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Share and Share Alike: The Social and Technological Influences on Knowledge Sharing Behavior

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Abstract

In recent years, attempts to capture and leverage a firm's knowledge resources have become a primary focus in the pursuit of competitive advantage. Business leaders have increasingly looked to their firms' bases of knowledge - on topics such as customers, suppliers, markets, and business practices-as their most critical strategic resource. This trend has led to the widespread adoption of knowledge management initiatives aimed at capturing and leveraging the knowledge of social actors within an organization to advance the economic interests of the firm. Within such an effort, the behavior of knowledge sharing by individual business professionals stands as a necessary first condition for programmatic success. This essay explores the determinants of knowledge sharing by applying Ajzen's Theory of Planned Behavior to the context of knowledge management. The implications of the model provide support for an emphasis on organizational culture and relationship issues in the development and initiation of a knowledge management program. The model presented incorporates both formal and informal features of organizational contexts that can promote or discourage knowledge sharing behavior. The critical nature of social factors, reflected in the organizational culture of a firm, is strongly supported by the model. In addition, the analysis will illustrate the degree to which technological resources can influence the expected knowledge sharing behavior of business professionals.

Keywords: Knowledge Sharing, Knowledge Hoarding, Knowledge Management, Theory of Planned Behavior, Antecedents of Knowledge Sharing

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Introduction

In recent years, attempts to capture and leverage a firm's knowledge resources have become a primary focus in the pursuit of competitive advantage. Building on the work of Peter Drucker (1969; 1993; 1999) in the second half of the last century, business leaders have increasingly looked to their firms' bases of knowledge – on topics such as customers, suppliers, markets, and business practices – as their most critical strategic resource. This emphasis on the strategic value of firm knowledge is deeply rooted in contemporary understandings of the knowledge-based economy – a system built upon the intangible assets and skills possessed by members of firms. The primary focus of this view is well articulated in the popular business press: “In today's information-driven economy, companies uncover the most opportunities – and ultimately the most value – from intellectual rather than physical assets” (Santosus & Surmacz, 2001).

As a result of this focus, knowledge management initiatives have emerged as a primary focus for business development efforts. These initiatives are aimed at capturing and leveraging the knowledge of social actors within an organization to advance the economic interests of the firm. Because of the central informational component of such a focus, information technology has received extensive attention as a key facilitator of the success of knowledge management efforts. A broad range of knowledge management systems have been designed and implemented in an effort to enable and promote greater knowledge exchange within and beyond organizational boundaries.

The importance of *knowledge sharing* within the knowledge management perspective can hardly be overstated. For any knowledge management initiative to be successful, a firm must encourage its members and strategic partners to share the knowledge they have of customers, competitors, markets, and other aspects of their business environment. However, understandings of what constitutes knowledge sharing may be expected to vary widely based on the paradigmatic approaches to knowledge adopted by a firm. For example, knowledge sharing can be understood as narrative and perspective sharing (Boland and Tenkasi, 1995), shared practices and activities (Cook & Brown, 1999), sharing information with customers and between firms (Davenport & Klahr, 1998), socialization across industries and contexts (Fernie et al., 2003), or the dyadic exchanges of best practices (Szulanski, 1996). As von Krogh (2003) has noted, despite its central role in knowledge management, knowledge sharing behavior remains an under-addressed element of research in the area:

“In order to progress fruitfully [in knowledge management research], we need to pay more attention to one of the core problems that bridge the chasm between individual and collective levels: why, under what circumstances do people share knowledge in organizations? ... Knowledge and best-practice transfer within and between organizations is not a one-way activity, but a process of sharing involving trial and error, feedback, and mutual adjustment of both the sender and receiver of knowledge” (p. 373).

Accordingly, the current study proposes a methodology for understanding the determinants of knowledge sharing behavior. More specifically, we apply Ajzen's (1988) *Theory of Planned Behavior* to analyze knowledge sharing behavior on the part of social actors in business settings. The proposed model contributes to the study of knowledge management by incorporating several elements of a firm's formal policies and compensation structure that may promote or inadvertently discourage critical knowledge sharing behavior among its members. While many commentators have focused on the essential elements of formal organizational

policy that can support knowledge sharing (e.g., incentive payments and knowledge sharing requirements), little attention has been paid to formal facets of the organizational context that are not specifically aimed at knowledge management initiatives but which impact the sharing of information between individuals. In addition, the model incorporates informal aspects of an organizational context that are often overlooked but can significantly affect the willingness of business professionals to share their knowledge with others in the organization. These informal factors include elements of a firm's culture and perceptions of power distributions within the firm. Finally, the model offers a different lens through which to consider the dynamics of knowledge sharing in organizations.

