Chapter XVI

A Resource–Based Perspective on Information Technology, Knowledge Management, and Firm Performance

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ABSTRACT

The resource-based view of the firm attributes superior firm performance to organizational resources that are valuable, rare, non-substitutable, and difficult to imitate. Aligned with this view, the authors contend that both information technology (IT) and knowledge management (KM) comprise critical organizational resources that contribute to superior firm performance. The authors also examine the relationship between IT and KM, and develop a new second-order variable – IT-KM competence – with IT capability and KM performance as its formative indicators. Thus, this chapter contributes not only by investigating the determinants of firm performance but also by broadening our understanding of the relationships among IT, KM, and firm performance.
INTRODUCTION

For the last two decades, the investigation of the return on investments in IT has become a key objective of many studies. In pursuing this objective, researchers have developed two main theoretical frameworks: one asserts that IT has a direct impact on firm performance (Bharadwaj, 2000), while the other proposes that the effect of IT on firm performance is mediated by business process (Tanriverdi, 2005). However, no matter which theoretical framework has been employed, some studies have failed to find a significant correlation between IT and firm performance. Because the return on IT investments seems to be contingent, scholars call for more research into why IT may not benefit business, how to make IT effective, and what are the key determinants of the success of IT (Dehning & Richardson, 2002).

Meanwhile, considerable research attention has been devoted to the importance of KM in the rapidly changing, competitive, and dynamic business environment (Holsapple & Wu, 2008). Modern organizations are turning to KM practices and applications to foster the creation, integration, and usage of knowledge assets that enable them to compete in an increasingly global economy. In light of this, researchers have attempted to provide empirical evidence of the strategic consequences that KM can bring to organizations (Grant, 1996). For example, based on the survey data collected from 177 firms, Chuang (2004) finds that greater KM capabilities are significantly associated with greater competitiveness and that social KM resource has a significant impact on competitive advantage. Similarly, in a survey-based investigation of the link between KM activities and competitiveness, Holsapple and Singh (2005) observe that the KM activities of interest can be performed in ways that improve organizational competitiveness, and can do so in each/all of four ways: enhanced productivity, agility, innovation, and reputation.

Although there exist studies on IT-firm performance relationship and on KM-firm performance link, these studies have paid insufficient attention to the full map of relationships among IT, KM, and firm-level return, and have placed relatively less emphasis on the collaborative effect of IT and KM on firm performance (Wu, 2008). Given the inseparability of IT and KM, and the strategic importance of the two, a thorough investigation of both their joint and separate roles in firm performance is necessary. Such investigation would enrich not only the theoretical understanding of the mechanism for competitive advantage, but also the research models investigating determinants of superior firm performance. Thus, the work would be of value not only to practitioners striving to achieve and sustain business success, but also to researchers interested in identifying determinants of better firm performance.

This study contributes to such investigation. More specifically, the purpose of this chapter is to theorize a triangle of relationships among IT, KM, and firm performance, and to develop a theoretical model with testable hypotheses that improve our understanding of the effects of IT and KM on firm performance. The theoretical foundation of this paper is embedded in the resource-based view of the firm and prior work by Holsapple and his colleagues. The current study contributes to the literature in a number of ways. First, this study is among the first to recognize that KM may play an important role in the link between IT and firm performance. Thus, the study may provide a plausible explanation for why some previous research has failed to discover a significant relationship between IT and firm performance. Second, we examine the determinants of firm performance by introducing and employing a new perspective, which focuses on the collective impacts of IT and KM. Such a perspective may broaden our approach to identifying determinants of firm performance. Third, we present methods to measure relevant variables. Therefore, the current chapter is useful.
and effective in guiding future empirical research in this regard. Finally, this study also investigates the relationship between IT and KM, which has so far received relatively little research attention.

The remainder of the chapter is organized as follows. In the next two sections, we review the state of IT and KM. Then, we present the research model and hypotheses, followed by a section in which we discuss methods for measuring the variables. Finally, we provide a brief summary of the contributions provided by this research.

