

**THE VALUE OF KNOWLEDGE FOR PROFESSIONAL SERVICE WORKERS:
A USE VALUE PERSPECTIVE**

Shad S. Morris

Fisher College of Business
The Ohio State University

Scott A. Snell

Darden School of Business
University of Virginia

ABSTRACT

The purpose of this paper is to better understand the underlying path of how knowledge stocks create value for the professional service firm. We examine how stocks are interconnected with the professional in a way that prescribes how valuable knowledge is in the first place, before it reaches the client. To do this, we extend resource- and knowledge-based views of the firm by introducing a framework that examines the value of specific knowledge stocks for the individual users themselves. We incorporate a “use value” perspective, where knowledge flows and inefficiencies are seen as benefits and costs, respectively. In this context, flows represent the creation, sharing, and integration of knowledge by individuals inside a firm. Knowledge stocks represent aggregate levels of human capital (experience and education), social capital (networks), and organizational capital (routines and processes).

The professional workforce ... constitutes the critical asset of the professional service firm because it embodies, operates, and translates the knowledge inherent in the firm's output, and, it is the basis of the firm's relationships with clients who often follow professionals if they change firms (Greenwood, Li, Prakash, & Deephouse, 2005: 663).

In professional service firms (PSFs), workers draw from knowledge gained through experience, networks, routines, or information systems to offer solutions to problems faced by their clients (Lowendahl, Revang, & Fosstenlokken, 2001; Morris & Empson, 1998). The value of these solutions is determined by the client (e.g., through their willingness to pay or expressed level of satisfaction). However, the value of the "knowledge inherent in the firm's output" is somewhat unclear. For example, firms will often pay employees based on certain knowledge stocks such as experience and education (human capital) and even work-related networks (social capital). But they do not usually pay on the extent to which those accumulated stocks are actually used in developing and delivering client solutions (Deirickx & Cool, 1989). As stated by Davenport (2005), "When it comes to knowledge professionals ... we haven't formally examined the flow of work ... and there is no accountability for the cost and time these activities consume" (2). All of this makes it difficult for a firm to know where and when to invest in specific knowledge stocks. Yet little attention has been paid to the value of these stocks in helping professionals provide solutions.

The first question we try to answer in this paper is what is the underlying path of knowledge stocks that enables a professional service firm to create value for its clients? Second, how are these stocks interconnected with the professional in a way that prescribes how valuable knowledge is in the first place, before it reaches the client? In answering these questions we hope to extend resource- and knowledge-based views of the firm by introducing a framework that examines the value of specific knowledge stocks for the individual users themselves. To do this we incorporate a "use value"

perspective, where knowledge flows and inefficiencies are seen as benefits and costs, respectively (Bowman & Ambrosini, 2000; Lepak, Smith, & Taylor, 2007).¹ In this context, flows represent the creation, sharing, and integration of knowledge by individuals inside a firm. Knowledge stocks represent aggregate levels of human capital (experience and education), social capital (networks), and organizational capital (routines and processes) (Subramaniam & Youndt, 2005). While often examined at the aggregate level, knowledge stocks are ultimately drawn upon at the individual level in ways that allow professionals to implement, share, and create client solutions (Argote & Ingram, 2000). However, drawing upon these stocks does not come without individual efficiency costs. Such costs can be identified in how much time and money are consumed by professionals in these activities (Davenport, 2005).

A use value perspective helps us to look at the utility of resources in relation to how useful they are perceived to be in trying to provide a client-based solution and how much they help individuals to meet their knowledge flow needs. In the case of professionals, their input needs are inherently knowledge-based and their outputs are intangible and customized for each client (Maister, 1993). Each new solution may require that they access a different set of knowledge stocks, providing unique knowledge flow benefits as well as costs.

Such an understanding might contribute to theoretical discussions trying to link macro-level phenomena such as firm-level knowledge stocks and performance, with micro-level processes and people (e.g., Coleman, 1990; Felin & Hesterly, 2007). To do this, we first discuss the context of the argument by looking at how professional service

¹ Traditionally, organizations use “exchange value” to determine the value of their knowledge stocks on the basis of whether the attainment costs are less than the benefits generated in terms of market value achieved. This is a typical value capture model for assessing the impact of intangible assets (cf., Arrow, 1974). However, this model fails to examine how different stock investments might lead to different flows depending upon the knowledge flow needs of the professionals themselves.

firms create value for the client. Second, we discuss how knowledge stocks must first be considered valuable by the professionals themselves before value can be created for the client. This is best understood from a use value perspective. Next, we consider how three separate but related knowledge flows (creation, sharing, and integration) are interlinked with the knowledge stocks. Third, through cost/benefit analyses we conceptually map the use value of specific knowledge stocks. Both theoretical and practical implications are discussed at the end.

CREATING CLIENT VALUE

To develop our framework, we start with the assumption that to compete, PSFs must create value for the client (e.g., Hansen & Haas, 1999). Value creation for clients of PSFs is often measured in one of two ways: (1) financial performance of the PSF itself, or (2) client satisfaction. Both measures assume market characteristics in terms of monetary exchange. Because most PSFs are neither publicly traded nor under any requirement to report profits, most scholars use revenues per professional (R/P) as a proxy for financial performance (e.g., Lorsch & Tierney, 2002). Such measures can then be linked to a firm's aggregate levels of knowledge. For example, Greenwood et al. (2001) found that the benefits of optimizing knowledge transfer between partners and nonpartners led to greater performance—performance being measured as R/P.

On the other hand, client satisfaction (though rarely used) is seen as a more appropriate alternative for realizing value created by PSFs. While profits increase a firm's ability to compete and continue to win bids, ultimately the value of services provided by a firm can be determined by the client. If clients are not satisfied with a PSF they may pay the fee but not return or refer others to the PSF. Hence, a company can do well financially one year, but be providing poor service. It is not until later when client

resells are down and referalls are low that the company begins to realize that they had not been creating value for the client. Hence, client satisfaction is an important measure in understanding how to create value before it is too late. As recommended by Greenwood et al. (2005), including more dynamic models closer to the client-professional model will help scholars to expand the definition of performance for professional service firms.