The paper lays the foundation for further research on the dynamics of knowledge sharing within the scope of knowledge management initiatives. We start by outlining the essential concepts for a broader discussion of knowledge management and knowledge sharing behavior. Then, we review the Theory of Planned Behavior and its application for analyzing the determinants of intention to act and subsequent action in business environments. In the subsequent section, we develop our theses and propose a theoretical model specific to knowledge sharing within the context of a knowledge management effort. Finally, we discuss the implications of the model for the structuring of knowledge management initiatives by businesses and its potential for further research.

Conceptual Foundations

As a preface to the discussion of knowledge sharing behavior, the following section provides brief conceptual foundations of knowledge, knowledge management, knowledge management systems, and knowledge sharing.

Knowledge

One of the most significant challenges to understanding knowledge management is the difficulty in pinpointing the concept of knowledge in a concrete fashion. A common approach to this subject is the positing of a hierarchical relationship between data, information, and knowledge. In this approach, it is widely held that data holds the most basic status. When processed for practical application, data is raised to the level of information. Information, in turn, is applied by individuals to create knowledge:

“Knowledge is information possessed in the mind of individuals: it is personalized information (which may or may not be new, unique, useful, or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgments” (p. 109; Alavi & Leidner, 2001).

This distinction includes two critical points. One is that knowledge is understood to be something more complex than, and superior to, simple information. In this regard, knowledge incorporates an element of interpretation. Knowledge is information understood and applied in reference to specific objectives and contexts. This distinction proves insightful when one considers the role of information technology in the support of knowledge as something to be managed. Secondly, the description highlights the role of individual social actors in the creation and application of knowledge. Within this view, knowledge per se simply does not exist in the absence of social actors. It is the mind of an individual that converts information into something of directed value through the process of interpretation.

A second widely-employed approach to the concept of knowledge builds upon the work of Michael Polanyi (1967) in emphasizing the distinction between tacit and explicit forms of knowledge. Firmly rooted in the behavior of an individual, tacit knowledge is gained through one's experiences while pursuing selected objectives within a given setting. As such, tacit knowledge tends to defy straightforward articulation or documentation and is best transferred between individuals through personal interaction. By contrast, explicit knowledge is defined as knowledge that can be rendered in words and numbers, and is therefore subject to documentation and acquisition by others (Koskinen et al., 2003). While some researchers have criticized the dichotomous nature of the tacit-explicit categorization of knowledge (Hislop, 2002), this approach has been widely employed in research on knowledge in organizations (Nonaka, 1994; Roberts, 2000).

In addition to the taxonomies of knowledge outlined above, knowledge has been operationalized in both factor and process terms. In their review of the research literature on Knowledge Management, Schultze & Leidner (2002) explore a variety of metaphors that have been applied to the concept of knowledge. Specific metaphors identified include knowledge as object (Hightower & Sayeed, 1996; Gregor & Benbasat, 1999), as expertise or asset (Stein, 1992; Andreu & Ciborra, 1996), as situated practice (Brown, 1998; Star & Ruhleder, 1996), as culture (Huysman, 2000; Reeves-Ellington & Anderson, 1997), and knowledge as discipline (Foucault, 1979).

Similarly, Cook & Brown (1999) present two broad approaches to the subject by distinguishing what they refer to as the epistemologies of possession and practice. The epistemology of possession views knowledge as something that can be acquired and retained—that is, possessed—by an individual. Conversely, the epistemology of practice focuses not on knowledge per se but on the processes of knowing—from object to action. Despite comments on the limitations of a possession-oriented understanding of knowledge from several other scholars (e.g., Brown & Duguid, 1991; Boland & Tenkasi, 1995; Pentland, 1995; Orlikowski, 2002), this characterization has maintained strong face validity in the popular and business press. This observation is demonstrated by the preponderance of concepts such as intellectual capital, knowledge resources, and knowledge assets that are embedded in much of the discourse on knowledge management. Despite this persistent understanding of knowledge as an “object,” each of the various treatments of knowledge (or knowing) reviewed here offers some insight to research on the subject of knowledge management and knowledge sharing.

Knowledge Management

The challenge inherent in understanding the phenomena of knowledge management is that, like knowledge itself, there is no singular definition of what it entails. In the vernacular, knowledge management is generally couched as the management of intellectual capital, similar to the more tangible resources of a business within the contemporary economic system. As the term itself implies, the focus of knowledge management is on a determination of how knowledge can be leveraged by organizational decision makers in the same way that other tangible firm assets are managed. Thus, a primary challenge in the pursuit of knowledge management is bridging the gap between the knowledge held by individuals and that which can be accessed independent of any given organization member. In a survey of business managers regarding knowledge management efforts, KPMG Management Consulting (1998) inquired as to perceptions of organizational detriment caused by the departure of key personnel, including damage to client relationships and lost knowledge of organizational best practices. Nearly half of all respondents felt that such a departure had resulted in a strained customer relationship and 10% felt the company had lost income as a result.

