

Singapore Management University

Institutional Knowledge at Singapore Management University

Research Collection School Of Computing and
Information Systems

School of Computing and Information Systems

6-2005

Knowledge management mechanisms of financial service sites

Fiona Fui-hoon NAH

Singapore Management University, fionanah@smu.edu.sg

Keng SIAU

Singapore Management University, klsiau@smu.edu.sg

Y. TIAN

Follow this and additional works at: https://ink.library.smu.edu.sg/sis_research



Part of the [Databases and Information Systems Commons](#)

Citation

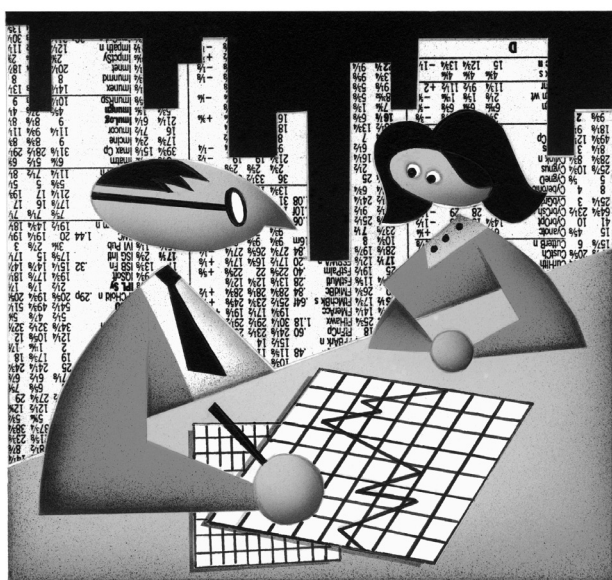
NAH, Fiona Fui-hoon; SIAU, Keng; and TIAN, Y.. Knowledge management mechanisms of financial service sites. (2005). *Communications of the ACM*. 48, (6), 117-123.

Available at: https://ink.library.smu.edu.sg/sis_research/9385

This Journal Article is brought to you for free and open access by the School of Computing and Information Systems at Institutional Knowledge at Singapore Management University. It has been accepted for inclusion in Research Collection School Of Computing and Information Systems by an authorized administrator of Institutional Knowledge at Singapore Management University. For more information, please email cherylds@smu.edu.sg.

KNOWLEDGE MANAGEMENT MECHANISMS OF FINANCIAL SERVICE SITES

How can we effectively acquire, use, and manage knowledge via the Web?



Knowledge has been recognized as a key corporate asset and the only source of sustainable competitive advantage. One must effectively apply, manage, and utilize organizational knowledge to sustain competitive advantage. The advancement of the Internet and e-commerce technology provides companies not only with new ways to create knowledge, but also with

opportunities to improve their ability to manage and utilize knowledge [10]. Via the Internet, enormous amounts of information concerning customers, suppliers, markets, and supply chains can be easily gathered, while information about company processes, products, and services can be conveniently disseminated to the public. However, these opportunities pose challenges as companies may become overwhelmed by the volume of information and may not know how to utilize information to their advantage. How can such information and knowledge be

**FIONA FUI-HOON NAH, KENG SIAU,
AND YUHONG TIAN**

effectively acquired, managed, and utilized?

Knowledge refers to justified personal beliefs that increase one's capacity to take effective action [8]. To remain competitive, organizations must effectively and efficiently create, capture, locate, and share organizational knowledge and expertise, and bring that knowledge to bear on problems and opportunities [3, 5].

Knowledge management (KM) is a collection of processes that govern the creation, dissemination, and utilization of knowledge [7]. To achieve the goal of KM, we need a systematic approach to identify and capture information and knowledge about company processes, products, services, markets, customers, and competitors, and to share them for the greater goal of organizational well being and performance [2].

A survey by Alavi and Leidner [1] indicated the most important knowledge domain is one related to customer service (as compared to knowledge about business partners, internal operations, human resources, and others). Tiwana [12] also stressed the importance of managing customer knowledge to gain competitive advantage. Knowledge related to customer service and relations is undoubtedly even more important in the e-commerce context because of the lack of social cues and interpersonal interaction in cyberspace. What mechanisms can assist e-commerce companies in acquiring and utilizing the enormous amount of customer knowledge available through the Internet?

