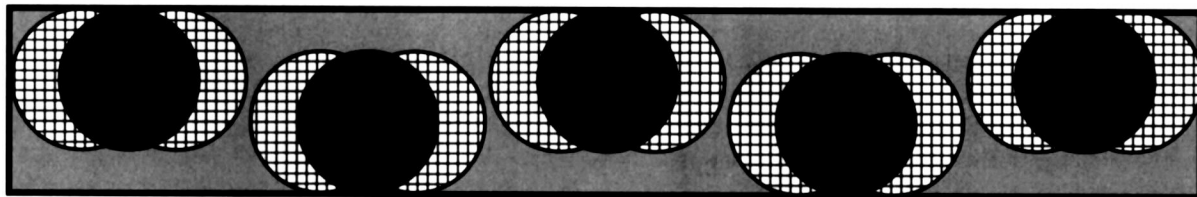


The Role of Knowledge and Capability Evaluation in E-Business Strategy: An Integrative Approach and Case Illustration

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Introduction

For most firms, ignoring e-business means losing an opportunity to gain competitive advantage in the digital age (Czerniawska and Potter, 1998). Yet, e-business initiatives are often perceived as risky and challenging, especially for bricks-and-mortar companies facing challenges such as a lack of e-business skills, resistance to process redesign, and the ambiguity associated with changing the information technology (IT) infrastructure of the company (Marshall and McKay, 2002).

Several studies have emphasized the role of e-business strategy and planning in reducing the uncertainty associated with moving business operations to the Internet (Mason, 2000). However, organizations are not all equally predisposed or prepared to successfully launch and maintain an e-business initiative. Therefore, a key to understanding the success and failure of e-business initiatives is to identify and assess the necessary preconditions. In this paper, these preconditions refer to the prior knowledge and capabilities that directly affect the organization's drive toward successful e-business strategy formulation. This paper postulates that formulating an e-business strategy should be based on knowledge of customer priorities, technological evolution, supply chain, environment, and competition, as well as on its current core capabilities.

Traditional top-down and bottom-up planning approaches have failed to provide the needed flexibility in e-business projects because they do not adequately account for such knowledge and capabilities factors. Thus, a "continuous planning with feedback" approach to the process of

e-business strategic planning has been introduced, wherein the process of transformation to e-business is customized and systematized. In this approach, two major phases take place, namely e-business strategy formulation and implementation. The formulation phase has three major steps. First, knowledge building involves assessing and acquiring the knowledge levels necessary for e-business. Second, capability evaluation involves assessing and acquiring the capabilities required for a successful e-business initiative. And third, e-business design consists of choosing the appropriate e-business application and setup based on the existing knowledge and capability levels. The implementation phase entails developing an e-business blueprint followed by the development and deployment of the e-business applications (Kalakota and Robinson, 1999).

This study focuses on the first two steps of e-business strategy formulation by developing an integrative and a knowledge-based approach. This approach adapts auditing principles to knowledge building and capability evaluation. More specifically, this study attempts to address the following research questions:

1. How can knowledge-enabled customer relationship management (KCRM) auditing principles be used to identify and assess a broader range of knowledge areas in a company, in addition to customer knowledge? An how can it help arrive at an acceptable level of knowledge for moving into e-business?
2. How can current competencies be identified through a capability audit? And how can

companies determine what additional capabilities are required before implementing the e-business strategy?

After a brief review of the literature on e-business strategy, the next section describes the integrative framework for the process of e-business strategy formulation. The application of the proposed framework is illustrated by a case study of a garment manufacturing company in the Middle East.