In this study, we rely upon the working definition of knowledge management as articulated by Schultze & Leidner (2002): “Knowledge management is the generation, representation, storage, transfer, transformation, application, embedding, and protecting of organizational knowledge” (p. 218). As the breadth of this statement illustrates, activities captured under the rubric of knowledge management can run a broad gamut. Indeed, firms have approached knowledge management in a myriad of ways. Such efforts may include initiatives for best practices documentation, data warehousing and data mining, subject matter expertise directories, job rotation programs, and the fostering of communities of practice. Each of these approaches to knowledge management has different implications for the role of technology within the initiative. What all such efforts have in common is the necessity of sharing of knowledge among members of the organization.

Knowledge Management Systems

Knowledge management has frequently been understood and treated as essentially technological in nature. Indeed, given the importance of capturing, storing, processing, and distributing information to the development and exchange of organizational knowledge, information technology can be a critical resource for firms pursuing the objectives of knowledge management. This has resulted in the emergence of a category of IT resources known as knowledge management systems. Alavi & Leidner (2001) identify this class of resources succinctly:

“Knowledge Management Systems (KMS) refer to a class of information systems applied to managing organizational knowledge. That is, they are IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage/ retrieval, transfer, and application ... Many KM initiatives rely on IT as an important enabler” (p. 114).

Given the breadth of corporate knowledge management undertakings, the technological tools that have been applied to this endeavor are wide-ranging. Project and best practice repositories, directories of subject matter expertise, data mining tools, and groupware for facilitation of team-based activities are examples of IT resources that have been employed to facilitate knowledge management efforts.

As with knowledge sharing behavior, the types of systems and resources developed to support knowledge management are greatly influenced by the paradigmatic understanding of knowledge adopted within an organizational setting. Building on the commonly-used distinction between explicit and tacit knowledge, firms that understand knowledge as something that can be explicitly documented and exchanged tend to emphasize information repositories and other solutions that capture perceived knowledge in forms of documentation. By contrast, firms that approach knowledge as tacit understanding arising from experiences opt for systems that promote greater contact between knowledgeable individuals. Subject matter expertise directories are one example of this tacit perspective. A taxonomy of some different approaches to knowledge management systems is provided in Appendix 2.

Powerful IT resources may provide significant operational benefits, but they can also promote among managers the tendency to focus on technical aspects of knowledge management to the detriment of more fundamental social and cultural considerations (Davenport and Prusak, 1998). This concern has led many in the IS researchers and practitioners to advise against a technology-centered approach to knowledge management (Santosus & Surmacz, 2001). The risks inherent in a predominantly technological perspective of knowledge management are considered in greater detail in a later section of this paper.

Knowledge Sharing

Knowledge sharing behavior and its determinants are the focus of the current study. The concept of *knowledge sharing*, and its counterpart *knowledge hoarding*, are central to the objectives of knowledge management. Knowledge sharing can be understood as the behavior by which an individual voluntarily provides other social actors (both within and outside an organization) with access to his or her unique knowledge and experiences. This conceptualization of knowledge sharing is closely related to *information sharing* as outlined by Jarvenpaa & Staples (2000): “Information sharing embeds the notion of ‘willingness to share’. Volition distinguishes information sharing from involuntary information reporting” (p. 130). In the same way, knowledge sharing represents a volitional act of providing others with a certain access to one’s own knowledge and expertise.

In contrast to knowledge sharing, knowledge hoarding is a behavior by which one chooses to limit or prohibit access of other social actors to such uniquely held knowledge assets. At least two distinct drivers have been identified for such behavior (Michailova & Husted, 2003). First, individuals may hoard information because of concerns about a reduction of their personal value and influence. This dynamics reflects the widely applied adage that “knowledge is power.” From such a perspective, the sharing of one’s personal knowledge may imply a relative loss of power within an organization (Davenport, 1997). Secondly, hoarding may reflect an avoidance of the costs – in terms of time and effort – associated with knowledge transfer. This second basis for knowledge hoarding behavior becomes particularly relevant when considering the transfer of more tacit forms of knowledge (Grant, 1996). Both of these facets support the relevance of organizational structure and culture as a factor influencing knowledge hoarding behavior (O’Dell & Grayson, 1998).

Ultimately, promoting an environment conducive to knowledge sharing within the realm of knowledge management is intuitively salient. As Lin & Lee (2004) have observed, “organizational knowledge is contingent upon the ability to *institutionalize* individual-based knowledge with the intention of making it available to other organizational members” (p. 110; italics added). Therefore, the elicitation of knowledge sharing behavior is a necessary prerequisite for the success of a knowledge management effort.