INFORMATION TECHNOLOGY

Information technology can be defined as covering a broad range of technologies involved in information processing and handling, such as computer hardware, software, telecommunications, and databases (Huff & Munro, 1985). Realizing that IT enables businesses to run efficiently and profitably, organizations around the world have made tremendous investments in it. As estimated by market research organizations, world IT spending in 2000 was about $2 trillion and will reach $3.3 trillion in 2008, with an average growth rate of over 7% in these eight years (WITSA, 2000; Gartner, 2007). It is also estimated that such a growth rate will be sustained for several years after 2008 (InformationWeek, 2007). In the U.S. economy, IT spending now accounts for nearly 40% of overall expenditure on capital equipment, making it the largest line item in American firms’ budgets for capital investment (Cline & Guynes, 2001). Not surprisingly, IT spending has already accounted for approximately 4% of U.S. gross domestic product (GDP) (BusinessWeek, 2001).

IT has profoundly changed the way that business gets done in nearly every industry. Using IT, organizations radically redesign their business processes to streamline and simplify operations and remain competitive in a changing environment. With the help of computer-aided design and operational systems, organizations can greatly reduce overall cost and time of developing and manufacturing its products and of providing its services. Key customer-related IT, such as customer relationship management systems, allows organizations to capture and maintain detailed information about customer interactions, thus enabling them to provide quality customer service and to increase sales. As a specific category of IT serving middle-level managers, management information systems summarize and report on a company’s basic operations using transaction-level data, and thus help with monitoring, controlling, and decision-making activities (Laudon & Laudon, 2006). Today in the U.S., more than 23 million managers and 113 million workers in the labor force rely on information systems to conduct day-to-day business and to achieve strategic business objectives (Laudon & Laudon, 2006).

Along with the rapid growth and development of IT, the role of IT in business has greatly expanded, ranging from simple back-office functions to enabler of business process reengineering and key driver of competitive advantage. Until the 1960s, IT had played a very simple role in business operation: transaction processing, record-keeping, accounting, and other data processing activities; by the late 1970s, the major role of IT began to shift toward providing managerial end users with ad hoc and interactive support of their decision-making processes; in the 1980s-1990s, IT was mainly employed to support end users to use their own computing resources for job requirements and to assist top executives in easily accessing critical information in their preferred formats; now the primary role of IT is to help develop fast, reliable, and secure Internet, on which e-commerce and Web-enabled enterprise are based (Laudon & Laudon, 2006). Figure 1 shows the expanding role of IT in business and organizational management. Because IT is an area of rapid change and growth, it is important and necessary for organizations and individuals to continually adapt and develop new skills and knowledge.
Knowledge refers to a fluid mix of framed experience, values, contextual information, and expert insight that offers a framework for interpreting, assimilating, and integrating new experiences and information (Davenport & Prusak, 1998). Knowledge is highly human-related. More specifically, it is originated from and applied in brains of human beings. From one perspective, knowledge is a product of human reflection and experience emphasizing understanding and sense making (why and how), while information can be considered as a message focusing on the awareness of something (who and what) (Bennet & Bennet, 2003). Others contend that modern computer technology can also make sense of situations, learn from its experiences, and derive/discover new knowledge—in addition to message handling (Holsapple 2005). In this vein, knowledge is something that is conveyed in representations (e.g., linguistic, symbolic, digital, mental, behavioral, material patterns) that are usable to some processor (e.g., human mind) and can be categorized as being descriptive (characterizations of the state of some system—who, what, when, etc.), procedural (characterizations of how to do something), or reasoning (characterizations of logic or causality). In this view, information is one gradation of descriptive knowledge, but it can be operated on by other types of knowledge (i.e., procedures and logic).

Holsapple and Joshi (2004, p. 593) define knowledge management as “an entity’s systematic and deliberate efforts to expand, cultivate, and apply available knowledge in ways that add value to the entity, in the sense of positive results in accomplishing its objectives or fulfilling its purpose.” Thus, KM involves any activities of generating new knowledge through derivation or discovery, acquiring valuable knowledge from outside sources, selecting needed knowledge from internal sources, altering the state of knowledge resources, and embedding knowledge into organizational outputs (Holsapple & Joshi, 2004).
KM is becoming increasingly important and prevalent for many reasons. To succeed in today’s dynamic global economy, organizations must reduce their cycle times in production, operate with minimum fixed assets and costs, shorten product development time, improve customer service and product quality, enhance employee productivity and performance, provide innovative products and services, modernize and reengineer business process, and increase agility and flexibility (Gupta et al., 2004). All these critical business activities require continued efforts to acquire, create, document, share, and apply knowledge by employees and teams at all organizational levels. Because of the importance of KM to success, organizations have invested heavily in it. According to IDC, global business spending on KM was rising from $2.7 billion in 2002 to $4.8 billion in 2007 (Babcock, 2004). The company also estimated that in the United States, KM spending reached $1.4 billion in 2001 and $2.9 billion in 2006, exhibiting an average annual growth rate of over 20% in these five years (Motsenigos & Young, 2002).