Of course, this is no easy task. The measure of value may be different for each client, creating a challenge in assessing the value of knowledge resources on the firm's performance. Services rendered, for example, can differ in their customization, cultural adaptation, extent to which clients coproduce them, and ambiguity of specification (Whitley, 2006). What adds value for one client may not do so for another. This is largely because professional service firms have outputs that are "*intangible* applications of *complex* knowledge, making it difficult for consumers to weigh the relative competence of suppliers.² Clients are thus dependent on the professionals delivering these services" (Greenwood et al., 2005: 663). Because of the intangibility and complexity of these outputs, it is not enough to examine the knowledge stocks present in a PSF (e.g., aggregate levels of experience, education, social networks, routines and processes, etc.) and regress those variables on client satisfaction. We need to also understand the underlying processes and factors that make that knowledge valuable in the first place, before it reaches the client.

CREATING USE VALUE

Arguing that individuals are the primary locus of value creation, Felin and Hesterly (2007) call for research using a knowledge-based perspective to take into

² While a large part of many professional's (e.g., doctors, accountants, etc.) work is standardized and routine, clients rely on PSFs to deliver solutions to their unique problems—giving unique aspects to most client solutions.

account the underlying processes and people within an organization. Turning to the individual professionals inside a firm, we can better understand how knowledge stocks must first and foremost create value for the user (the professional) before they can be transformed into a solution or product that is valuable to the client. Such an approach offers a contingency perspective that allows us to understand the processes of how knowledge is used to create client value. For example, a firm may have extensive information systems and routines in place for sharing and integrating knowledge, but if these routines are not drawn upon extensively by the individuals within the firm then little value will be created for the client. Hence, to understand how stocks create client value, we must first understand how they can be used differently and how the differences in use first create value for the professional at an individual level (See Figure 1).

[Figure 1 about here]

According to Abbott (1988) and Mills and Moberg (1982), much of the work within professional service firms can be viewed in terms of a process, whereby trained experts temporarily come together to draw upon different knowledge stocks or resources that allow them to offer a solution to a client's problem. Such examples include consulting, accounting, advertising, and law firms that must engage with a client to understand their problem(s), to develop a solution to that problem, and to deliver it. In these settings, the nature of work becomes much more fluid and often times the proposed path of delivering a solution will change mid-stream, requiring professionals to exhaust multiple sources of knowledge (e.g., reusing information found in templates or databases from past solutions that were successful, turning to colleagues in other offices who may have experienced similar client problems, drawing on personal experience or even flying people out who have the appropriate background to help with a client's problem). Because of the knowledge intensity and variability found in knowledge use, such PSFs

provide a rich context for theorizing about how resources create value. As Penrose (1959) explains, “It is never the resources themselves that are the inputs in the production process, only the services that the resources can render” (25). This means that it is more important to look at the usefulness of various stocks to the professionals rather than just an aggregate measure of stocks found within the firm. In line with this, Barney (1991) suggests that resources are valuable “when they enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness” (106). In other words, the use of these knowledge stocks should create value by improving the efficiency and effectiveness of professionals. This is consistent with resource- and knowledge-based views to say that knowledge stocks have value in relation to their ability to meet users’ knowledge flow needs (see Aaker, 1989; Aharoni, 1993; Prahalad & Hamel, 1990, 1994; Williams, 1992). To examine performance from this perspective requires that the value of knowledge be measured closer to the user within the process rather than when the service is rendered to the client (cf., Arrow, 1974; Glazer, 1998).

Use value refers to the specific qualities perceived by the users of the service or product in relation to what they need (Lepak, Smith, & Taylor, 2007). As pointed out by Bowman and Ambrosini (2000), such perceptions are subjective and individual specific. In contrast, much research takes an exchange value approach, which captures the monetary amount realized when a service is delivered to a client, and is often measured at the firm-level. A use value perspective views the process of drawing upon specific knowledge stocks as a labor process that produces value through the knowledge flows needed by the professionals; if the resource helps to meet specific needs, then it provides a “benefit” to the professional. But the degree of that benefit is contingent upon the relative “costs” involved in turning to other possible resources that might be more efficient for the person. From the standpoint of value creation, if we conceive of value as

the benefits derived over costs incurred, use value presents a suitable framework for analyzing value at the individual level of a professional service firm.

What this means is that to understand the client value created by knowledge stocks, we must first understand how the use of those stocks can add more benefit than costs to the individual professionals themselves who are responsible for mobilizing knowledge toward producing a service. Here we see that individuals can actually create value by taking the appropriate steps to create new knowledge, share existing knowledge, and integrate knowledge in order to produce better products and services that can then appropriate value for the organization. Such measures point to the importance of knowledge flows and their antecedents.

KNOWLEDGE FLOWS AND USE VALUE

Earlier, we noted the importance of knowledge flows as a source of internal value creation. Nevertheless, confusion still exists on how to conceptualize and determine the ways that different forms of knowledge flows are linked and simultaneously managed in PSFs. Kogut and Zander (2003) admit to a lack of understanding the complex interactions of different forms of knowledge flows. Others argue that more work is needed on these complex relationships and how they are linked (e.g., Crossan & Berdrow, 2003; Crossan, Lane, & White, 1999; Brown & Duguid, 1998; Hansen, 1999; Haas & Hansen, 2005). Knowledge flows can be categorized as knowledge creation, knowledge sharing, and knowledge integration (Argote & Ingram, 2001).

The first type of knowledge flow to be considered is knowledge creation. According to Nonaka (1994), to compete in a dynamic environment individuals must develop capabilities that allow them to create new knowledge. Knowledge creation is a process of taking on problems and developing new ways to solve them. Because

professionals deal with unique outputs and, in many cases, unique inputs, they must create new ideas or products for the client. Hence, professional service firms create value by continuously generating unique solutions to client problems (Maister, 1993; March, 1991).