Types of knowledge sharing behavior are nearly as varied as the understandings of knowledge itself. Understanding knowledge as a personal or organizational asset implies the sharing of explicit forms of knowledge (or tacit knowledge that can be converted to explicit forms) through multiple approaches to knowledge repositories. Knowledge sharing activities in such an environment may include the creation and submission of best practices documents, the input of customer information in a CRM system, or any other deposit of information in a shared repository. Conversely, if the understanding of knowledge is based on action and tacit elements, then knowledge sharing behavior is more likely to entail offering one’s time and skills for face-to-face interaction or other forms of direct discussion. Mentorship programs or communities of practice would be characteristic of such a tacit knowledge focus.

The Theory of Planned Behavior

The Theory of Planned Behavior (Ajzen, 1988) aims to provide a framework for explaining and predicting the deliberate behavior of individuals within specific social contexts. The theory stems from an earlier articulation dubbed the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). According to the theory of reasoned action, attitudes toward a specific behavior and the subjective norm in a social setting combine to form the

principle determinants of behavioral intentions (i.e., the intentions of individuals to engage in a relevant behavior). Intentions, in turn, are seen as the primary predictor of a behavioral action. The theory of planned behavior was introduced subsequently in response to the realization that an intention to act in a certain manner is not a sufficient determinant of actual behavior, particularly if an individual is inhibited by limits on personal ability or constraints within the context of action. Accordingly, the theory of planned behavior accounts for limitations to one's control (or perceived control) over one's actions by introducing an additional determinant, perceived behavioral control. The components of the theory of planned behavior model are described below and presented in Figure 1 (adapted from Ajzen, 1991).

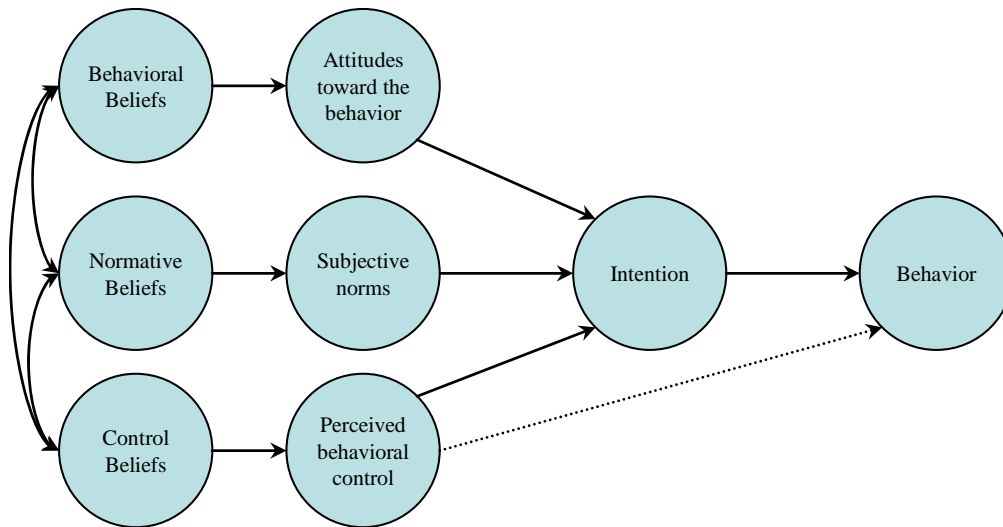


Figure 1. Theory of planned behavior

Attitude

According to the theory of planned behavior, an *attitude toward a behavior* is formed by the collection of beliefs one has about that particular behavior. An individual's *behavioral beliefs* consist of expected outcomes that one associates with that behavior (Ajzen, 1991). Thus, one's overall attitude toward the focal action is the result of cumulative salient beliefs about the outcomes of that action. The emphasis on salient beliefs is a critical and often misunderstood element of the theoretical model. Salient beliefs are those of which an individual is cognizant

Subjective Norm

Similar to the mechanism of attitude, a *subjective norm* is based on the beliefs one has about a particular behavioral standard. The relevant beliefs in this case are what Ajzen refers to as *normative beliefs* which are "concerned with the likelihood that important referent individuals or groups approve or disapprove of performing a given behavior" (p. 195; Ajzen, 1991). The subjective norms that contribute to one's intention to take a certain action are based on their beliefs about the degree to which others, who they feel are important within a given setting, want them to take that action. This construct is also frequently referred to as *social norms*, reflecting the importance of the social context.

Perceived Behavioral Control

Perceived behavioral control refers to the degree to which an individual believes he or she is capable of engaging in the focal behavior. The perceived limits to such action are based on *control beliefs*, including beliefs about one's own skills or competencies, as well as "the presence or absence of requisite resources or opportunities" (p. 196, *ibid.*). The control beliefs also incorporate a social element because they are frequently based on the experiences and input of others within the social setting. Ajzen notes that perceived behavioral control is closely related to the concept of perceived self-efficacy developed by Bandura (1977)–"judgments of how well one can execute courses of action required to deal with prospective situations" (p. 122). According to the theory of planned behavior, perceived behavioral control has both a direct and indirect impact on performance of a behavior. Along with attitudes and subjective norms, perceived behavioral control is a primary determinant of an intention to act. In addition, one's perception of control can affect behavior directly, because even if intention is held constant, a change in the perception of behavioral control will have a corresponding effect on the likelihood of the relevant action.