E-business Strategy

The primary value of e-business lies in enabling organizations to respond to business pressures with innovative rather than incremental actions, such as customization, direct marketing, and convenient and timely access to market information (Zhu, Kraemer and Xu, 2003). Moreover, e-business reduces the cost of information, direct advertising, and access to international markets while removing distance-related barriers. However, e-business initiatives face various barriers and challenges such as access to the necessary infrastructure, security, appropriate legal and regulatory settings, and adaptation of business processes (Scupola, 2003). The need for a strategy in e-business initiatives is justified by "hyper-competition." As organizations face continuous pressures from investors and rivals alike, they seek immediate actions with fast results as opposed to building a superior strategic position. Therefore, if e-business is adopted for the purpose of achieving a sustainable competitive advantage, it should follow a long-term strategy (Sharkie, 2003).

The uncertainty associated with e-business strategy stems from making strategic choices based on the assumptions, premises, and beliefs of managers. Consequently, companies need rigorous tools to help them systematically and reliably determine their current as well as needed level of knowledge related to e-business. This can be achieved by adapting established

knowledge management and auditing concepts. Similarly, current as well as needed capabilities, including technological infrastructure and organizational processes, required in e-business should be identified through some form of capability auditing (Ping and Chang, 2004). Only then can the company determine the appropriate e-business design that defines the right business model, organizational structure, and control systems. The ultimate result is achieving a sustainable competitive advantage (Hill and Jones, 2004). E-business strategy should also avoid vagueness and abstraction to reduce the uncertainty inherent in moving part or the entire enterprise online.

The Integrative Approach

• Knowledge building and knowledge auditing

Knowledge auditing is the "systematic and scientific examination and evaluation of the explicit and tacit knowledge resources in the company" (Hylton, 2002). It also entails determining the organization's effectiveness and efficiency of knowledge capture, codification, and transfer (Liebowitz et al., 2000). Knowledge auditing processes can take many forms and have many levels of detail depending on the company (Ho, 2004). However, regardless of the method, a knowledge audit consists of the following basic steps:

1. Audit Initiation: setting the objectives (target areas of knowledge to be audited) and limitations
2. Reference measures and selection of audit method
3. Performing the audit:
 - a. Identifying existing knowledge in target areas
 - b. Identifying missing knowledge in target areas
 - c. Providing Recommendations.

Table 1. Steps of Knowledge-enabled Customer Relationship Management (KCRM) Audit

Step 1: Initiate the Audit	Step 2: Select Reference Measures and Methods	Step 3: Perform the Audit
1. Define Audit Goals	1. Define Customer Clusters	1. Perform the Audit
2. Assemble Audit Team	2. Determine the Ideal State Reference	2. Document Knowledge Assets
3. Identify Constraints	3. Select Audit Method and Dimensions	

Adapted from (Tiwana, 2001)

Table 1 describes the KCRM knowledge audit. This particular audit was chosen for this study because customer attention and sensitivity to customer needs are essential in any e-business project (Hackney, 2005). KCRM is defined as the utilization of knowledge management tools and principles to strengthen customer relationship management (CRM) projects. This involves storing and using knowledge about customer buying patterns, predicting customer needs, and responding to their preferences for the purpose of maximizing their loyalty and satisfaction in the process (Spira, 2002).

In the context of knowledge building as part of the first step of e-business strategy formulation, a knowledge audit similar to the KCRM audit is used and called the *E-business Knowledge Audit*. The only difference is that it assesses the company's knowledge about customers as well as value and relationship trends, technology trends, supply chain or environmental trends, and competition. It follows the same structure of the audit illustrated in Table 1. However, the first step of "selecting reference measures and methods" in Table 1 (defining customer clusters) is eliminated since it is rather CRM focused. Generally, a manufacturing company being introduced to end consumers through a business-to-customer (B2C) e-business initiative would not benefit much from clustering existing business customers.