Not only must professionals possess capabilities that allow them to create new solutions for clients; they must also be able to share these solutions with other parts of the firm (Szulanski, 1996; von Hippel, 1994). As professional service firms grow and expand, an inability to share knowledge across people in various offices becomes a central obstacle to creating value (Nahapiet & Ghoshal, 1998). For example, in a recent conversation with a knowledge manager at Ernst & Young, we found that one of their biggest struggles is getting people in different offices to share ideas. Unlike a publicly traded company, PSFs tend to consist of autonomous units with fewer mechanisms to facilitate sharing. However, knowledge sharing allows professionals to scan prior solutions and better understand how to approach current problems. Research that addresses knowledge sharing argues that knowledge can be difficult to obtain and that firms can increase their value proposition by enhancing knowledge sharing across individuals (e.g., Galbraith, 1973; Tushman, 1977; Hansen, 1999; Kogut & Zander, 1995).

While knowledge sharing is important in professional service firms, it does not address the issue of how the knowledge is used once it has been shared. Huber and Daft (1987), Sproull and Kiesler (1991), Whittaker and Sidner (1997), and Hansen and Haas (2001) all contend that knowledge sharing does little good when people lack the ability to act on the shared information or to distinguish reusable from unusable knowledge. The knowledge integration process takes knowledge sharing one step further by combining knowledge obtained from latent information in the firm and in people's minds and applying it to existing job tasks. In essence, it is not just the use but also the reuse of

information that allows the professional to leverage existing knowledge within it toward other productive means, thereby incurring an economy of scope. While creating knowledge and sharing it with others in the firm is important and often a prerequisite, the primary objective of this knowledge work is to be able to reuse knowledge that has been created elsewhere in the firm and apply it in familiar or unfamiliar situations (Jensen & Szulanski, 2005).

The significant component of these three types of knowledge flows is that, while they are interdependent and mutually enabling in the process of providing client solutions, they are probably distinct enough to be managed separately. Facilitating the different types of knowledge flows may require different levels and kinds of investment. In the next section, we look at how knowledge stocks might influence knowledge flows and the value in use of supporting certain knowledge stocks toward meeting professionals' needs. This means that the value of a firm's knowledge stocks must be assessed by examining how useful they are to professionals in terms of both costs and benefits—in other words, how knowledge stocks are “used.” For professional service firms, this evaluation consists of examining how different knowledge stocks can result in benefits and costs to the flow of knowledge.

KNOWLEDGE STOCKS AND KNOWLEDGE FLOWS

Ahuja and Lampert (2001), Nahapiet & Ghoshal (1998), Subramaniam and Youndt (2005), and Tsai and Ghoshal (1998) all noted the importance of the configuration of knowledge stocks, and previous research has identified three that are most critical: human capital, social capital, and organizational capital. While specific context will influence the value in use of stocks on different types of knowledge flows, what do existing theories tell us about how knowledge stocks might create benefits and

costs? How should these benefits and costs be examined when firm-level outputs are difficult or inappropriate to measure? At what level should these relationships be examined? And how can they be understood from an individual management perspective?

Some researchers have found that strong levels of local and international experience help in a firm's quest to create new ideas as well as to share ideas across subunits (Haas, 2006), but the value of experience on sharing may not be as great as it is for creation (see Figure 2). Likewise, investments in information technology and formal employee voice processes allow for greater local knowledge creation and global sharing and integration (Kremer & Maskin, 1996; Acemoglu, 2000; Aghion, Caroli, & Garcia-Penolosa, 1999), but the relative value that these systems offer in integrating knowledge as opposed to sharing and creating it may be quite high. Moreover, much of this work looks only at firm-level measures of knowledge stock and fails to examine how it is used by individuals. Below, we present a framework to help understand how the use of different knowledge stocks will lead to differences in value created for professionals as they try to provide solutions for clients. Such a framework helps to further the knowledge stock and flow research while offering valuable insight on how a professional service firm might more effectively manage its people.

[Insert Figure 2 about here]

Human Capital

Human capital is often defined in terms of the aggregated knowledge, skills, and experience of individuals within the organization, with experience being the key predictor in human capital theory (Becker, 1967). It is often manifested in past experience and formal training. Human capital plays a strong role as the professional service firm's key resource in solving client problems. We discuss how human capital is perceived in terms

of value to meet individual knowledge needs on the basis of the type of knowledge flow that is most important.

Knowledge creation. Researchers such as Argyris and Schön (1978) and Grant (2001) point out that organizations themselves do not create or produce knowledge—people do. The basic assumption is that ideas new to the firm come from individuals who possess education, skills, and experience—not organizations (Nonaka & Takeuchi, 1995; Simon, 1991). Creating knowledge is often seen to require experience, experimentation, and reflection by the individual members (Argyris & Schön, 1978; Leonard-Barton, 1995; Snell, Youndt, & Wright, 1996). Some of these ideas in response to the environment may not be new per se, but they can be considered new for the firm. That is why researchers such as Luo and Peng (1999), March (1991), and Moorman and Miner (1998) claim that exposure to the external environment stimulates the creation of new ideas from individuals. In particular, drawing from individual experience, experimentation, and reflection are often seen as key forces driving knowledge creation among professionals.

Professionals possessing large amounts of experience, education, and training should be able to effectively create ideas on their own in response to the complexities of unique client needs. This localized experience helps them to understand the needs of local clients and markets, which allows them to develop solutions that are unique to each contextual environment and hence heterogeneous across the firm. Likewise, creative intuition allows them to uniquely frame challenges and come up with innovative solutions. If the human capital pool of a professional service group is lacking, outside talent may be hired to help develop new ideas and solutions. Professionals who draw the most upon human capital tend to rely on the experimentation, inspiration, and experience of individuals to solve a problem.

In devising innovative solutions, human capital probably will be a more beneficial resource than reliance upon information from others inside the firm and especially than reliance on institutionalized forms of knowledge, such as databases and routines. It is the individual's creative license that allows for more creative thinking and for thinking that is different from what has occurred in the firm so far. The "costs" of such activities are also likely to be lower than if the company were to spend time turning to social networks or information systems. The transaction costs in terms of time and money associated with interacting with others and interfacing with technology and processes tend to be greater than those generated by people cognitively processing problems. By turning to human capital, the firm is required to manage fewer resources or points of information.