KM has also attracted tremendous attention from researchers. Figure 2 exhibits the trend of publications for KM as tracked by Google Scholar from 1995 to 2007. For each year, the number of publications referring to “knowledge management” is shown. Such publications were 513 in 1995, or about 10 per week, and exponentially increased to 12,600 in 2005, or about 243 per week. This indicates that two weeks’ publications in 2005 are almost equal to whole year’s publications in 1995 and that the average annual growth rate in these 10 years is astonishing – 236%! To put this KM trend in perspective, we compare it with the traditional business discipline of operations management (OM), for which Google Scholar reports 1,190 publications in 1995, ramping up to 3,760 in 2005. Figure 2 also shows the trend of publications for OM.

One important research stream in this field focuses on the KM ontology that offers a com-

Figure 2. Publication trends for knowledge management and operations management

Source: Google Scholar, March 24, 2008
prehensive understanding of KM phenomena (Holsapple & Joshi, 2004). While specifying the conceptualization of the KM domain, the study recognizes three categories of KM influences: managerial, resource, and environmental. The study also identifies five major knowledge manipulation activities: acquisition, selection, generation, assimilation, and emission, as well as four major managerial activities that constituted the managerial influences: leadership, coordination, control, and measurement.

**RESEARCH MODEL AND HYPOTHESES**

Drawing on the resource-based view (RBV) of the firm and prior empirical findings, we introduce a conceptual model positing that IT and KM both play an important role in predicting firm performance, and that KM performance is highly related to IT capability. As depicted in Figure 3, the model includes a new variable – IT-KM Competence, which is also conceptualized as a key antecedent of firm performance. Below we describe and discuss the new variable and the conceptual links in the research model.

**IT Capability and KM Performance**

In the last decade, more and more researchers have adopted the notion that IT plays a critical role in shaping firms’ efforts for KM. For example, in a study examining the link between KM and computer-based technology, Holsapple (2005) argues that IT is of great importance not only for enabling or facilitating the knowledge flows among knowledge processors (human or computer-based) but also for assisting in the measurement, control, coordination, and leadership of knowledge and the knowledge processors. Thus, he asserts that modern KM is inseparable from a consideration of IT. Similarly, in a study investigating the relationships among IT, KM, and firm performance, Tanriverdi (2005) argues that an IT-based coordination mechanism can increase the reach and richness of a firm’s knowledge resources, and enable business units of the firm to learn about knowledge sharing opportunities with each other. Thus, he posits that IT relatedness, which is defined as “the use of common IT infrastructures and common IT management processes across business units,” (p. 317) is positively associated with KM capability.

Not surprisingly, previous research also suggests that IT plays an important role in supporting...
and enhancing aforementioned KM activities: acquisition, selection, generation, assimilation, and emission (Holsapple & Singh, 2003; Jones, 2004). In performing knowledge acquisition activities, an IT-based network system can assist in identifying, evaluating, analyzing, and qualifying external knowledge that needs to be acquired to support the firm’s growth (Holsapple & Singh, 2003). An IT-based knowledge selection system can help a firm be more efficient and effective in the process of knowledge selection. For example, Buckman Laboratories uses K’Netix, an IT-based knowledge selection system, to locate, collect, select, and package appropriate knowledge received from 11 resources and transfer it to the person requesting the knowledge (Holsapple & Singh, 2003).