In addition, the second step in "selecting reference measures and methods" is eliminated. This step consists of determining the ideal state reference, which refers to the identification of the current performance levels and setting target levels for each knowledge component. The target levels should be higher than the company's performance or the industry average by a certain percentage (Tiwana, 2002). The purpose here is to provide a way to benchmark and measure the impact of the e-business initiative on the company's performance. However, determining this reference needs tracking and measurement, making it more suitable for e-business implementation and performance assessment projects. This study is concerned only with the formulation as opposed to the implementation process of an e-business strategy. Therefore, an ideal state reference has no effect on the validity of the e-business knowledge audit. Finally, instead of recording knowledge assets into the customer-focused capability framework, we developed a scoring table that

accounts for the other areas of knowledge. We call this the *E-business Knowledge Level Scoring Table* (see Table 4).

Knowledge auditing begins by identifying objectives and limitations of the audit itself (Hooft and Stegwee, 2001; Tiggelaar, 1999). We use Bohn's Knowledge Growth Framework, which is summarized in Table 2.

Each knowledge dimension is rated on a scale from 0 to 8 in terms of its tacit nature as well as its need for knowledge management support. Bohn (1994) recommended that averages be calculated for knowledge areas and mapped into a matrix (a scoring table) for comparison. In assigning the 0-8 rates, the degree of codification is the measure. This is because the goal is to determine whether the company stores and reapplies knowledge and workable solutions as procedures instead of replicating efforts every time a problem occurs. This is the essence of codification (Maryam and Leidner, 2001).

To illustrate how the scale is applied, consider the example of knowledge about customer segments. The audited company is asked questions about the extent of its knowledge about customers. Subsequently, each answer is assigned a rate. Examples of such questions may include: What are your different customer segments? What is most important to your customers? What five new products or services in your industry have become most popular in the last five years? What customer segments are buying them? Why do they like them? What are the spoken and unspoken needs of each of the customer segments? And what aspects of your performance does each customer segment care about? Averages are calculated for all the answers to yield a single value for customer knowledge. This paper proposes that the company should enter the e-business project with at least adequate levels of customer knowledge to achieve significant results and strategic value.

• Capability evaluation and auditing

Core capabilities refer to the organizational resources, processes, or abilities that distinguish a company from competitors and enable it to achieve market success (Miasaki, 1994). Thus, companies strive to define themselves in relation to one or a few unique core capabilities. Although capabilities can be categorized into supplemental, enabling, and core (Leonard-Barton, 1995), only core capabilities are examined here in the e-business strategy formulation

Table 2. The Tacit/Explicit Knowledge Scale - Adopted from (Bohn, 1994; and Tiwana, 2002)

Stages of Knowledge	Interpretation
Stage 0	The company cannot differentiate good from bad outcomes
Stage 1	The company applies trial-and-error in making every single decision. No Knowledge Reference is available
Stage 2	Only few people have all the knowledge in their brains. No explicit knowledge is available to other employees.
Stage 3	Tacit knowledge is available in the form of heuristics and rules of thumb. This knowledge is good enough.
Stage 4	Knowledge is somewhat codified, but employees do not use it or appreciate its value.
Stage 5	The available explicit knowledge cannot be applied without the tacit knowledge of a few people in the company.
Stage 6	For normal circumstances, the company uses explicit codified knowledge and does not need the tacit knowledge possessed by certain few people. Otherwise, tacit knowledge is needed to apply the codified knowledge. Revalidation of explicit knowledge is necessary upon each application.
Stage 7	Very small amount of tacit knowledge. Knowledge sharing is encouraged, and knowledge codification reduces the harm done by the departure of key employees. Revalidation of codified knowledge is done upon every use of it. Codification of knowledge is a systematic and predictable process. Explicit knowledge can be used to make decisions, run what-if-scenarios, learn from past experiences in order to choose appropriate actions and avoid useless measures.
Stage 8	Cannot be easily characterised

process. These capabilities embody proprietary knowledge unavailable from public sources and superior to those of competitors. Such core capabilities are composed of *skills and knowledge* (techniques and scientific understanding about e-business), *physical systems* (databases, hardware, and software programs, in which skills and knowledge get embedded over time), *managerial systems* (systems of learning, rewards, and incentives), and *values and norms* (systems of status, behaviour, and passionate beliefs that define the level of tolerance to new undertakings) (Leonard-Barton, 1995; Minbaeva et al., 2002).