Knowledge sharing. As pointed out by Cummings (2004), knowledge sharing in organizations focuses on the relationships of people, such as across geographical locations or reporting managers, rather than on the human capital attributes of the people themselves. But human capital can also be employed as a resource for sharing knowledge (Jackson, Hitt, & DeNisi, 2003). Many firms depend on rotation programs, exchanges, and deployments to move knowledge around the organization (Hatch & Dyer, 2004). Such methods might prove "beneficial" in terms of ensuring that knowledge is moved from one part of the organization to another. The level of contextual complexity that is transferred is high, as the individuals bring all their experience and knowledge with them.

While using human capital to share knowledge can be beneficial, it is probably not very "cost"-effective. Depending on individuals' experiences for the sharing of knowledge means that people must be mobilized to get the knowledge from one place to another. If a professional service group is in the stage of a project where getting knowledge from other parts of the firm is crucial, relying on human capital to leverage it

may require that people be moved to the project to make their contributions, leading to travel and living expenses, time away from their own jobs, and so on. While this is a contextually rich way to share knowledge, it is very costly in comparison to social or organizational capital. As a result, when knowledge sharing is most important, human capital's value to the firm most likely decreases.

Knowledge integration. While human capital is likely to create high costs for knowledge sharing, the use of this resource for knowledge integration is likely to incur both high costs and low benefits. The integration of knowledge through human capital requires instruction, demonstration, mandate, or replacement of team members. It also requires executives who both understand the importance of applying knowledge and possess the ability to provide for instruction and mandate integration (Davis & Naumann, 1997). Davenport (2005) points out that proper role models and training encourage individuals to apply and reuse knowledge from others.

Knowledge integration through human capital may also include individuals' architectural knowledge of behavioral scripts of how ideas are integrated into existing operations and applied productively. Absorptive capacity scholars (e.g., Cohen & Levinthal, 1990) state that prior knowledge and experience is the primary factor allowing companies to integrate and apply (i.e., absorb) information from outside the firm or unit. As people gain experience that is related to the knowledge they are bringing in, they will be more likely to apply that knowledge to their existing operations because they now have a cognitive map that allows them to "plug and play." While such forms of human capital are beneficial in using outside knowledge, large amounts of diversified experience by individuals within the firm may lead to decreased levels of knowledge integration. The argument for this is consistent with the literature on the "not-invented-here syndrome," whereby individuals within an organization show more resistance to applying

others' ideas on the basis of overconfidence in their own experience and knowledge. Such overconfidence can pose an obstacle to integrating knowledge from other parts of the firm, often leading to inefficiencies and insufficiencies in solving a client's problem. In other words, fewer "benefits" and higher "costs" are derived from human capital in these situations. Human capital can also act as a barrier to replicating and adapting time-saving steps in delivering a solution to a client, thereby adding high "costs" to the resource's use.

Of all the resources drawn upon in professional service firms, human capital is probably the one most used. This is good when the group is working on a particular phase of the project where knowledge creation is most important. However, overdependence on human capital for other necessary knowledge flows, such as sharing and integration, may be more of a cost than a benefit to the firm, in which case the value of this resource is likely to decrease.

Social Capital

Social capital is the knowledge embedded within, available through, and derived from social networks (Nahapiet and Ghoshal, 1998). Kang, Morris, and Snell (2007) divide social capital of people in a firm into two distinct types, internal and external, each containing multiple dimensions. They discuss how the two types can be distinguished in interactions with people both inside and outside the firm (245). In addition, they address which type of social capital is more valuable on the basis of the type of knowledge possessed by the individuals involved. Hence, we discuss the possible effects of (1) external social capital, characterized in part by sparse and loosely connected social networks, and (2) internal social capital, defined by a denser network with strong ties. We also try to answer the question posed by Kang et al. differently, by examining how a

professional drawing on these types of social capital might benefit from specific knowledge flows and at what cost.

Knowledge creation. Much of the research on knowledge creation focuses on individual skills and abilities (e.g., Grant, 1996). In contrast, Nonaka, Toyama, and Nagata (2000: 3) argue that knowledge is a “dynamic human process” that is often created through interactions among and between individuals and their environment. Specific aspects of social capital have been cited as playing a role in knowledge creation (cf., Ghoshal et al., 1994; Ibarra, 1993; Leonard-Barton, 1995; Powell, Koput, & Smith-Doerr, 1996). While Hansen (2002) maintains that social networks provide an important conduit for the sharing and integration of knowledge, he also contends that such networks contribute to knowledge creation because they inform network members about the existence, location, and significance of new knowledge. Burt (1982) found that networks comprising a broader range of contacts are able to draw from a more heterogeneous base of information and knowledge. Though such external contacts may not always facilitate a deep flow of knowledge, they offer different reference points for professionals to make comparisons and explore new ideas.

A firm’s ability to identify new opportunities is likely to be a function of multiple local contacts. Professionals often have critical links with local businesses, governments, and clients that allow them to pursue local opportunities (Bartlett & Ghoshal, 1989; Hedlund, 1986). Birkinshaw (1997) refers to these as relationships within the “local market.” In that setting, an affiliate is likely to be embedded in different types of relationships (Ghoshal & Bartlett, 1990). McEvily and Zaheer (1999) argue that, because each part of the firm maintains different local patterns of network linkages, the organization is exposed to new knowledge, ideas, and opportunities that allows it to develop more innovative solutions.

Despite being time- and resource-demanding, local contacts act as creative inputs in the knowledge creation process. As one moves from sharing knowledge to generating it, the high “costs” of external social capital (maintaining multiple relationships) may be offset by high “benefits.” In this case, the benefits of external social capital may be high because there is much variation in novel inputs.

However, if social capital is based on internal contacts, there is the same risk of incurring high costs from managing multiple relationships but without the associated benefits. Knowledge creation is likely to be hindered by internal contacts, as they may create overdependence on social interactions with similar others inside the firm. Such examples are given by Granovetter (1984) and by Hansen (1999), with both arguing that people in a close internal network who are more likely to interact frequently with just a few others may be stuck with similar opportunities that do not allow for the identification of new knowledge or benefits. Similarly, Uzzi (1997) asserts that companies that interact only with similar others (e.g., internal employee members) can become mired in existing ways of doing things. Part of the reasoning behind this is that, as professionals continually turn to similar sources of knowledge, they will be less likely to have access to or contact with different ideas that could spur practice creation, thereby driving benefits down and costs up.

