2) the one-to-one marketeer will use community knowledge in order to gain insights into individual tastes and to anticipate individual needs [2].

Customers are the direct source of a range of insights, all of which are urgently needed by companies. They can provide up-to-date product information, competitive comparisons, insights into changing consumer preferences and immediate feedback about service and patterns of use. However, this knowledge is widely dispersed, with many different business functions interacting with customers. Furthermore, the often-conflicting perceptions of customer information among departments can make it difficult to pull together customer knowledge in one common format and place [4]. Technology, of course, can help, but only as one element in the solution. It is important to emphasise that what matters most is the eventual quality of the customer experience.

The customer experience

The customer experience has been described as being the next competitive battleground. The customer experience is the sum total of interactions that a customer has with a company's products, people and processes; it goes from the time that they see an advertisement for a product to when they accept delivery and beyond. The advent of the World Wide Web has added seemingly limitless potential to the customer experience. As an example, take Dell Computer's bulletin board, where customers answer questions from other customers at a rate of 400 to 500 a day. As well as this, the natural-language search engine at this site handles 50,000 enquiries a week [5]. Significantly, these activities extend into attempts to measure aspects of the customer experience by tracking three major elements: order fulfilment, performance and service and support. This answers key questions such as:

(1) order fulfilment: how often does a completely accurate order get to a customer on time?
(2) performance: how often does something go wrong with a system once it has been delivered?
(3) service and support: how often do service people arrive on time and how often do they fix a problem on the first visit?

Communities and conversations

Among the more innovative and challenging dimensions to the electronic business environment is the concept of community. Earlier, writers such as Drucker described the new global economy as one rooted in electronic conversations between buyers and sellers [6]. Increasingly, this notion of markets as conversations is being specifically related to the Internet. Hence, it is argued, the Internet is enabling conversations among people that were not possible in the era of mass media and, as a result, markets are becoming smarter, more informed and more organised. Furthermore, people in networked markets are discovering that they can frequently get better information and support from one another than from vendors. Hence, for e-companies, the first goal of marketing has to be that of persuading people to listen.

In order to get people to listen, what is required is not the traditional sales pitch but membership of communities. The resultant community discourse involving customers, potential customers and business partners is the nub of the market and companies that do not belong to these communities and engage in discourse face a bleak future. However, engaging in a dialogue with consumers requires a lot more than sending out personalised direct mail. Despite the plethora of loyalty programmes, such as 'fly buys' for air miles, there is still considerable ignorance about customers. This ignorance embraces information context as well as information content.

Context and content

The driving force of Internet-based commerce is coming from companies looking for creative ways to conduct business with new and emerging partners. The initial rush of activity was as a response to the transaction dimension to business-to-business (B2B) e-commerce. Today, however, firms are beginning to understand that content and context are every bit as important.

The centrality of content to B2B e-commerce is exemplified in the necessity within markets, mediated and unmediated, for buyers and sellers to be able to trade useful knowledge. Content management involves the oversight and management of sources and the creation, packaging, reuse, sharing, delivery and customisation of information and knowledge across Web sites by means of intranets and extranets using a growing range of software. By linking diverse knowledge sources together for multiple uses, this empowers customers to serve themselves while getting a richer view and experience of electronic markets.

Further enrichment of the customer experience is available at some sites through the provision of editorial content. This is expensive and clearly raises familiar issues to do with potential conflicts between news and advertising. Some Web sites address this potential problem by building a firewall between commerce and content, with the latter residing on a separate server and accessible only by means of a password [7]. The intention is to build knowledge communities by providing high-quality, often critical, reviews and comments in the form wanted by users and which combine to make the overall user experience more rewarding.

However, as in traditional forms of business, much of the real intelligence and information value within electronic markets resides in the context that is wrapped around the information. Successful firms will have to automate the management and delivery of context. To this end, companies are employing a range of technologies, including document management systems, content management systems, enterprise portals and collaborative environments. At the core of these advances is extensible mark-up language (XML), which allows companies not only to deliver content to anyone but to collect valuable information about the context of their business dealings as well [8].

Portals and knowledge communities

Although the full contribution of enterprise knowledge portals has still to be determined, they have obvious potential as an interface between firms and customers. Sitting at the intersection of content and e-business processes, portals can function as a window to any online destination, be it an online marketplace, an extranet site or a corporate intranet. Around these functions is a framework of business process management that combines desktop access to multiple applications such as customer relationship management (CRM), workflow and collaboration systems.

A useful example of the use of technology to help in building communities is that of Cisco Corporation.

The company operates portals for its customers, its suppliers and its employees. The goal is to create relationships, by providing customers with access to every aspect of their relationship with Cisco over the intranet or the Internet. One central challenge to the company in building these portals was the perceived risk of making intellectual capital freely available. Another was the transformation of Cisco's organisational culture from one where knowledge hoarding was valued to one that is based on knowledge sharing. In order to build and maintain the levels of trust so essential to this kind of cultural change, the company actively engages customers and suppliers through focus groups and advisory boards to determine what they want and it then develops applications that meet those needs [9].