The purpose of capability evaluation is to ensure a thorough assessment and understanding of the company's current and needed e-business capabilities. This is needed to determine the correct combination of capability building and outsourcing, if any (Czerniawska and Potter, 1998). Capability evaluation has two steps. The

first identifies current core capabilities and the second identifies capabilities needed for e-business.

Assessing current core capabilities

To identify a core capability, the following questions should be answered (Leonard, 2002):

1. What knowledge exists within your organization that is better, deeper, or rarer than that possessed by your competitors?
2. What are the main knowledge assets that your competitor would want to steal from your organization? The loss of what knowledge assets from your organization would threaten your company's existence?
3. What kinds of knowledge does your company's culture encourage and foster?
4. Where are those knowledge assets held? That is, are they located in the heads of a few people, in managerial systems, or in physical hardware

components or software systems?

The next step consists of determining whether or not the dimensions of the identified core capability are adequate for the anticipated e-business initiative.

Determining the required capabilities

In this step, we propose that three different frameworks for determining the to-be-acquired capabilities be combined into one framework to identify the areas of change in the company. The following three frameworks form the basis of our integrated framework.

Framework-1: Kalakota and Robinson's (1999) areas of capability assessment for e-business. This framework assesses the strengths and weaknesses of the company's capabilities along the following dimensions: customer interactions (e.g., customer service, sales, and marketing), production and fulfilment (e.g., manufacturing, distribution, and inventory management), people (e.g., training, culture, and skill sets), technology (e.g., networks, help desks, and legacy applications), and core infrastructure (e.g., financial systems, research and development, human resources). This assessment helps identify the capabilities needed to

acquire, improve, or create to achieve the e-business mission.

Framework-2: Marshall and McKay's (2002) visioning and strategy formulation for e-commerce. This framework assesses the following success factors for e-business: (1) investment in suitable information systems and technology, (2) appropriate reengineering and redesign of business processes, (3) effective marketing and customer relationship management, (4) efficient and effective acquisition and management of resources and relationships, and (5) the development and management of an efficient and effective logistics and distribution capability.

Framework-3: Leonard-Barton's (1995) dimensions of core capabilities. This framework divides core capabilities into four dimensions, as explained earlier.

Our integrative framework, summarized in Table 3, classifies the components of capabilities according to Leonard-Barton's approach but measures their readiness for e-business against the areas of assessment as well as the success factors previously mentioned. For instance, the first cell in Table 3 would tell us how much knowledge and skills about customer service,

Table 3. Assessment of the Dimensions of Core Capabilities for Readiness for E-Business

E-business Skills and Knowledge	Physical Systems
<ul style="list-style-type: none"> • Customer service • Knowledge about e-business • Information technology skills • Marketing skills 	<ul style="list-style-type: none"> • ERP Systems • Legacy applications • Web site and intranet • Financial systems • Factory equipment and production techniques • Networks
Managerial Systems	Culture and Values
<ul style="list-style-type: none"> • Supply chain management • Inventory management • Knowledge management • Training • R & D • Human resources • Redesign of business processes • Distribution and logistics • Disaster recovery planning 	<ul style="list-style-type: none"> • Executive commitment • Alignment of e-business of business strategies • Level of risk • Change management • Sharing and collaboration • Responsibility awareness

e-business, information technology, and marketing are needed to achieve a competitive advantage from its e-business initiative.

Case Illustration

This case illustrates the process and outcomes of the detailed application of the integrative framework just developed.