In the activity of knowledge generation, a decision support system may draw on databases and text-bases, plus banks of solvers and/or rule sets to derive knowledge in the sense of expectations, explanations, evaluations, solutions, recommendations, and so forth (Bonczek et al., 1981; Holsapple & Whinston, 1996). In addition, such systems can also help in other knowledge generation activities such as data mining, text mining, and sense-making (Jones, 2004). In the activities of knowledge assimilation, an IT-based organizational memory system can help in modeling, representing, and archiving knowledge, while an IT-based less structured repository (e.g., discussion database and lessons-learned system) can be used to store insights and observations (Jones, 2004). Finally, in the process of knowledge emission, IT-based systems can support users in sharing and transferring knowledge quickly and cost-efficiently. For instance, to enhance knowledge sharing among employees in geographically dispersed locations, Honda has established a full-service international communications network system (called Pentaccord) and a system to manage selected databases (sales, finance, and part ordering) on a global basis (Holsapple & Singh, 2003). In short, the current literature suggests that KM performance is of particular relevance to IT. Thus, we hypothesize:

**H1: IT capability is positively related to KM performance.**

Here, IT capability refers to an organization’s ability to identify IT that meets business needs, to deploy IT to improve business process in a cost-effective manner, and to provide long-term maintenance and support for IT-based systems (Karimi et al., 2007). By KM performance, this chapter means the degree to which KM activities harness organizational resources to achieve the goals or purposes of KM initiatives (Wu, 2008). Through linking IT capability to KM performance, the first hypothesis highlights that KM and IT are inseparable, and can play a communal and collective role in an organization.

**The Resource-Based View of the Firm**

Rooted in management strategy literature, the RBV of the firm is developed to understand why firms are able to gain and sustain a competitive advantage (Newbert, 2007). RBV states that a firm’s performance is mainly determined by a unique set of firm resources that are valuable, rare, non-substitutable, and difficult to imitate. RBV indicates that such resources are often rent-yielding and likely to survive competitive imitation when protected by isolating mechanisms such as resource connectedness, historical uniqueness, and causal ambiguity (Barney, 1991). In short, RBV addresses firm performance differences by using resource asymmetry. That is, the resources needed to achieve strategic business objectives are heterogeneously distributed across firms, and thus are posited to account for the differences in firm performance (Grant, 1991).

Based on the RBV, a resource can be defined as a rare and inimitable firm-specific asset that adds value to firms’ operations by enabling them...
to implement strategies that improve efficiency and effectiveness (Wade & Hulland, 2004). Advocates of RBV tend to characterize resources broadly – including financial capital, physical assets, knowledge, brand image, IT, organizational processes, and so forth (Bharadwaj, 2000). Thus, a resource is an observable but not necessarily tangible asset that can be independently managed, appraised, and even valued (Karmi et al., 2007). RBV suggests that a resource held by a majority of competing firms (i.e., a non-rare resource) may not explain firm performance differences (Newbert, 2007). It also suggests that if a resource held by just a few competing firms is not costly to imitate, the resource is likely to be quickly obtained by competitors, and thus may not explain differences in firm performance, either (Ray et al., 2005).

**IT Capability and Firm Performance**

As an important firm resource, IT capability plays a key role in firm performance. IT capability enables organizations to design innovative products and services, and to reduce the overall cost and time of developing the products and providing the services. For instance, IT giant Apple developed an innovative product – iPod, which has dominated digital music player sales in the United States and brings the company new sales records and great business success. Continuing to innovate, the company recently released iPhone, an Internet-enabled multimedia mobile phone. Computer-aided design (CAD) systems assist Toyota’s designers to create and modify their product specifications much faster than before, and thus achieve cost efficiency. CAD allows a designer to see his or her ideas as they take shape on a monitor display, in addition to clay models. Taking the advantage of CAD, Toyota designs quality into its products.

IT capability is the primary driver of business process reengineering, which integrates a strategy of promoting business innovation with a strategy of making major improvements to business process so that a company can gain and sustain competitiveness (O’Brien & Marakas, 2007). The computation capability, information processing speed, and connectivity of computers and Internet technologies can considerably enhance the efficiency of a business process, as well as communications and collaboration among the people responsible for its management, implementation, and maintenance (Wade & Hulland, 2004). For example, many Fortune 500 companies count on enterprise resource planning (ERP) systems to reengineer, automate, and integrate their marketing, manufacturing, sales, distribution, finance, and human resource business processes (O’Brien & Marakas, 2007).

IT capability used for production and operations can improve performance of companies that must plan, monitor, and control inventories, facilities, and the flow of products and services. Many manufacturing and production systems can efficiently deal with the operation and maintenance of production facilities; the establishment of production goals; the acquisition, storage, and distribution of production materials; and the scheduling of equipment, facilities, materials, and labor required to fulfill an order (Laudon & Laudon, 2006). Thus, computer-integrated (or –aided) manufacturing enables organizations to reduce the cost and time of producing goods by simplifying, automating, and integrating all production and support processes (O’Brien & Marakas, 2007). Moreover, such manufacturing helps companies achieve highest product quality by bridging the gap between the conceptual design and the manufacturing of finished goods.