Intention

While intention to take a certain action may appear self-evident, the concept warrants some exposition. Ajzen (1991) identifies intentions in the following manner:

"Intentions are assumed to capture the motivational factors that influence behavior; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior. As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance" (p. 181).

Ajzen's research provides significant support for behavioral intentions as a predictor of actual performance of a relevant behavior. However, it is important to note that the link between intention and behavior requires volitional control. For intentions to be relevant, an individual must be free to choose whether or not to act in a certain way.

The theory of planned behavior provides a theoretical lens for an investigation of knowledge sharing behavior within the context of knowledge management. In many respects, the fit between the model and the underlying subject of inquiry is quite natural—a focus on voluntary action that is subject to multiple aspects of the social and technical environments. Invoking the knowledge management research agenda proposed by von Krogh (2003), "a prosperous [research] future depends on the ability to define the sharing problem and to deliver parsimonious theories and rich research based on a multiplicity of methods" (p. 373). The theory of planned behavior provides one such approach to this pressing research question.

Theoretical Model for Knowledge Sharing

The proposed model for knowledge sharing behavior builds upon the theory of planned behavior and adapts it to the context of knowledge management. While there is a strong conceptual fit between the theory of planned behavior and the dynamics of knowledge sharing, several assumptions inherent in the proposed model should be acknowledged. The proposed model is focused on organizational contexts with some semblance of a traditional corporate structure, with multiple stakeholder groups and the asymmetric distribution of power in corporate decision making and job structuring. Specifically, the model assumes at least two

broad categories of enterprise stakeholders—executive management and business professionals. Executive management represents a set of individuals within the firm who have authority over the corporate strategy, capital resources and budget, personnel decisions, and compensation structure. Business professionals represent the larger category of social actors within a firm who enact the operations of the organization and interface directly with customer, suppliers, competitors, and other business professionals. For example, this category of individuals may include sales representatives, customer service personnel, administrative assistants, operations staff, and marketing personnel. Business professionals are the focal group of organizational members for our consideration of knowledge sharing behavior. Another relevant stakeholder group within the ranks of the business professionals is the information systems (IS) personnel. Within the predominant organization structure, IS professionals are those actors responsible for the design, development, implementation, and/or maintenance of the IS resources of the firm. The following section describes the model in detail. The model is outlined in Figure 2 and a working definition of key constructs is provided in Appendix 1.

Attitude toward Knowledge Sharing

Following the theory of planned behavior, we theorize that an individual's attitude toward knowledge sharing is a critical determinant of the intention to share knowledge. Thus,

Proposition 1.0: *A favorable attitude toward knowledge sharing has a positive effect on the intention of business professionals to share knowledge.*

While the attitude of the individual is modeled with a direct effect on the intention to share knowledge, the *behavioral beliefs* upon which this attitude is formed can be traced to multiple lower order perceptions of business professionals. These specific sources of behavioral beliefs include aspects of the firm's formal compensation structure, expectations of reciprocity, and understandings of organizational power dynamics.

Formal Incentives and Disincentives

One primary source of beliefs about the outcomes of knowledge sharing behavior is the formal incentive structure, or reward systems, of a firm, which may provide both incentives and disincentives for knowledge sharing. The formal incentive structure refers to the system of compensation by which business professionals receive monetary and other remuneration for services rendered to the organization through their work activities. *Formal incentives* to share knowledge include facets of the compensation structure that reward organization members for engaging in knowledge sharing behavior. Examples of such incentives include bonuses for contributions to organizational knowledge repositories or a system of credits for consideration in the performance review process (Davenport, 1997). Several researchers have highlighted the importance of thoughtful incentive structuring to the success of knowledge management efforts (Davenport, 1997; Jarvenpaa & Staples, 2000; Ruggles, 1998; Santosus & Surmacz, 2001). This concept is concisely stated in the basic idea of value exchange where "one party has to be willing to give something to get something from another party" (p.130; Jarvenpaa & Staples, 2000).