• Case Study Background

The case study was conducted in a garment manufacturing company established in Sharjah, United Arab Emirates (UAE) in 1989. The company had a few local manufacturing facilities and a global network of contracted manufacturing plants. It provided apparel sourcing services ranging from raw material sourcing at competitive prices to the manufacturing of quality apparel for distributors. The company supplied, under different labels, several global retail chains. Product lines included knit and woven items such as jeans, shorts, knitwear, sleepwear, and uniforms. This company was chosen because, while specializing in business-to-business commerce, it was considering a business-to-consumer initiative that was still in the early planning stage. Data were collected

through in-depth interviews with various executives and managers, as well as multiple site visits.

• Results and discussion

Interpreting the knowledge audit

The outcome of the knowledge building stage was identifying the areas where the company needed to acquire and codify more knowledge. Table 4 signals an alarming difference between the level of codification of competitors' knowledge and the other four areas.

Consequently, as proposed by Tiwana (2001), the company should consider some knowledge management activities to obtain, organize, and make accessible knowledge about its competitors. Such knowledge would instill in employees the urgency to watch rivals' practices, be alert to innovations and share them within the rest of the company as soon as possible. A detailed analysis of each of the cells follows.

Customer knowledge level. The company's knowledge about customer segments was found to be held mainly by the merchandising managers. Data about customer contact information and products of interest were stored in a general

Table 4. E-business Knowledge Level Scoring Table

Customer Knowledge Level		Technology Knowledge Level		Environment and Industry Knowledge Level	
Customer Segments	3	Core Current Technology	5	Economic Trends	3
Customer Needs	3	Technical Transitions	3	Political Trends	3
Product delivery and Optimization	2	Technological Change Planning	3	Technological Trends	3
Customer Retention Techniques	4	Technological Portfolio Diversification	1	Strategy Trends	3
Customer Targeting	3			Competition Trends	3
Value Adding Activities	5				
Customer Priorities	3				
Customer Priority Trends	2				
Average:	3.13	Average	3.00	Average	3.00
Competitor's Knowledge Level		Supply Chain Knowledge Level			
Direct Competitor Identification	1	Supplier Capabilities	3		
Indirect Competitor Recognition	1	Effective Use of Facilities	3		
Future Competitors	1	Cycle Time	3		
Competition Analysis	1	Lead Time	3		
		Inventory Levels	3		
Average:	1.00	Average:	3.00		

customer database that lacked textual narratives or customer experiences. Knowledge about customer segments was tacit to the extent that it could not be articulated. Similarly, knowledge about the spoken and unspoken needs of customers was retained in the heads of upper managers and was not available in any format for other employees. Although the aspects of performance that were most valuable to customers were available in annual reports, these reports were accessible to top management only. Such knowledge was converted into rules of thumb that aided managers to address those customers' needs.

Moreover, knowledge about customer priorities and priority trends (lowest price, quality, and design uniqueness) was developed through interaction between managers and customers over time and was not codified. It resided in the heads of managers and was embedded in the nature of interactions with customers. Customer targeting did not depend on any knowledge about customer needs and priorities. The company assumed that the needs of new customers would be low price and good quality for all. For instance, the company's top five customers were dealt with based on experience and the tacit understanding of their priorities and perceived value. Thus, adding value was viewed by the company as minimizing customer cost, maintaining quality assurance throughout the manufacturing process, and continuously applying the latest technologies. This process was in place although it partially depended on the merchandizing managers' particular skills and knowledge.

As for knowledge about product delivery, products were shipped to customers throughout the year through a single employee in the shipping department who contracted with shipping agents and arranged delivery of products to customers. All the knowledge in this area was held by that employee. The company's knowledge about how to optimize the process of product delivery was minimal, since no steps could be identified for elimination by management. Nor could possibilities of streamlining through the Internet be anticipated. None other than the employee in the shipping department could respond to these questions. Finally, details of customer incentives were available only in monthly reports accessible only to upper management, and merchandizing managers who needed this information could not directly use it.

Hence, we concluded that this knowledge was codified in specific reports, but not used by those who needed it.

Environment and industry level knowledge.