IT capability is the key to electronic commerce, which refers to the use of digital technology and the Internet to execute major business processes of developing, marketing, selling, delivering, servicing, and paying for products and services (Laudon & Laudon, 2006; O’Brien & Marakas, 2007). Electronic commerce is transforming firms’ relationships with customers, employees,
suppliers, distributors, retailers, and partners into digital relationships using networks and the Internet (Laudon & Laudon, 2006; Wheeler, 2002). More important, it can dramatically improve firm performance by allowing companies to achieve six major business values: (1) generate new revenue from online sales, (2) reduce costs via online transaction, (3) attract new customers through online marketing and advertising, (4) increase customer loyalty and retention by providing Web-based customer service and support, (5) develop new Web-based markets and distribution channels, and (6) develop and sell digital goods such as music track, video stream, online game, and flight ticket (O’Brien & Marakas, 2007; Wheeler, 2002).

IT capability can be a key enabler of superior firm performance by improving communication and collaboration within an organization. IT, especially network technologies, provides basic infrastructure and platform for communication, coordination, and collaboration among the members of business teams and workgroups. In other words, such IT capability enables employees and/or managers at all levels to work together more easily and effectively by helping them share information with each other, coordinate their individual efforts and use of resources, and work together cooperatively on joint projects and assignments (O’Brien & Marakas, 2007). For example, knowledge experts, technicians, computer specialists, and R&D engineers may form a virtual team for a KM system development project. The communication, coordination, and collaboration among the team members may rely heavily on IT-based applications such as email, instant messaging, newsgroup, videoconferencing, discussion forum, and a Web-based database for convenient and immediate access to work-in-progress information. Such improved communication and collaboration can significantly increase the quality of the team work.

Adopting the resource-based view of the firm, information systems researchers suggest that IT capability has an impact on firm performance. For example, Mata and colleagues (1995) point out that managerial IT skills are scarce and firm specific, and thus likely to serve as sources of sustained competitive advantage. Focusing on the differential effects of various IT resources on customer service performance, Ray and colleagues (2005) argue that such factors as IT are valuable resources because they enable firms to increase the efficiency or effectiveness of business processes compared to what would be the case if these resources were not exploited. Similarly, Bharadwaj (2000) contends that organizations successful in developing superior IT capability will enjoy superior financial performance by boosting revenues and/or reducing costs. In line with the resource-based view of the firm and the literature, we therefore hypothesize:

H2: IT capability is positively related to firm performance.

KM Performance and Firm Performance

As mentioned earlier, the RBV indicates that knowledge is a unique company resource (Grant, 1996). Therefore, KM can also be viewed as such resource important to firm performance because it allows the firm to better leverage its knowledge. KM facilitates organizational learning, which keeps organizations in tune with trends and developments in their business, and thus helps them perform better. Here, organizational learning refers to individual learning, team learning (i.e., learning in small or large groups), or entire organization-level learning (Bennet & Bennet, 2003). All these levels of learning are necessary for an organization eager to possess the requisite knowledge to improve performance. From a KM perspective, organizational learning is critical and should be nurtured and made an integral part of KM strategy. Organizational learning also reflects an organization’s capacity to acquire or generate
the knowledge necessary to survive and compete in its environment (Bennet & Bennet, 2003).

KM can change an employee’s attitude toward learning and its impact on an organization’s competitive position (Wu, 2008). Such change is likely to stimulate organizational learning because individuals and teams become to believe that learning can help their company to handle change, uncertainty, and complexity in the ever-changing business environment. KM helps define and specify what should be learned, when it should be learned, and who should be learning it. KM can also create a culture of peer collaboration and open communication, both leading to a setting conducive to organizational learning. Moreover, KM activities of knowledge acquisition and generation promote organizational learning by motivating individuals to obtain new knowledge from external sources or from existing knowledge, and to make it suitable for future use.