The aim of this research is to identify and analyze the KM mechanisms employed on the Web sites of leading online financial service companies. Unlike many of the previous KM studies, this research does not focus on how to facilitate KM within an organization. Rather, the focus is to study the prevailing mechanisms and practices of KM utilized by leading financial service sites.

In this e-commerce era, the financial service industry is no less affected by Internet challenges than other industries; indeed the impact might be even greater

due to its heavy reliance on information systems and customer contact [12]. The advantage of having a cyberspace counterpart is enormous. Internet transactions will soon become the dominant method for offering financial services because they are faster, cheaper, and easier to customize than traditional methods. The vast amount of information flow and intense customer contact in the financial industry make a strong case for conceiving and developing a systematic customer KM framework.

KM MODEL IN CYBERSPACE

Schwartz et al. [9] developed the Acquisition, Organization, and Distribution (AOD) Model, which views Internet-based KM as dealing with three distinct

tenets: acquisition, organization, and distribution (see Figure 1). Tiwana's three-phase customer knowledge cycle model [12] consists of acquisition, sharing, and utilization (see Figure 2). Most of the existing KM models do not present knowledge inflows and outflows across organizational boundaries [4]. However, when dealing with customer KM in

cyberspace, we must include both knowledge acquisition and dissemination between the companies and their customers. In other words, knowledge crosses organizational boundaries.

To stress the importance of customer knowledge in cyberspace, we developed a KM model shown in Figure 3. This model consists of three components: knowledge acquisition, knowledge dissemination, and knowledge sharing [6]. It closely resembles Tiwana's model [12], except that knowledge dissemination is used in place of knowledge utilization. Knowledge dissemination is more appropriate in this context—knowledge dissemination mechanisms can be directly observed from company Web sites whereas knowledge utilization mechanisms are internal to companies and hence may not be directly observable from the sites. The model for this study is similar to that proposed by Schwartz et al. [9] (see Figure 1) except that we differentiate between



UNLIKE MANY of the previous KM studies, this research does not focus on how to facilitate KM within an organization. Rather, the focus is to study the prevailing mechanisms and practices of KM utilized by leading financial service sites.

knowledge distribution (or dissemination) and knowledge sharing.

Knowledge dissemination refers to delivering knowledge to potential customers, whereas knowledge acquisition involves capturing customer knowledge. Knowledge sharing activities enable participants to contribute their knowledge to peer participants, or interact directly or indirectly with experts, advisors, or customer service representatives. In other words, knowledge is transferred not only between the company and its customers, but also among the customers.

The research described here examines the customer KM mechanisms of financial companies from four categories: credit card companies, banks, discount brokers (online brokers), and full-service brokers (brick-and-mortar brokers with online counterparts). The sample comprises 20 of the most highly rated online personal finance service sites as rated by the well-known Gómez.com, an independent Internet quality measurement firm.

KNOWLEDGE DISSEMINATION

The study findings (see Table 1) indicate that all 20 Web sites provide help or FAQ features, and the majority provide site maps, search functions, pressrooms, and educational information. Some sites have demos or tours to help potential customers gain a better understanding of the products and services offered. Personalized product/service recommendations are a relatively new mechanism employed by most Web sites. These mechanisms directly facilitate the knowledge dissemination process.

In addition, some Web sites include features such

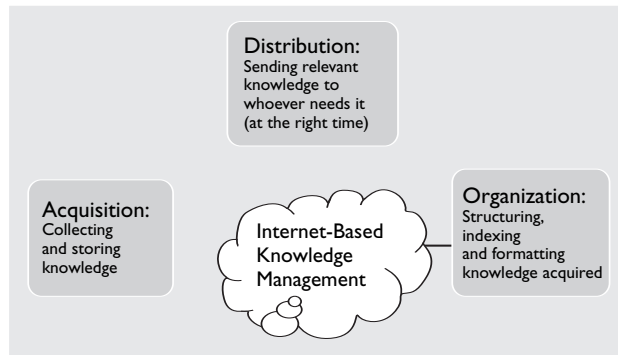


Figure 1. Three tenets of Internet-based knowledge management.

as links to other companies' Web sites, information on incentives and rewards programs, or e-commerce credit card companies (or top sellers) indexes. These features attract customers to the products/services offered. Other auxiliary services or functions provide customer access to appropriate and relevant knowledge, including account alerts, telephone and wireless banking, real-time market information (watch lists), free email accounts, access to the latest research tools, and account analyzers.