Relevant knowledge about economic, political, technological, and market trends was not available to employees in general. Management made sure it stayed informed about these trends at all times, informed the relevant employees about them, and guided involved teams and individuals to act accordingly. No systematic ways existed to capture and organize this knowledge or even make it available in any format among managers themselves. In other words, this knowledge was generated *as needed* to deal with problems as they arose.

Knowledge about competitors. The company's knowledge about their competitors was very limited since the interviewees could not mention specific competitors by name. No information about specific competitors in the UAE industry could be obtained from the company, because management believed that this knowledge was not important as long as no new competitors tried to woo away existing customers. Management also perceived local competition as insignificant since most of the customers were based in the United States.

International competition was not feared by the company, since it considered its business to be already established and, therefore, its customers had no reason to consider other options. The company also indicated that, in the garment industry, there were no *indirect competitors*. Consequently, the company did not deploy special efforts to anticipate and prepare to deal with future competitors. Knowledge about competitors was insignificant even though the company conducted business with international clients and was exposed to competitors worldwide. Therefore, we concluded that the company's knowledge about their competition was very low.

Technological knowledge. Knowledge about the company's manufacturing technology was integrated into the manufacturing process itself, resulting in workable solutions and procedures to improve the production process. The IT department ensured up-to-date information about technological trends and transitions in the industry. Such information was not stored in any

database, nor was it embedded in operations in a predefined procedure. We found this knowledge to be rather tacit in nature. However, the company found ways of learning, as needed, and embedding new knowledge in successful ways. The company's knowledge about technological transition planning was very limited and tacit. It was unstructured; a simple feasibility study was conducted every time a transition occurred to determine whether or not to adopt a new technology. The belief that the garment industry was labor-intensive led the company to ignore knowledge about technology diversification. In fact, managers believed that the technology they applied was more than enough to run the production process.

Supply chain knowledge. The company felt that suppliers in the garment industry did not have any capabilities that would give them bargaining power in supply chain decisions or pricing mechanisms. Therefore, other than the quality and variety of their materials, no additional knowledge about suppliers was considered necessary. The company apparently had enough explicit and documented knowledge about suppliers' capabilities and weaknesses, as well as about how to choose among them. Yet, experiences with suppliers were not codified in a repository nor stored in any other form.

Knowledge about the specifics of lead time and details of the production process resided only with the production manager and the key employees. No evidence of codification was found for this type of knowledge, since production reports were not made available to all employees. The interviewees asserted that the cumulative knowledge of the production managers and key employees explained the exceptionally low lead time the company had relative to competitors. These individuals were considered to be the only ones who could determine ways of reducing lead time. Most of this knowledge was tacit and unstructured.

Similar to almost all kinds of knowledge in the company, cycle time analysis was available in annual reports that were accessible only to upper management. Employees who had a direct effect on cycle time did not have regular access to this knowledge. The company's knowledge about inventory management was basic. The general policy was to maintain twice the needed amount to account for move-up orders and errors.

Production reports accessible to production managers revealed that the warehouse was operating at about 40% utilization, because the company's warehouse had a certain shelf organization that could not handle large orders of the same product. The shelves were designed to fit a relatively small amount of particular product and other shelves could not be used since they could not fit the overproduced product. Therefore, the port's warehouse was used in these circumstances. Again, this information was generated only for production managers and was not accessible to other employees who might be involved in the process or who might be able to provide insights into problem-solving.