Knowledge sharing. Depending upon the complexity of the knowledge involved, sharing can take many forms, leading to discussions of kinds of knowledge (“know-who,” “know-what,” and “know-how”). Explicit “know-what” information concerning practices, products, or services can be exchanged without verbal communication, whereas more tacit “know-how” knowledge requires a more involved and iterative exchange process. In their seminal work, Nelson and Winter (1982) tackle this issue and find that, when dealing with knowledge transfer, the type of knowledge being transferred must be

taken into account. For example, knowledge that is considered complex (Kogut & Zander, 1992) or sticky (Szulanski, 1995) can be transferred only across people with the motivation to take the time to share their experiences.

Within a professional service firm, much of the knowledge (or, at least, the valuable knowledge) is of the know-how type and is gained from experience in developing client solutions. Transferring this knowledge requires, first and foremost, social capital. Szulanski (1995) found that one of the biggest obstacles to sharing knowledge in firms is the poor relationship between sources and recipients of information. Ghoshal, Korine, and Szulanski (1994) also showed the importance of social interactions consisting of both subsidiary-headquarters and intersubsidiary communication in knowledge sharing. These studies point to the importance of a network focused on contacts outside of a project but within the firm—that is, internal social capital.

Drawing upon internal social capital to share knowledge would likely be most beneficial in terms of providing deeper knowledge to solve complex and context-specific problems. Part of the reason is that, through personal contact, two-way or double-loop learning can occur (Argyris & Schön, 1978), whereby a series of feedback loops can be achieved as complex ideas and problems are discussed. The “benefits” of this type of interaction within a professional service firm are greater than those obtained by relying on single-loop processes and systems found in databases, routines, and templates. In terms of cost, turning to people for knowledge that has a much higher likelihood of being useful is potentially more efficient than wasting time with insufficient resources, such as past experience or information systems and processes.

While internal ties may prove superior for professionals’ knowledge-sharing needs, external ties may be detrimental. Burt (1982) suggests that people who spend a lot

of time with external contacts are likely to harm the quality and quantity of knowledge they receive from internal sources, and vice versa. Time spent on outside contacts creates network constraints on one's time for sharing knowledge inside the firm. Likewise, increased interaction with outside contacts, though productive in many aspects, can lead to information overload (O'Reilly, 1980). Many professionals are beginning to complain about being inundated with information and lacking the cognitive ability to process all of it. Hence, people in professional service firms who often turn to external contacts may actually hinder internal knowledge sharing through time lost interacting with local outside contacts or information overload, making that resource one of low "benefits" and high "costs".

Knowledge integration. As we move toward applying and integrating knowledge into existing operations, the costs of social capital may or may not be offset by the benefits. The "benefits" derived in applying knowledge may be high with internal social capital if it leads to conformance through social influence (Kang et al., 2007). Because internal contacts are more likely to maintain a shared mindset through repeated interactions and working toward similar goals, they will develop norms and shared understandings of how knowledge is to be combined and applied.

Internal social capital can act similarly to institutionalize processes in that related knowledge or aspirations about how a project should operate may show professionals how new knowledge obtained from others can fit into and be applied to existing practices. The literature on shared cognition suggests that team processes for integrating individual knowledge are supported by the similarity of team members' mental models (e.g., Klimoski & Mohammed, 1994; Mohammed & Dumville, 2001; Cannon-Bowers & Salas, 2001). Tsai and Ghoshal (1998) point out that social conformance in terms of shared vision facilitates not only knowledge sharing but also knowledge integration.

Though internal social capital is likely to carry high costs that are outweighed by high benefits in knowledge integration, external social capital is likely to carry similar high costs associated with managing multiple sources of knowledge but without the benefits. External social capital hinders knowledge sharing among professionals due largely to lack of focus and consistency. As people depend more upon external contacts as a knowledge resource, they encounter obstacles in terms of time lost with internal contacts and low benefits in terms of focusing on contacts who might offer a different vision or mental map of how things should be done.

Based on all of this, both external and internal social capital should offer varying degrees of value to a professional, as each is associated with varying benefits and costs that accrue from the different flows. External social capital seems to offer high benefits to knowledge creation but low benefits to sharing and integration; it may also be time-consuming and costly to all forms of learning. Internal social capital, on the other hand, offers seemingly high benefits to knowledge sharing and integration but low benefits to knowledge creation. It is also most likely a high cost for all forms of learning other than sharing.

Organizational Capital

Subramaniam & Youndt (2005) define organizational capital as the institutionalized knowledge and codified experiences residing within an organization. Artifacts of organizational capital include a reliance on manuals and information technology to preserve knowledge, along with the establishment of structures, processes, and routines that encourage repeated use of the knowledge (Hansen, Hohria, & Tierney, 1999). While organizational capital is a firm or aggregate level variable, it should be examined from an individual use perspective (i.e., to what degree is the organizational

capital used by the professional inside the firm). Below we examine organizational capital and how it is valuable to professionals for different aspects of knowledge flow.

Knowledge creation. Though highly valuable for knowledge integration, organizational capital may simultaneously work against efforts to preserve heterogeneity within the firm. The formalized processes and systems have a tendency to reinforce existing routines and to obviate against variations and changes that engender creativity. Hence, the benefits of organizational capital on knowledge creation may not be very high. This could stem largely from the fact that, as professionals are given simpler and more specific sources of information, they feel less need for local adaptation or individual input into how their products or services are developed (Burns & Stalker, 1961). Internal databases and publications tend to be built around a culture of efficiency and standardization that can potentially squelch incentives and reduce time for delivering innovative solutions.

Some firms have tried to use databases and systems to create new knowledge. For example, customer relationship management involves rather sophisticated data mining systems. In these cases, the “costs” of knowledge creation go up if the firm relies on organizational capital. Elaborate information systems and even artificial intelligence and other technology-based cognitive processing systems (e.g., expert systems) geared toward knowledge creation may prove to be costly vehicles for creating knowledge that tends to be more of an individual phenomenon (cf., Nonaka, 1991). The knowledge created from such systems was needed at such a rapid pace that designers had to constantly revise and change how decisions were made (Davenport, 2005). These revisions are difficult for designers and costly for companies. In other words, not only is organizational capital likely to produce low benefits in terms of knowledge creation, it is

also liable to be a much more costly resource. If these tendencies are combined, the benefits of organizational capital for knowledge creation decrease and the costs rise.