Search function, drop box, site map. Search functions are standard features available on a majority of the Web sites, allowing customers to quickly find appropriate financial services and other types of information relevant to their needs.

Some Web sites simplify the search function by listing all of the items in a drop box. Site maps show the overall structure of the Web site, and help customers quickly familiarize themselves with the site.

FAQ/help, demo/tour.

All 20 Web sites have FAQ or other help functions that explain their services in a question-answer format. The content is diverse, from information about basic financial services such as credit information and issues, to information about how to use the Web site.

Instead of browsing through a long FAQ list, the Bank of America allows customers to type in their questions, after which the Web site is able to provide answers using an intelligent

match. Some sites also use demos/tours to help potential customers navigate through the services.

Pressroom. Many companies, especially the larger ones, have "pressrooms" that showcase the latest company and industry news gathered from public sources, such as stock indices, newspapers, and journals, or composed by the companies themselves. Pressrooms can help to disseminate company information to the public while boosting company image.

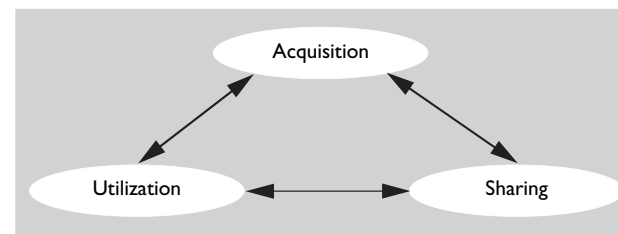


Figure 2. Three-phase customer knowledge cycle.

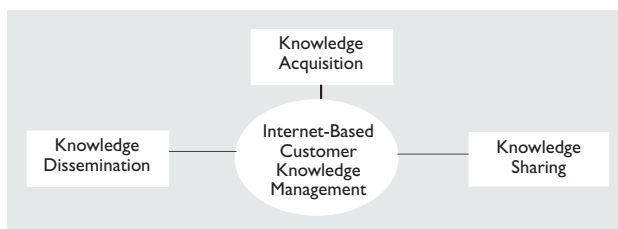


Figure 3. Research model.

Category	Company	Search function or drop box	Site map	FAQ or help	Demo/Tour	Press room	Email the site to a friend	Checklist for opening account	Education information about product/service	Personalized product/service recommendation	Links to other company's Web sites	Links to Web sites in same group	Incentives/Rewards	Account alert	*e-Commerce Index or top sellers (for credit cards)	Others
Credit Card	A1	N	Y	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	
	A2	N	Y	Y	Y	N	N	Y	Y	Y	N	Y	Y	N	N	Email money to friends
	A3	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	Y	Personalized web page. Free email account
	A4	N	N	Y	N	N	Y	N	N	N	Y	N	Y	Y	N	
	A5	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	N	N	Loan analyzer (by system, not in person)
Bank	B1	Y	Y	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	Market information/news
	B2	Y	N	Y	Y	Y	N	N	Y	N	N	N	N	Y	N	
	B3	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	Y	N	Telephone banking and wireless banking
	B4	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	
	B5	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	Y	N	
Broker-Discount	C1	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	
	C2	Y	Y	Y	N	Y	N	Y	Y	Y	N	N	N	Y	N	Watch list
	C3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Multiple country and language support
	C4	Y	Y	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	Offers trade by voice-enabled phone service
	C5	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y	
Broker-full service	D1	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	
	D2	Y	Y	Y	N	Y	N	N	Y	Y	N	Y	N	Y	N	
	D3	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	N	Y	N	
	D4	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	N	Y	N	Features ClientLink, which connects the clients to the latest research, tools and detailed reporting on their own accounts
	D5	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	N	

*eCommerce Index is a monthly listing of the top e-commerce Web sites based on the number of online transactions by cardholders.

Email to a friend. Two of the Web sites allow site visitors to email the site address to friends and add a note to the message. This mechanism expands the boundary of knowledge dissemination.

Checklists. All the personal finance Web sites require customers to open an account before using online services. Some present a checklist of all the information necessary to open an account or comprehensive information about the requirements/criteria for opening an account. The applicant can then decide whether he or she qualifies or is willing to disclose his/her personal information.

Product/service information. Financial services are complex, and involve highly specialized professional knowledge. Some Web sites provide financial articles based on extensive research and experience from practice, investment advice, detailed descriptions of various financial vehicles, and market quotes to help customers make educated decisions.