Interpreting the capability audit

The company identified its core capability as using the latest production and information technology to build sustainable and rewarding relationships with customers. This was achieved by enabling low volume production while maximizing efficiency through maintaining a unified knowledge among merchandising managers about specific customer needs. This capability was the heads of few people such as upper management and merchandising managers. As for the to-be-acquired capabilities, we followed the structure in Table 3 as follows:

E-business skills and knowledge. The company seemed to have all the IT skills required for the e-business initiative since its IT department was fully capable of developing the three in-house Web sites. No hosting skills were required, since their sites were hosted on a server located in the U.S. Employees acquired many e-business concepts and activities developed through training and education. However, the company needed to develop customer relationship skills since employees were not used to interacting with individual consumers, who typically pay more attention to the smaller details of product and service quality. Employees interacting directly with end customers needed training on effective individualized marketing techniques and advanced interpersonal skills. In addition, the company lacked the skills to develop an online catalog, hence requiring more training or simply outsourcing the activity. Adding photos to the Web site would also require the company to contract with professional photographers.

Physical systems. The company's IT infrastructure was almost ready to accommodate the business-to-consumer initiative. The Web site was hosted on a large server capable of handling the potential increase in online transactions. However, the company had to acquire online catalogues as well as introduce a point-of-sale inventory management system. In addition, the current system would not be able to handle the tremendous increase in data storage and processing capacity, hence requiring an upgrade of the database for higher capacity and more advanced backup.

Meanwhile, the enterprise resource planning (ERP) system would need to account for the shift toward customer focus in the business processes as well as data storage and retrieval priorities. The company did not believe in outsourcing ERP systems, given the difficulty of customizing off-the-shelf solutions. In addition, the e-business initiative required assessing the legacy system's adaptability to the significant increase in the size of sales introduced by online transactions. This was an important challenge since no data were available on UAE companies implementing business-to-consumer e-commerce. Still, the company needed to consider either investigating UAE bricks-and-mortar established retailers' figures or contracting with a consultant. The company also needed to establish a call center to enable timely response and fulfilment of customer requirements.

Managerial systems. The company adopted a continuous training approach for relevant IT applications. Whenever new software was on the market, the IT manager reported it and required a training course at least for the management layer to stay current on IT trends. The company's disaster recovery plan was based on a server with two back-ups in case of downtime. However, the company still needed to modify the warehouse setup to one that quickly provided appropriate amounts of all models, colors, and sizes at any time. As for business process redesign, new processes for direct interaction with consumers were needed. The Human Resources Department had to motivate those who participate in and support the e-business initiative. New knowledge workers were needed to perform the jobs that required IT skills not available in the company. Meanwhile, with less tolerance for delays and inaccurate shipments of raw materials, new supply chain management efforts were

needed in terms of supplier selection and development.

Finally, the company was lacking important knowledge management activities as part of its managerial systems dimension. For instance, the company did not make effective use of available corporate data, resulting in redundancies in the eyes of customers, e.g., a customer was asked the same question about his or her references from two different merchandizing managers. Thus, the company needed to implement an enterprise knowledge portal to visualize all departments' tasks and performance.

Norms and values. The e-business initiative under consideration was well aligned with the business strategy of maintaining strong relationships with existing customers and obtaining new profitable ones. Managers exposed the company to acceptable levels of risk that instilled a sense of urgency to learn. However, the e-business initiative required a significant decrease in emphasis on cost reduction when dealing with individual customers who typically demanded high quality and reliable delivery. Employees also needed to be made aware of their responsibilities and roles as part of the new e-business initiative so they could set individual goals and try to meet them.

Conclusions and Recommendations

Recalling the continuous-planning-with-feedback framework proposed in the introduction, the next phase of e-business strategy formulation is choosing an e-business design. Although this step was not within the scope of this study, an insight into its purpose and nature would be beneficial. Having identified the strengths, weaknesses, opportunities, and threats through the e-business knowledge audit and capability evaluation, the company was ready to choose the appropriate e-business design. Further research could focus on how the outcome of knowledge building and capability evaluation could be utilized to design the appropriate e-business business model.