Organizations tend to draw on organizational capital for many aspects of learning, including knowledge creation, sharing, and integration, but this resource may provide more value for specific types of learning. On the basis of previous literature and our own experience with professional service firms, organizational capital is most likely to create more value when individuals in the organization are trying to integrate knowledge.

Knowledge sharing. Investments in information systems and coordination processes are not equally valuable for all forms of learning among professionals. Mahmood and Mann (1993) found that, for many companies, there is a large discrepancy between perceived benefits and investments in information systems. Thus, while managers have begun to point out the strategic importance of organizational capital for knowledge sharing and reuse, there is confusion about how best to strategically position organizational capital for optimal value creation (cf., Tippins & Sohi, 2003). In line with this concern, many companies fall into the trap of the technology productivity paradox, as discussed by Lucas (1999). This refers to a belief, common among companies, that the larger the investment in organizational capital, the greater the performance will be. The problem is that, while organizational capital is potentially beneficial to knowledge integration, it may not be as much so for other forms of learning, even knowledge sharing.

Within the global professional service firm, knowledge sharing is often facilitated across borders through processes and information systems that allow knowledge to be exchanged more efficiently. A firm that has a system in place for capturing and codifying knowledge allows individuals to share their ideas efficiently with others across geographical and cultural divides. This is because knowledge becomes decontextualized

and articulated in codified systems and processes, allowing multiple parts of the firm to access it more easily. Schulz (2001) found that the higher the level of codification of a domain of knowledge, the stronger the horizontal and vertical outflows.

Recent research has shown that, while firms are increasingly investing in information systems and processes, most organizational members have not been able to better share information (Davenport, 2005; Lozinsky, 1998; Peppard, 2000; Soh, Kien, & Tay-Yap, 2000). One explanation may be that such systems become vehicles for sharing depersonalized and low-quality information. Many firms are now developing internal “knowledge quality control units” that are charged with the task of sifting through data and making sure it is useful. This is being done largely because information processing costs are inhibiting the ability of professionals to share deep, quality information.

Because organizational capital provides a base for the sharing of codified information, the type of knowledge transmitted will often be of low quality, and hence of low benefit, to professionals dealing with complex, context-specific problems that require deeper levels of sharing (i.e., tacit knowledge) to help provide solutions. Therefore, organizational capital may offer a low-“cost” solution to knowledge sharing, but the quality or “benefits” accrued are quite low compared with those afforded by bringing people together.

Knowledge integration. In relation to the human and social capital possessed by professionals, organizational capital is likely to offer the most value in applying and integrating diverse knowledge into existing operations. The most valuable investments in knowledge reuse are potentially different from those that are most valuable in sharing or creating knowledge. While two professionals may have the ability and the motivation to share knowledge with each other, applying the knowledge to their current operations requires set processes and technologies that will enable them to actually capture and

implement the knowledge into existing tasks (Grant, 1996). Kogut and Zander (1992) refer to this as the “combinative capability” to create new applications from shared knowledge, which requires organizing and technological mechanisms.

As an integration mechanism, organizational capital allows the firm to preserve knowledge as incoming employees replace those leaving. This resource is being seen increasingly by scholars and managers as a crucial link to knowledge capture and application (Bettis & Hitt, 1995; Grant, 1996). An example of such an artifact might be a “lessons learned” database to ensure that one group’s experience can be made reusable for all groups. Professional service firms are also notorious for using project templates that act as a platform or base to design and capture learning. In these situations, the organizational capital artifact of the project template acts as both a repository for new knowledge and a platform for reusing existing knowledge.

While these platforms are often seen as instruments for greater knowledge dissemination, their greatest value comes in being able to “allow for the coming together of decisions, knowledge, and information” (Anand, Manz, & Glick, 1998). With the increase in IT and the increased emphasis on knowledge convergence, organizations are often no longer struggling with lack of information traversing borders (quite the opposite) but rather with constraints on being able to integrate and apply incoming knowledge in a timely and effective manner. One such professional service firm, as reported by Bohmer, Edmundson, and Feldman (2002), showed how organizational capital can be key to effectively managing information overload. Intermountain Healthcare (IHC), an integrated healthcare delivery organization in the United States, found that its doctors would revert to personal experience rather than draw on the experience of others throughout the organization. Part of the problem was that they lacked technology and processes to facilitate the reuse of knowledge produced by others inside the firm. IHC

implemented a decision-making/care-delivery system consisting of a data warehouse for care outcomes, electronic patient records, computer workstations, clinical data support systems, and treatment protocols for doctors and nurses that facilitated the capture and reuse of knowledge within a geographically and ideologically diverse group of professionals.

In order to improve the integration of knowledge within a firm relative to the speed of its diffusion or imitation by competitors, firms invest in ways to make knowledge explicit by encoding its use and replicating it in rules and documentation (Kogut & Zander, 1993). Professional service firms typically implement information systems and coordination processes to provide affiliates with a common platform for learning (Snell, Stueber & Lepak, 2002). These systems ensure that knowledge is implemented routinely through established data processing techniques, creating useful “benefits” in terms of project-level knowledge needs, and also that knowledge is rapidly compressed, reused, and recycled throughout the entire firm, thereby minimizing “costs” (Daft & Weick, 1984). In terms of integration, then, organizational capital helps to create value through the implementation and reuse of knowledge across affiliates, which allows professionals to deliver solutions more efficiently to clients.

In summary, by examining how knowledge stocks are used by individuals to facilitate different types of knowledge flows, we can better understand how value is created within the professional service firm. Some stocks are more useful, depending on the type of flow needed, and ironically, some that enhance one type of flow might hinder another.