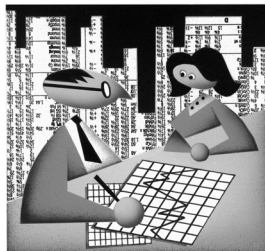


Table 1. Knowledge dissemination mechanisms.

Personalized recommendations. Some of the leading finance sites provide personalized product/service recommendations. Many credit card sites allow customers to create their own credit cards with preferred features such as card type and borrowing options. They also provide personalized travel and shopping recommendations. Online brokers allow their customers to choose account types and investment vehicles. American Express provides tools for customers to create their own personalized homepage.

Links, incentives, account alerts, and e-commerce index. Most Web sites provide hyperlinks to their international sites, other branches, affiliate companies or even related Web sites that might interest customers. For example, TD Waterhouse has links to different language sites in other countries. The American Express credit card section provides links to stores as well as to ticket and restaur-

STUDY RESULTS suggest that almost all of the companies surveyed realize the importance of customer knowledge and are attempting to devise and implement mechanisms to acquire such knowledge to their advantage.

Category	Company	Sign-up/Enroll	Personal Information	Financial Information	Account Preference	Write-to-us (Feedback)	Survey form
Credit Card	A1	Y	Y	Y	Y	Y	N
	A2	Y	Y	Y	Y	Y	N
	A3	Y	Y	Y	Y	Y	Y
	A4	Y	Y	Y	Y	Y	N
	A5	Y	Y	Y	Y	Y	Y
Bank	B1	Y	Y	Y	Y	Y	N
	B2	Y	Y	Y	Y	Y	Y
	B3	Y	Y	Y	Y	Y	Y
	B4	Y	Y	Y	Y	Y	Y
	B5	Y	Y	Y	Y	Y	N
Broker-Discount	C1	Y	Y	Y	Y	Y	N
	C2	Y	Y	Y	Y	Y	N
	C3	Y	Y	Y	Y	Y	N
	C4	Y	Y	Y	Y	Y	N
	C5	Y	Y	Y	Y	Y	N
Broker-full service	D1	Y	N	N	Y	Y	N
	D2	Y	Y	Y	Y	Y	N
	D3	Y	Y	Y	Y	Y	N
	D4	Y	Y	Y	Y	Y	N
	D5	Y	Y	Y	Y	Y	N

Table 2. Knowledge acquisition mechanisms.

rant reservation sites. Such features expand information resources and broaden customer knowledge of the products/services. Together with other auxiliary mechanisms, they increase site appeal, which can increase site traffic and facilitate the other knowledge dissemination mechanisms.

Some online firms provide customer rewards and monetary incentives for referrals. Many financial Web sites offer rewards for opening an account. One brokerage company gives a \$75 credit for each new account. The account alert feature notifies customers about account activities. ECommerce Index is a monthly listing of the top e-commerce Web sites based on the number of online transactions by credit card holders.

Additional features. Other Web-enabled services and functions and related new technologies include emailing or wiring money, telephone banking and real-time wireless banking, real time market information (watch list), free email accounts, access to the latest research tools, and account analyzers. These features help promote and disseminate new and existing financial services to a larger customer base.

KNOWLEDGE ACQUISITION

Online personal finance companies actively acquire knowledge about customers, including their demographics, preferences, and behavior patterns. Such knowledge is useful for developing marketing programs as well as new service packages. Study results suggest that almost all of the companies surveyed realize the importance of customer knowledge and

are attempting to devise and implement mechanisms to acquire such knowledge to their advantage. In the financial industry, sign-up is always required, although the level of detailed information acquired differs across companies. Registration requirements include personal information, financial/income information, and account preferences. All 20 Web sites use feedback mechanisms to acquire customer knowledge, while some sites also employ survey forms to gather specialized information concerning customer needs.

Sign-up/enroll. The most direct approach to customer knowledge acquisition is membership/account sign-up. In this process, customers/users provide demographic or psychographic information by filling out structured forms. In return, customers have the privilege of using the services provided and are granted access to restricted functions, including online chatting and bulletin board use. The forms are either completed online or downloaded and mailed. Most full-service brokers only allow existing account holders to enroll in online services; all new accounts must be opened through a company financial consultant. For banks and credit card companies, customers can either open an account online or enroll their existing accounts for online access. The sign-up/enroll and customer account mechanisms provide a subtle, convenient, and effective way of tracking online customer activities, and thereby gathering knowledge about customers. It should be no surprise that all 20 Web sites utilize this feature, although the granularity of information acquired varies across sites.