KM can improve firm performance not only by facilitating organizational learning but also by encouraging knowledge sharing. A core principle of KM is to make knowledge sharing easier and timely, and to encourage employees and managers to work together in ways that will incorporate knowledge shared among them. Consequently, one important goal of KM is to boost productivity and efficiency by building a set of methods and tools to foster appropriate flows of knowledge. For instance, to align with the strategy of possessing a platform for quick and easy knowledge sharing on global scale, Xerox developed Eureka, an intranet based communication system, in 1996 (Barth, 2000). The system is linked with a corporate database that helps service technicians share repair tips. There are more than 36,000 tips in the system which can be accessed by about 19,000 Xerox technicians via their laptop computers (Barth, 2000). The increasing importance of KM also motivates managers to develop a reward and personnel evaluation structure favoring knowledge sharing activities. Reward and punishment standards help define acceptable behavior. By incorporating desired KM behavior into annual performance evaluation, an organization may improve its own performance by encouraging such critical activities as knowledge sharing and foregoing organizational learning.

KM can strengthen an organization’s competitive position by increasing its agility (Holsapple & Singh, 2003). In general, agility refers to an organization’s ability to detect changes, opportunities, and threats in its business environment and to provide speedy and focused responses to customers and other stakeholders by reconfiguring resources and processes and/or by developing strategic partnerships and alliances (Mathiyalakan et al., 2005). Thus, agility derives from both the physical ability to act and the intellectual ability to understand appropriate things to act upon (Dove, 2003). KM is recognized as a key success factor for agility because it enables an organization to apply effectively its knowledge of market opportunity, production process, business practice, cutting-edge technology, quality service, management skills, the extent of a threat, and so forth. In a continuously changing and unpredictable business environment, it is crucial for an organization to manage knowledge in a way to quickly absorb new knowledge, fully assimilate it, and effectively exploit it (Holsapple & Wu, 2008). Consequently, an organization with sufficient competencies in KM will be agile enough to deliver leading edge and achieve a better competitive position.

KM can also improve an organization’s performance by fostering its innovation. As a subject of research and practice, innovation refers to the ability of creating valuable and useful new product, new services, new technology, or production processes (Liao & Chuang, 2006). Innovation has been recognized as a primary value creator for organizations, in both times of generating revenues and in times of cutting costs. Innovation consists of two important dimensions: magnitude, which reflects the extent or breadth of innovation, and speed, which shows an organization’s quickness to adopt an innovation, relative to its competitors.
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(Liao & Chuang, 2006). KM plays a critical role in the ability of an organization to be innovative because KM initiatives and activities often serve as a key platform for creating new and inventive ideas that will benefit and add value to the organization. More specifically, KM activities such as knowledge generation and sharing can broaden understanding of relevant issues and concepts, and push thinking beyond the constraints of presumption, narrow rationality, and traditional method. Therefore, KM can be an important organizational practice that spurs innovation.

In summary, RBV suggests that a firm can outperform its competitors by taking advantage of its KM. As a unique company resource, KM plays a fundamental role in firm performance because it facilitates organizational learning, encourages knowledge sharing, increases agility, and fosters innovation. Although it is complex to acquire and difficult to leverage KM resources, firms that succeed in doing so are likely to experience learning effects whereby they improve their abilities for creating value. This directly leads to the following hypothesis:

**H3:** KM performance is positively related to firm performance.

**IT-KM Competence and Firm Performance**

IT-KM competence is defined as a firm’s IT and KM ability and resources that are peculiar to achieving and sustaining business success. The new variable is conceptualized as a composite construct with IT capability and KM performance as its two formative indicators. Such conceptualization is in line with prior research and RBV, which suggest that KM and IT are inseparable from each other and both are unique and important firm resources. Thus, the current literature supports the idea to represent IT capability and KM performance by a single composite construct that impacts firm performance. We contend that such conceptualization can push our thinking beyond current theoretical boundaries and offer a new perspective for investigating determinants of firm performance. Thus, we advance the following hypothesis:

**H4:** IT-KM competence is positively related to firm performance.

**MEASURING THE VARIABLES**

Firm performance can be measured in a variety of ways, including financial performance, market performance, and business process performance. Financial performance is usually evaluated by means of standard profit and cost ratios, which can be calculated by using accounting data obtained from Standard & Poor’s COMPSTAT. A common way to assess market performance is to use Tobin’s $q$, which can also be calculated by using COMPSTAT data. However, one factor researchers need to be aware of is that for private firms and not-for-profit organizations, accounting data are not readily available in COMPSTAT. Perceived business process performance can be evaluated by using a survey questionnaire. Often, researchers can find well-developed survey instruments in the literature and adapt them for their specific needs. In addition, it is very important to address data validity and reliability issues when using survey data to test research hypotheses.