Proposition 1.1: *Formal incentives to share knowledge have a positive effect on the attitude of business professionals toward knowledge sharing behavior.*

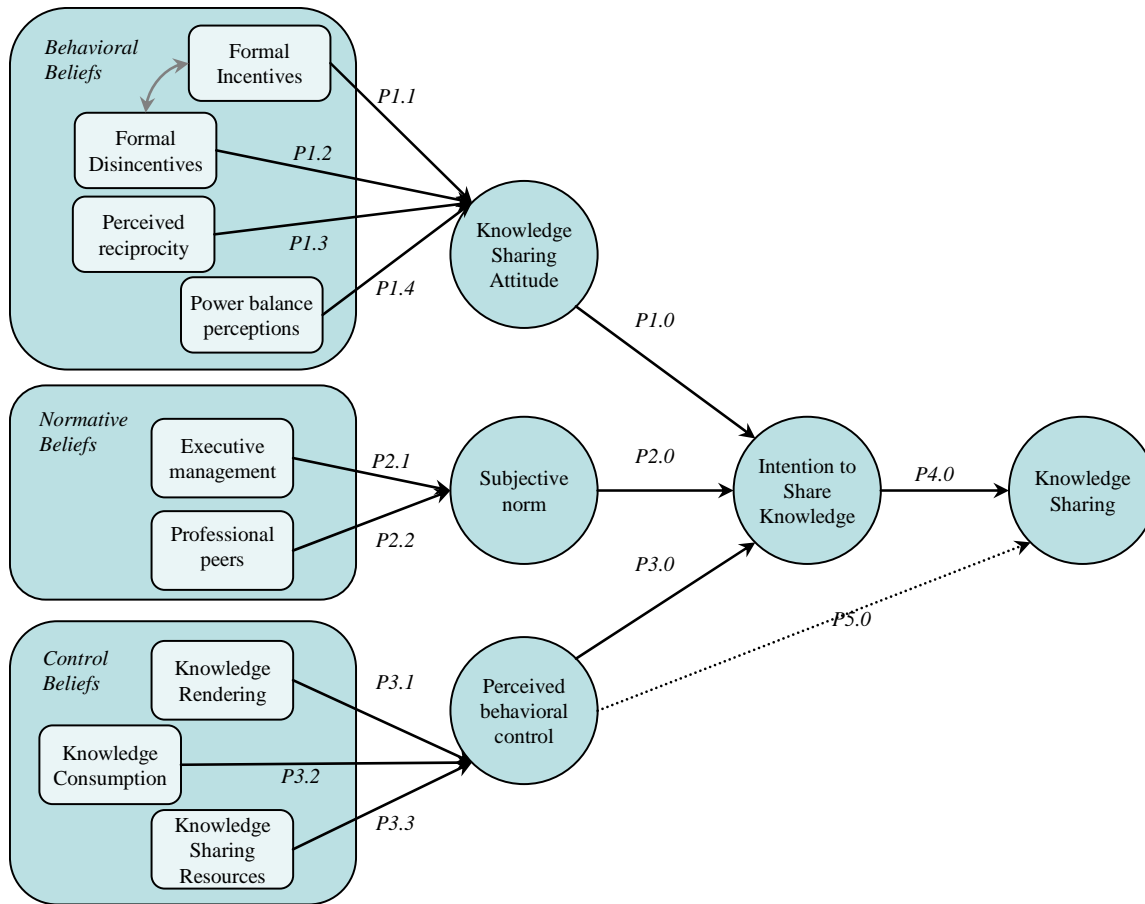


Figure 2. Model of knowledge sharing behavior

In addition to formal incentives to share knowledge, a firm's compensation structure may include overlooked elements that "dis-incent" knowledge sharing behavior and operate, unintentionally, as *formal disincentives* to knowledge sharing. Examples of formal disincentives include stack ranking of business professionals for the purposes of performance appraisal and other competitive schemes that facilitate relative performance review of individuals. Such competitive structures turn knowledge sharing behavior that could enhance the performance of others into an undesirable act with negative ramifications. This kind of unintended formal disincentives has received little attention in the literature.

Proposition 1.2: *Formal disincentives to share knowledge have a negative effect on the attitude of business professionals toward knowledge sharing behavior.*

Perceived Reciprocity

The belief that other business professionals are willing to share their valuable knowledge with other members of the firm is expected to affect one's own attitude toward knowledge sharing. *Perceived reciprocity* refers to the degree to which business professionals believe they will receive knowledge value from others in return for the knowledge they share as part of an informal system of sharing and mutual support. Knowledge sharing may help in forming alliances and gaining organizational power through reciprocal relationships. Ultimately, perceived reciprocity is a salient aspect of organizational culture relative to cooperative behaviors.

Proposition 1.3: *The belief of likely reciprocity in knowledge sharing behavior has a positive effect on the attitude of business professionals toward knowledge sharing behavior.*

Power Dynamics

Examining the power dynamics is fundamental for understanding how organizations function. According to Weber (1978), power is "the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests" (p. 53). Organizations are marked by power asymmetries that stem from various actors' unique knowledge. For example, unique knowledge about customers, suppliers, competitors or other aspects of the business environment is frequently treated as a source of relative power. From this perspective, sharing of such knowledge may result in power loss for an individual (Markus, 1983; Kling, 1980). A *power balance perception* refers to the beliefs of an individual regarding the effect of knowledge sharing on the extent of his or her organizational power. As with perceived reciprocity, power balance perceptions represent a salient aspect of organizational culture.