Personal and financial information. Nineteen of the 20 Web sites require that customers provide detailed personal information including name, social security number, address, phone number, email address, and financial/income information such as income level and investment preferences, as some of this information is necessary for financial industry security reasons. Merrill Lynch Online, a cyber division of the full-service broker, allows current customers to obtain an online account without providing additional information. With the personal and financial information available, the Web sites are able to offer personalized products and services.

Account preference. When customers open new

accounts online, they are asked to specify account preferences, such as personal or business accounts, or other account types stipulated by the company. Juniper, a credit card company, allows users to design personalized credit cards.

Feedback. All 20 Web sites provide customer feedback mechanisms. Although feedback or write-to-us mechanisms act mainly as customer service tools, companies can collect information on customer evaluations and comments about the services.

Survey form. Besides sign-up forms, a few Web sites have specialized survey forms. Many are simple online comment forms, while some are quite unique. Bank of America provides a survey form under each product category. J.P. Morgan Chase requests potential customers to fill out a questionnaire and, based on the results, recommends appropriate credit cards for specific individuals. The First Internet Bank of Indiana FAQ section includes customer surveys as to whether the answers provided are satisfactory.

Some of the knowledge dissemination mechanisms described previously are enabled by knowledge acquisition. For example, personalized product/service recommendations are provided based on sign-up information, preference specifications and customer online activities, while the eCommerce Index is based on credit card holders' consumption activities.

KNOWLEDGE SHARING

Online knowledge-sharing activities involve customers or experts posting messages on Web sites. We differentiate between three types of postings: posting messages with no feedback, posting messages with synchronous feedback, and posting messages

Category	Company	Post message with no feedback		Post message with synchronous feedback		Post message with asynchronous feedback (email, posting, bulletin board)
		Consumer posting message	Expert posting message	Online chat among consumers	Online chat with customer service representatives	
Credit Card	A1	N	N	N	Y	Y
	A2	N	N	N	N	Y
	A3	N	N	N	N	Y
	A4	N	N	N	Y	Y
	A5	N	N	N	N	Y
Bank	B1	N	N	N	N	Y
	B2	N	N	N	Y	Y
	B3	N	N	N	N	Y
	B4	N	N	N	N	Y
	B5	N	N	N	N	Y
Broker-Discount	C1	Y	N	N	N	Y
	C2	N	N	N	N	Y
	C3	N	N	N	N	Y
	C4	N	N	N	N	Y
	C5	N	N	N	N	Y
Broker-full service	D1	N	N	N	N	Y
	D2	N	N	N	N	Y
	D3	N	N	N	N	Y
	D4	N	N	N	N	Y
	D5	N	N	N	N	Y

Table 3. Knowledge sharing mechanisms.

with asynchronous feedback. The first type, posting messages without feedback, is a one-way knowledge-sharing activity. The latter two types are two-way knowledge-sharing activities. Synchronous feedback refers to chat rooms. Asynchronous feedback is similar to chat rooms but is not live. Customers post questions and wait for someone, either another customer or an expert, to answer the question. It may take days to receive an answer, especially if one expects it to be answered by an expert. In most cases, the answers are also emailed to the customer in case s/he does not check the bulletin board or Web site frequently.

Most e-commerce companies, especially e-retailers, provide advanced mechanisms for knowledge sharing [6]. Knowledge-sharing activities can take place not only between (representatives of) the companies and their customers, but also among customers (some of whom may act/serve as experts). These activities aim to better present company products and services, gather customer feedback and preferences, and enhance customer service in an interactive way. One of the most

IN GENERAL, online knowledge-sharing mechanisms are important for sustaining competitive advantage in cyberspace. Studies have indicated that good knowledge-sharing mechanisms are useful for building a strong virtual community, a key factor for increasing customer loyalty.

important outcomes of knowledge sharing is the creation of virtual communities. Virtual communities can provide customers with not only a sense of belonging and involvement but also an enriched online experience. They also act as word-of-mouth marketing tools to promote companies and their products/services.