Past research suggests that IT capability can be measured by IT spending/use, survey questionnaire, or results of studies conducted by public independent organizations. IT spending/use data are often available in annual corporate financial reports. *InformationWeek* and *ComputerWorld* are the two publicly available sources of data on corporate IT spending and other measures of IT use. Survey instruments for some constructs related to IT capability have already been developed and applied to practice by prior IS research such as the aforementioned study by Tanriverdi (2005).
Results of independent organizations’ studies are also a very valuable source for IT capability data. For example, the IT leader study by InformationWeek may provide the data useful for measuring an organization’s capability to leverage its IT resources on a continuous basis. Past research suggests that KM performance can be measured by survey questionnaire or results of studies conducted by public independent organizations. Tanriverdi (2005) has developed a survey instrument to assess the extent to which an organization creates, transfers, integrates, and leverages related product, customer, and managerial knowledge resources. KM performance data may also be obtained by collecting and analyzing results of relevant studies conducted by independent KM research organizations such as KMWorld (http://www.kmworld.com), and Teleos and its KNOW Network (http://www.knowledgebusiness.com).

CONCLUSION

Over the past decade, one of the most striking developments in business has been the rapid proliferation of KM. Organizations have launched KM initiatives to consolidate and reconcile knowledge assets that enable them to compete in the dynamic and changing global business environment. Therefore, in parallel to the focus on the relationship between IT and firm performance, the role of KM in firm profitability has also received considerable research attention. Drawing on the RBV of the firm, plus findings from prior research, this chapter argues that both IT capability and KM performance are primary antecedents of firm performance and that IT capability has a significant impact on KM performance. The current chapter also introduces a new composite variable—IT-KM competence—with IT capability and KM performance as its formative indicators. As a result, this chapter broadens our understanding of the relationships among IT, KM, and firm performance by (1) viewing both IT and KM as unique and important firm resources, (2) suggesting that KM can play a mediating role between IT and firm performance, and (3) proposing that IT and KM may be represented by a single composite variable, which might play a more important and effective role in predicting firm performance.

NOTE

Authors are listed alphabetically and have contributed equally to this chapter.

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**KEY TERMS AND DEFINITIONS**

**Agility:** Refers to an organization’s ability to detect changes, opportunities, and threats in its business environment and to provide speedy and focused responses to customers and other stakeholders by reconﬁguring resources and processes and/or by developing strategic partnerships and alliances (Mathiyalakan et al., 2005).

**Information Technology:** Can be deﬁned as a broad range of technologies involved in information processing and handling, such as computer hardware, software, telecommunications, and databases (Huff & Munro, 1985).

**IT Capability:** Refers to an organization’s ability to identify IT meeting business needs, to deploy IT to improve business process in a cost-effective manner, and to provide long-term maintenance and support for IT-based systems (Karimi et al., 2007).
**IT Relatedness:** Is defined as “the use of common IT infrastructures and common IT management processes across business units” (Tanriverdi 2005, p. 317).

**IT-KM Competence:** Is defined as a firm’s IT and KM ability and resources that are peculiar to achieving and sustaining business success.

**Innovation:** Refers to the ability of creating valuable and useful new product, new services, new technology, or production process (Liao & Chuang, 2006).

**Knowledge:** Refers to a fluid mix of framed experience, values, contextual information, and expert insight that offers a framework for interpreting, assimilating, and integrating new experiences and information (Davenport & Prusak, 1998).

**Knowledge Management:** Is “an entity’s systematic and deliberate efforts to expand, cultivate, and apply available knowledge in ways that add value to the entity, in the sense of positive results in accomplishing its objectives or fulfilling its purpose” (Holsapple and Joshi 2004, p. 593).

**KM Performance:** Is the degree to which KM activities harness organizational resources to achieve the goals or purposes of KM initiatives.

**A Resource:** Can be defined as a rare and inimitable firm-specific asset that adds value to firms’ operations by enabling them to implement strategies that improve efficiency and effectiveness (Karmi et al., 2007).