DISCUSSION

The framework that we have proposed offers a contingency perspective allowing us to better understand the value of knowledge within a professional service firm. As we

understand the microprocesses underlying macro-level phenomena, we not only offer greater insight for researchers, but expand existing research using resource- and knowledge-based views of the firm, which tend not to take into account process contingencies at the micro-level. Because the overarching learning process in a firm has been shown to consist of multiple interrelated but distinct forms, it is important to understand the relative value of specific knowledge stocks on each type of knowledge flow for the professionals themselves. A particular knowledge stock may help, hinder, or offer no value to professionals, depending upon their specific knowledge needs within a project. Such value is realized through the actual use of knowledge in developing and delivering a service. This theoretical discussion carries implications for both practical applications for today and future research for tomorrow.

Implications

It may come as no surprise to note that in a survey conducted by the Economist Intelligence Unit (2006), knowledge management was the most frequently mentioned potential source of productivity gains over the next 15 years. Yet little is known about how to value and invest in this source of productivity. Our goal in this paper was to facilitate a better understanding of how to value knowledge in a professional service environment before it reaches the client. The implications are quite consequential. If managers are not able to determine the value of employees' activities, they will not know how to generate superior use value. They may inadvertently change something that is critical or be unable to respond to poorly used resources. Through downsizing, restructuring, and shifting strategies, they may eliminate some effective resource channels or incentivize incorrect behaviors. Conversely, managers who understand the value of different knowledge resources to professionals will be better equipped to invest in practices that will enable them to offer more unique solutions to clients.

Understanding how to value knowledge resources during the project process can also lead to better client solutions. While a firm can measure the value of the knowledge once it has been exchanged with a client, only through measuring knowledge-use interactions with employees can we understand where to make resource changes in the process.

To shed light on this process, we created a framework that will help firms to understand how they might facilitate different forms of learning on the basis of their specific needs. Such a framework will be useful to both academics and practitioners in helping them to develop a better understanding of the costs and benefits of different knowledge management interventions according to the nature of the task and the learning needs presented to professionals. When firms are confronted with novel problems that present a great deal of uncertainty and there is a need for knowledge creation, the framework could help them to identify which resources to invest in as well as the potential costs and benefits involved in their use.

Another implication of this paper has to do with the area of use value for knowledge resources. Traditional cost/benefit analysis is an important technique for project appraisal, involving the weighing of costs against benefits for one or more actions in order to choose the best or most profitable option. It is often used to assess the value of activities that are more difficult to express in financial or monetary terms. Inevitably, the benefits and costs that are identified are quite subjective (Brealey & Myers, 2003). Therefore, it is optimal to capture value measures from those who best understand the knowledge being delivered—the professionals (Glazer, 1998).

Discussions of use value have purported that, when considering the value of resources, it is best to determine the benefits of those resources to the consumer. Typically, such value is measured by how much the consumer is willing to pay for the resource. In the case of professional service firms, the initial consumer of knowledge

resources is the professional, who decides which resources to draw upon to solve a problem (Adler & Posner, 2006; Maister, 1993). Hence, the professional becomes the most informed source for determining knowledge resource benefit (Glazer, 1998). Because of the complexity and uniqueness of each individual project, it is the worker, and only the worker, who knows exactly how beneficial a resource will be to a project. Costs, on the other hand, can be calculated by individuals or measures removed or partially removed from the professional. Part of the reason is that professionals may show some bias in how they represent costs. For example, drawing upon a particular database or project template may require little effort in terms of cost but exact a high technology cost from the organization. The reverse is not true; if drawing on a resource is extremely time-consuming and costly for the worker, it will also be costly for the organization in terms of labor.

Most current thinking about how professional service projects should be structured to meet the demands of a complex, global environment seem to center mainly around knowledge workers and the creation of so-called knowledge organizations. A challenge in this effort is how to make the knowledge work process more effective. As stated by McGee (2003):

The fatal flaw in thinking in terms of knowledge management is in adopting the perspective of the organization as the relevant beneficiary. Discussions of knowledge management start from the premise that the organization is not realizing full value from the knowledge of its employees. While likely true, this fails to address the much more important question from a knowledge worker's perspective of "what's in it for me?"

It may be more useful to turn our attention from the resources of the organization to those of the professional.

We submit that the main factor in improving how work is done in a professional service firm is to improve how professionals create, share, and integrate knowledge to solve clients' problems. Taking a look around at today's professional service firms, it is apparent that this is not as easy as it sounds. A key problem with this value proposition, according to the Economist Intelligence Unit (2006), has to do with how one determines the value that comes from better-managed knowledge. How do you measure the value of people accessing their personal experience and training? How do you know if the knowledge benefit received from an internal network will exceed the costs incurred? And how can you determine whether the time it takes to access a database will be worth the benefit to your project as well as the firm? The framework that we have presented will allow organizations and scholars to better understand how such situations might be handled with greater value added.

However, the reality is that sometimes these investments in human, social, and organizational capital have long lead times. Rapid responses are often infeasible. Hence, we also suggest using this framework to analyze a PSF's performance in light of a) where previous investments and capabilities are made, and b) the type of clients with which the firm engages. Given that framing a PSF could decide to make changes in its various capital investment levels to alter future capital, or alternatively it could change the types of clients or projects it services.

Future Research

While the purpose of this paper is to theoretically discuss how knowledge resources create differences in value for professional service firms, we also take this opportunity to consider how future research might test this framework. Building upon work by King and Zeithaml (2003), we suggest an approach specifically geared to studies measuring organizational knowledge from a resource-based perspective. These steps are

not only useful for scholars in improving knowledge valuation research; they have practical implications in terms of how professional service firms might better measure the value of their knowledge management activities.

Porac, Thomas, Wilson, Paton, and Kanfer (1995) noted that, when conducting research on knowledge, it is important to first define the boundaries of the industry being studied. Establishing a context with defined boundaries helps to reduce potential confounding variables that arise when an industry's dynamics are influenced by diverse configurations of knowledge. This control increases the likelihood of identifying a relatively comprehensive inventory of knowledge stocks or flows. Therefore, ensuring that managers in firms are able to evaluate their perceptions of resources is important. In the current paper, we limited our discussion to the professional service industry. To identify an inventory of organizational knowledge resources, King and Zeithaml (2003) recommend that leaders of firms be interviewed. This method of qualitative data collection should be employed because it allows for the delineation and isolation of some essential qualities of complex social phenomena (Langley, 1999; Dougherty, 2002).