However, among the 20 financial Web sites studied, there are limited mechanisms and means for investors to share their knowledge with one another on the sites. Only one of the 20 Web sites provides message boards allowing customers to post their messages publicly. Most sites allow for asynchronous feedback, such as emailing customer service, or posting questions on message boards (with the former method more common than the latter). For example, J.P. Morgan Chase customers can send requests to the "Smart Borrowing Planner" and receive personalized options. They can also register to receive information automatically. A small number of sites provide private, online, one-to-one chat options with customer service representatives.

It appears that these online financial sites prefer individual customers to communicate directly with the financial advisors or customer service representatives, rather than with other customers. This might stem from concerns that companies may be liable for potential losses due to inaccuracy of information provided on their sites or customers' misunderstanding of the online messages. In addition, since it is important for the firms to maintain the privacy and confidentiality of their clients, it may not be appropriate for them to encourage knowledge sharing among their clients on the Web sites. This is an interesting observation that differs from retailing e-commerce Web sites [6].

Most of the financial Web sites, especially those of brokers, provide in-depth educational materials on financial planning and investment. These sites also provide links to other online resources where investors can obtain the necessary assistance and advice concerning investment decisions. This may be another reason why mechanisms that facilitate knowledge sharing among customers are deemed unnecessary on these sites.

In general, online knowledge-sharing mechanisms are important for sustaining competitive advantage in cyberspace. Studies have indicated that good knowledge-sharing mechanisms are useful for building a strong virtual community [6], a key factor for increasing customer loyalty. More research is needed to examine how virtual communities can be built in the financial service industry to help firms gain competitive advantage.

CONCLUSION

Knowledge management mechanisms prevail among the successful online financial service sites. Customer and expert knowledge is identified, captured/acquired, processed, and embodied into new products/services or used to customize existing products/services. This newly created knowledge is then disseminated to current and potential customers. This whole process is facilitated by knowledge dissemination, knowledge acquisition, and knowledge sharing activities.

Although this research is limited to financial Web sites, the sample includes 20 of the highest ranked Web sites (by Gómez.com), thus representing the leading financial Web sites. The findings have important implications for the financial industry as well as other industries seeking to enhance their online presence and KM practices. **G**

REFERENCES

1. Alavi, M. and Leidner, D.E. Knowledge management systems: Issues, challenges, and benefits. *Communications of the AIS* 1, 7 (1999).
2. Bushko, D. and Raynor, M. Knowledge management: new directions for IT (and other) consultants. *Journal of Management Consulting* 10, 2 (November 1998), 67–68.
3. Davenport, T.H. and Prusak, L. *Working Knowledge: How Organizations Manage What They Know*. Harvard Business School Press, Boston, MA, 1998.
4. Gupta, A.K. and Govindarajan, V. Knowledge management's social dimension: Lessons from Nucor Steel. *Sloan Management Review* 42, 1 (Fall 2000), 71–80.
5. Nah, F., Siau, K., and Sheng, H. The value of mobile applications: A utility company study. *Commun. ACM* 48, 2 (2005), 85–90.
6. Nah, F., Siau, K., Tian, Y., and Ling, M. Knowledge management mechanisms in e-commerce: A study of online retailing and auction sites. *Journal of Computer Information Systems* 42, 5 (2002), 119–128.
7. Newman, B. The Knowledge Management Forum (1996); www.km-forum.org/.
8. Nonaka, I. A dynamic theory of organizational knowledge creation. *Organization Science* 5, 1 (1994), 14–37.
9. Schwartz D. G., Divitini, M., and Brasethvik, T. *Internet-Based Organizational Memory and Knowledge Management*. Idea Group Publishing, Hershey, PA, 2000.
10. Siau, K. Knowledge discovery as an aid to organizational creativity. *Journal of Creative Behavior* 34, 4 (Dec. 2000), 248–258.
11. Southard, P. and Siau, K. E-banking: A survey of online retail initiatives. *Commun. ACM* 47, 10 (Oct. 2004), 99–102.
12. Tiwana, A. *The Essential Guide to Knowledge Management*. Prentice Hall, Upper Saddle River, NJ, 2001.

FIONA FUI-HOON NAH (fnah@unl.edu) is an associate professor at the University of Nebraska-Lincoln.

KENG SIAU (ksiau@unl.edu) is a full professor at the University of Nebraska-Lincoln and the editor-in-chief of *Journal of Database Management*.

YUHONG TIAN (yhtian@unlserve.unl.edu) is a Ph.D. candidate at the University of Nebraska-Lincoln.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.