Proposition 1.4: *The belief that knowledge sharing is likely to result in loss of individual power within the organization has a negative effect on the attitude of business professionals toward knowledge sharing behavior.*

Subjective Norm

Again, following the theory of planned behavior, we theorize that the perception that important others want one to engage in knowledge sharing behavior has a positive effect on the intention of business professionals to share knowledge. Thus,

Proposition 2.0: *A favorable subjective norm toward knowledge sharing has a positive effect on the intention of business professionals to share knowledge.*

Whereas the subjective norm toward the behavior of knowledge sharing is highly recognized as a critical determinant of the intention to share knowledge, the *normative beliefs* upon which this norm is formed can be traced to other perceptions of business professionals, such as the beliefs in the degree of executive management and peer support.

Executive Management Expectations

Members of executive management have authority over one's compensation, performance appraisal, and overall professional advancement within a firm. Thus, not surprisingly, it is expected that one's subjective norms will be affected by his or her normative beliefs regarding the expectations of superiors and organizational leaders. Therefore, one's belief that executive management expects knowledge sharing behavior is likely to have a positive effect on one's subjective norms toward knowledge sharing behavior.

Proposition 2.1: *The belief that executive management favors knowledge sharing has a positive effect on one's subjective norms toward knowledge sharing behavior.*

Peer Expectations

Professionals peers are not expected to have explicit authority over an individual business professional, but they represent an essential influence on one's day-to-day experience of the work environment. Therefore, normative beliefs about their expectations are expected to influence one's overall subjective norms regarding work and organizational action. Consequently, one's belief that his or her peers expect knowledge sharing behavior is likely to have a positive effect on one's subjective norm toward knowledge sharing behavior. Whereas in most cases, it is expected that executive management is favorable to knowledge sharing, peers' expectations can go either way and become a salient aspect of the organizational culture.

Proposition 2.2: *The belief that professional peers expect knowledge sharing has a positive effect on one's subjective norm toward knowledge sharing behavior.*

Perceived Behavioral Control

In the same vein, we theorize that a favorably perceived behavioral control also has a positive effect on knowledge sharing behavior. That is, business professionals' perception that they are able to engage in knowledge sharing with relative ease, and with few operational obstacles, has a positive effect on their intention to share knowledge. Thus,

Proposition 3.0: *A high level of perceived behavioral control in knowledge sharing has a positive effect on the intention of business professionals to share knowledge.*

The degree to which individuals believe that they are able to engage in knowledge sharing behavior affects their intentions to do so. The perception of such ability stems largely from beliefs about the presence of certain control factors that may facilitate or impede such sharing. In this context, *control beliefs*, or factors that control the ability to share knowledge are perceptions about the means provided for knowledge rendering, retrieval and reuse.

Knowledge Rendering

The degree to which an individual believes that a particular knowledge management system is conducive to effective knowledge rendering is likely to influence perceptions of his or her ability to share knowledge through that system. This illustrates the challenge with sharing knowledge that is characterized as tacit. If one feels that certain relevant knowledge cannot be rendered effectively in the expected form or media (e.g., documenting a complex skill in a standardized text-based online repository), then he or she is likely to believe that the given task is untenable. In other words, one is likely to perceive reduced behavioral control because of conditions inhibiting knowledge sharing.

Proposition 3.1: *A belief that a particular knowledge can be effectively rendered to others through a given mechanism or system has a positive effect on one's perceived behavioral control in knowledge sharing behavior.*

Knowledge Consumption

A second component of perceived control of knowledge sharing behavior deals with degree to which an individual believes that a particular knowledge management program is conducive to effective knowledge consumption on the part of others. Beliefs about knowledge consumption are likely to influence one's perceptions of the ability to share knowledge effectively through the program in question. If one feels that a certain relevant knowledge cannot

be consumed effectively from the provided knowledge exchange methodologies, then he or she is likely to believe that knowledge sharing is infeasible. Beliefs about knowledge consumption represent the flip side of those related to knowledge rendering.

Proposition 3.2: *A belief that a particular knowledge can be effectively consumed by others through a given mechanism or system has a positive effect on one's perceived ability to engage in knowledge sharing behavior.*

Knowledge Sharing Resources

The final component of perceived control of knowledge sharing behavior deals with the expected format for sharing knowledge. This is the aspect of knowledge management where knowledge management systems come to the fore. The perceived ease of sharing knowledge can be influenced by the distinct tools available for pursuing the behavior. If the resources provided to business professionals offer sufficient flexibility to incorporate less traditionally-explicit forms of knowledge, then the detrimental effect on perceived behavioral control of knowledge sharing proposed above may be mitigated.