Another factor to consider in testing this framework is how we measure use value. According to Hunt (1995), use value "depends on (a) the tastes and preferences of consumers in the segment and (b) the resources that produce the offering." This means that use value for knowledge is determined by the resources drawn upon by project leaders and by how much their knowledge needs are met. We recommend surveying project leaders on how useful or "beneficial" the specific resources are in meeting their needs.

To understand the "costs" involved in using these resources within a professional service firm, the impact that they have on a project in terms of efficiency of time, money, and talent must also be measured. We recommend the survey format because knowledge

stocks and flows in organizations are complex, deep, and historical, and hence difficult to operationalize or capture with archival data (Godfrey & Hill, 1995). King and Zeithaml (2003) argue that survey methods are the best quantitative form for measuring knowledge because typical archival tools used for measuring organizational learning and knowledge are crude and often inadequate. An example of this is patent and citation counts, which are restricted in industries that are technology- or science-based. Such counts do not address the wide disparity in the usefulness of patents or the different stances that firms take in their degree of aggressiveness toward patenting (Spender & Grant, 1996; DeCarolis & Deeds, 1999).

CONCLUSION

Knowledge stocks present a key source of value for professional service firms. This value is realized in the solutions provided to clients. But something as intangible as knowledge can be a major source of misunderstanding and mismanagement, especially in professional service firms where knowledge activities are the main source of value creation. Throughout this paper, we developed a framework that explores the underlying path of how knowledge stocks create value for the clients of professional service firms. This path required that we examine the microprocesses of how knowledge stocks are used by individuals for knowledge flow needs. For professionals, this activity consists of examining how different knowledge stocks can result in benefits and costs to knowledge flows, before a solution is delivered to the client.

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Figure 1: Extending the Value Creation Model

Use Value Approach

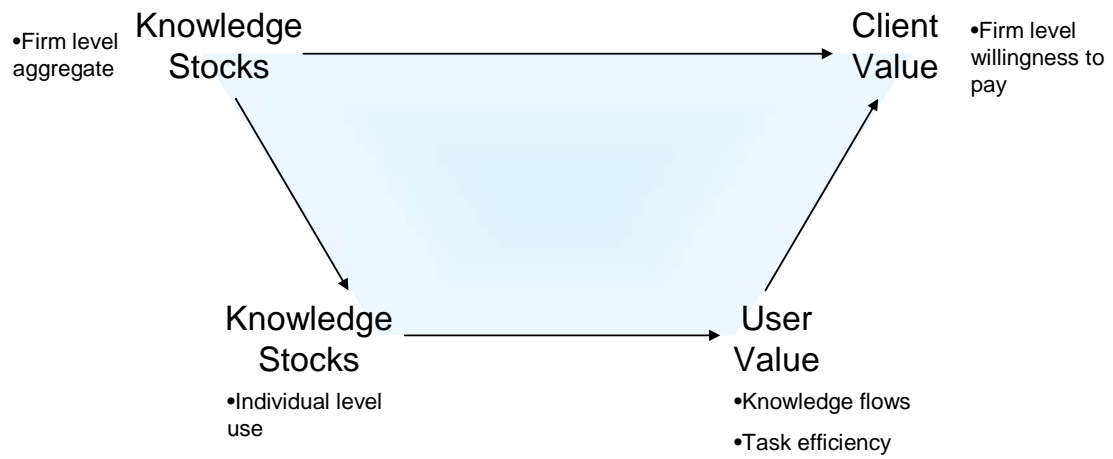
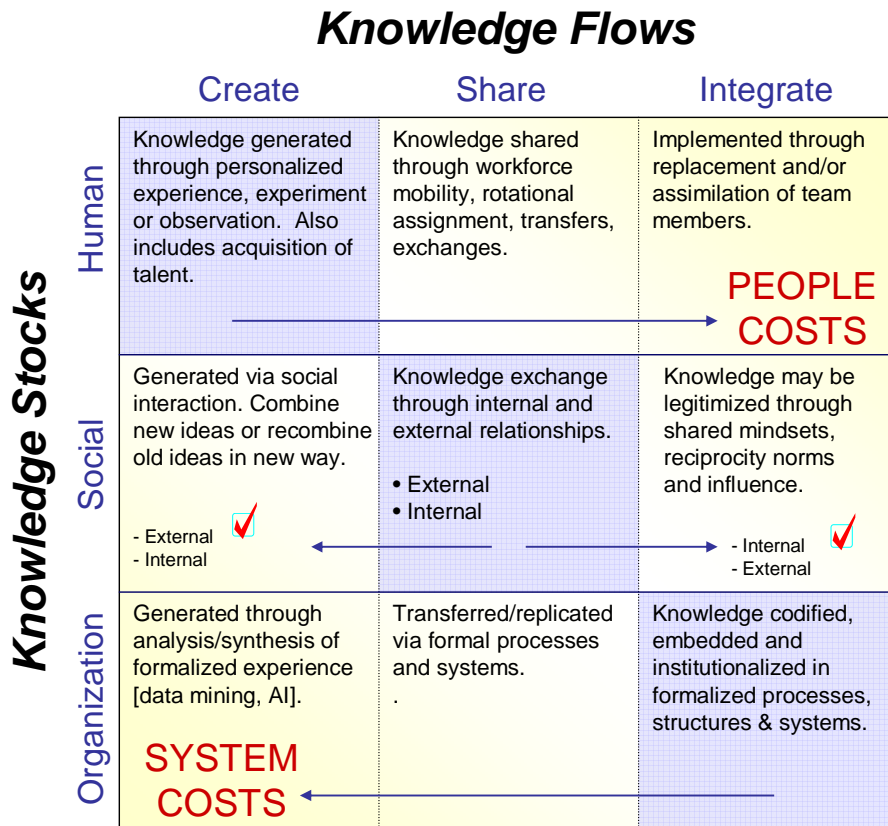


FIGURE 2: Knowledge stocks and flows



Along the “diagonal” the value (=B/C) of a stock is positive. What will happen to the value (benefits and costs) when we move off of the diagonal?