Managing the collaborative process

Much of what has been described so far can be seen as an essential response to the need for communication and collaboration in an e-business context. This entails the search for true interactive environments, where collaboration can be seen as evidence of electronic communities engaging in the real-time sharing of knowledge. This kind of sharing and collaboration is fundamental to two related, content-dependent and technology-empowered activities: CRM and knowledge management (KM).

Knowledge in customer relationship management

Newell has observed that if information is the heart of modern commerce, knowledge is the soul of CRM [10]. The aim is to turn information into knowledge through the establishment of mutually beneficial relationships with customers, in which customers provide information in return for personalised service. A useful definition of CRM is:

A process to understand the values that are important to individual customers and using that knowledge to deliver benefits the customers really want and making it easier for customers to do business with the company [11].

A major part of many e-commerce strategies, CRM helps companies to acquire and retain their most profitable customers. It is rapidly evolving from being technology-centric to becoming business value-oriented, with companies viewing customers less as exploitable income sources and more as assets to be nurtured in long-term relationships. Moreover, this business strategy is knowledge-focused, with the use of CRM software to bring together data from disparate systems and business units to provide a holistic view of customers and the company's relationships with them. Much of this data will be located in data warehouses and, when interrogated, will help to answer key questions, such as [12]:

- Who are core shoppers?
- What are their shopping habits?
- What are their preferences?
- Which prices and products are appropriate for which customers?
- Which promotions were profitable and who responded?

These data can be used to identify and target markets and even to market specific products directly to specific customers, by means of one-to-one marketing. By profiling customers, e-retailers (or e-tailers) can gather and use details that really drive the business and greatly enhance their value proposition. Central to, and coterminous with, such activities will be the practice of KM.

Knowledge management and the customer experience

As a term, *knowledge management* has received something of a mixed reception in the business community. At General Motors, it is called *Decision Dialog Process*, a team-based strategy for using individual and organisational knowledge to make better decisions. At Xerox, they talk about *knowledge ecology*, an organic approach to the nurturing of knowledge-based processes and practices. Other companies, from Dow Chemicals to Morgan and Banks, have taken a more qualitative approach to the subject, preferring to attach metrics to the value of intellectual capital. However, the name or designation is unimportant. What matters is the application of knowledge and knowledge-based processes to the work of the organisation.

Two useful working definitions of KM are:

(1) the explicit control and management of knowledge within an organisation, aimed at achieving the company's objectives [13];

(2) formalisation and access to experience, knowledge and expertise that create capabilities, enable superior performance, encourage innovation and enhance customer value [14].

The links to customer value and relationship building are clear in Davenport and Prusak's advice that KM should start with a recognised business

problem [4]. This can include such issues as customer defections, poorly designed products, losses of key personnel or a lower 'win rate' for service engagements, all of which might be traced to poor KM. This direct association with actual business problems can serve as a useful antidote to the general motherhood statements frequently issued in the name of KM. It can also help companies to focus more effectively upon the specific business benefits of KM.

Business benefits of knowledge management

The literature is full of the business benefits said to be attributable to the successful application of KM. These assertions are more plausible when linked to the exploitation of specific kinds of knowledge such as, for example, customer, operational or product knowledge.

The linkages between KM and business benefits can be illustrated as follows.

(1) Customer intimacy, e.g. higher customer satisfaction or increased order and proposal acceptance, can be achieved by using knowledge drawn from expert networks, from high-quality performers or from customer contact.
(2) Operational excellence, e.g. less costly products and services leading respectively to higher net profits and reduced operating costs, can be achieved through benchmarking and shared best practice.
(3) Product leadership, including the production of higher-quality and more innovative products offering greater value to customers, can be pursued by the application of external knowledge and increased sharing of internal knowledge between functions and departments.

In every case, this can involve the exploitation of both explicit and tacit knowledge.

Knowledge management and e-commerce

As with all forms of business, e-commerce cannot hope to succeed in the absence of commercial purpose and a related business value proposition. Lacking these essentials, neither products nor services nor market transactions can occur. This said, in the Internet economy, the availability of timely, relevant and high-quality information and knowledge is essential, both to translate this value proposition into reality and to facilitate digital transactions. Because of the nature of the

markets and the transactions involved, the relationships between stakeholders and the technological and business infrastructures employed, e-commerce is particularly dependent upon knowledge and its management. Whether it is specific categories of knowledge, such as customer knowledge, or general knowledge flows within organisations, markets or sectors, content is key for successful e-commerce. To be effective, the management of this content must provide for an integrated approach embodying strategic direction, sound human and business processes and a robust technology infrastructure.

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