The case study in this paper demonstrated the applicability and benefits of the proposed integrative framework for the e-business strategy formulation process derived from the literature on e-business, knowledge management and auditing, and core capabilities. Specifically, this study showed that managers need to capture and document as much knowledge as possible about

customer priorities, trends, and segments. This knowledge helps the company visualize how e-business can best enhance the value of their products and services in the eyes of the customer (Fahey et al., 2001). Managers should also develop ways to gather and document knowledge on all the aspects of the supply chain in order to tailor the e-business program in a manner that leverages strong relationships with suppliers and customers (Fahey et al., 2001). Adequate knowledge about competition could be generated through environmental scanning, benchmarking, monitoring, and predicting competitor practices. Such knowledge directs the e-business strategy toward achieving a competitive advantage. Meanwhile, knowledge sharing and dissemination activities and technologies should be deployed internally and throughout the supply chain. This would require that management develop a change management plan to carry out the necessary modifications in current organizational processes, employee commitment and attitudes, and reward systems for all employees (Daniel and Wilson, 2003).

Further research should elaborate on the conceptual models presented in this paper. In addition, more case studies would be helpful to build normative implications with respect to knowledge auditing and its implementation in e-business strategy formulation. Nevertheless, such cases should be complemented with quantitative empirical research that seeks to operationalize key knowledge management and capability variables and test the proposed conceptual models.

Dr. Daghfous focuses his research on knowledge management, organization learning, and innovation, and the role of government-university-industry collaboration in regional economic development. He has published in several journals. Noor Al-Nahas is pursuing an MBA at the American University of Sharjah (UAE) with a concentration on e-commerce. She has published conference papers and conducts research on e-business strategy and open source software development.

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The Produce-Process Matrix 4
Revisited: Integrating Supply
Chain Trade-offs

In 1979, Hayes and Wheelwright presented a product-process matrix showing the trade-offs in operations and marketing. Since then, much has changed in the world of commerce to increase speed to market, flexibility of production, and increased customization. The functions of a producer's supply chain are of increasing importance to these processes and trade-offs. To compete successfully, the entire supply chain must focus on meeting the needs of the end customer. Concrete examples suggest how this can be done.

Rhonda R. Lummus, Robert J. Vokurka, and Leslie K. Duclos

The Role of Knowledge and 11
Capability Evaluation in
E-Business Strategy: An Integrative
Approach and Case Illustration

Companies that might benefit from e-business are often understandably nervous about moving into this digital world. With the right kind of preparation, however, much uncertainty can be removed. A thorough, documented, and shared knowledge of customer priorities, the supply chain environment, competitors, current core capabilities, and IT abilities are needed as a foundation for a flexible e-business strategy. The "continuous planning with feedback" approach is recommended to tailor the strategy to the firm's particular needs and capabilities. This approach was applied by a garment manufacturer in the United Arab Emirates that was considering an e-business-to-consumer initiative. Their experience should be instructive for other businesses and managers.

Abdelkader Daghfous and Noor Al-Nahas

Culture, Self-Directed Learning 21
Readiness, and Per Capita
Income in Five Countries

Competitive pressures arising from globalization put the spotlight on workplace learning. If employees can't learn quickly, a company will not have the needed flexibility and agility to compete successfully. A study of self-directed learning readiness in China, Guatemala, Hong Kong, Lithuania, and the U.S. found a strong correlation to certain aspects of country culture. In particular, cultures that value individualism correlate positively, whereas those endorsing "power distance" (acceptance of the unequal distribution of power within an organization) correlated negatively.

Paul J. Guglielmino and Lucy Madsen Guglielmino

Proactive Reification: Shifting 29
Market Structure and
Entrepreneurship

Although a market is an abstract concept, it functions in a very real way. Market strategists seek to adapt their firms to existing markets, whereas entrepreneurs typically create new markets out of existing market factors. They convert or reify the market abstraction into something new and different. Southwest Airlines, Apple Computer, and the creation of the town of Impact, Texas, are notable examples of proactive reification. But entrepreneurs should beware of the Frankenstein effect, whereby the newly created market takes on a life of its own and threatens or destroys the inattentive creator.

W. Scott Sherman and Janice A. Black