Proposition 3.3: *The degree to which an individual believes that the resources available for knowledge sharing are easy to use has a positive effect on one's perceived behavioral control over knowledge sharing.*

Intention and Behavioral Control

According to the theory of planned behavior, an intention is a significant predictor of an action, because it measures one's readiness to perform a given behavior. Furthermore, another direct predictor of action is one's perception about his or her ability to engage in that given behavior (i.e., the perceived behavioral control). Therefore, in the context of this study, both intention and perceived behavioral control are direct antecedents of knowledge sharing behavior. Thus,

Proposition 4.0: *The intention to share knowledge has a positive effect on the actual behavior.*

Proposition 5.0: *A high level of perceived behavioral control of knowledge sharing has a positive effect on the actual behavior of sharing.*

The proposed model combines the framework for analysis of volitional action provided by the theory of planned behavior with dynamics observed in the study of knowledge management. In so doing, the model provides the structure for a systematic analysis of the social and technical determinants of knowledge sharing behavior on the part of business professionals. In addition, the model develops the propositions necessary for testing the efficacy of the theory of planned behavior in a knowledge management context.

Discussion

A review of the knowledge sharing model provides implications for consideration in the structuring of knowledge management initiatives, which rely upon the open sharing of knowledge among individual business professionals. Specifically, the model suggests guidelines for formal organizational compensation structures and policies, the social/cultural aspects of the work environment, and the design of knowledge management systems. In this regard, the model

fills a critical gap the treatment of knowledge sharing and knowledge management more broadly. While the Theory of Planned Behavior and Theory of Reasoned Action have been considered in reference to knowledge management initiatives (Lin & Lee, 2004; Bock & Kim, 2002), existing studies have applied overly simplified operationalizations of key constructs or focused on the perceptions of managers without consideration of those whose knowledge sharing behavior is central to initiative success – i.e., business professionals.

The importance of formal incentive structures that support knowledge sharing behavior has been commented on extensively in the popular treatment of knowledge management (Davenport, 1997; Santosus & Surmacz, 2001; KPMG Management Consulting, 1998). This observation is reinforced by the application of the planned behavior model. Formal structures can be expected to have significant impact on the behavioral beliefs (i.e., beliefs about the outcomes of behavior) of business professionals. Therefore, distinct formal incentives for knowledge sharing should be developed as part of a knowledge management program. As noted above, these incentives may take the form of bonuses tied to knowledge sharing behavior, consideration of knowledge sharing in the performance evaluation process, or formal recognition of knowledge sharing that can support the intra-organizational reputation of sharing individuals.

Interestingly, the model also directs attention to aspects of the formal compensation structure that do not address knowledge sharing behavior or knowledge management efforts directly, but nevertheless may impact behavioral beliefs about knowledge sharing. Such structural concepts noted above include stack rankings of employees in a performance evaluation process and similar structures that promote competitive attitudes between individual business professionals. Team-based incentives and the development of mentoring programs have been suggested as formal structures that can support greater perceptions of trust and common objectives within a firm (von Krogh, 1998). Such formal structures would be expected to also have an affect on informal determinants of behavioral beliefs, such as perceived reciprocity.

The movement of influences from formal to informal aspects of the work environment raises the issue of corporate culture. The leaders of knowledge management initiatives must take care to create or foster a culture of collective cooperation and discourage a culture of competition. Within any firm, an intentional effort to engender a change of culture is a significant undertaking, but it is a necessary corollary for support of effective sharing behavior. If a firm or divisional unit's culture is traditionally steeped in competition, the effort to promote knowledge sharing behavior will run up against behavioral beliefs that are deeply ingrained and often only tacitly understood. Norms for communication are another aspect of corporate culture that will have to be surfaced and addressed directly. Firms in which individuals are accustomed to knowledge sharing only in a direct face-to-face manner, may have a challenge encouraging sharing behavior that is computer-mediated.

The preceding point of course leads one to the subject of knowledge management systems. It has been noted that many early knowledge management initiatives have focused heavily on technological aspects of facilitating information and knowledge flow. One of the most interesting implications of the planned behavior model of knowledge sharing is its illustration of the limitations of technology in supporting such behavior. The question of technological enablement of knowledge sharing is almost exclusively limited to the concept of perceived behavioral control (see Figure 3). The development and implementation of knowledge management systems that improve the control beliefs of organization members can be critical to achieving the desired knowledge sharing behavior, but this is only the case if behavioral and normative beliefs already support an individual's intention to share knowledge. This underscores the role of technology as a key *enabler* or *facilitator* of knowledge sharing, rather than as a first-order determinant of the behavior itself (Alavi & Leidner, 2001). A second implication for the

development of knowledge management systems is that design must progress with an awareness of the mechanisms and flexibility business professional believe they need to sufficiently communicate their knowledge.

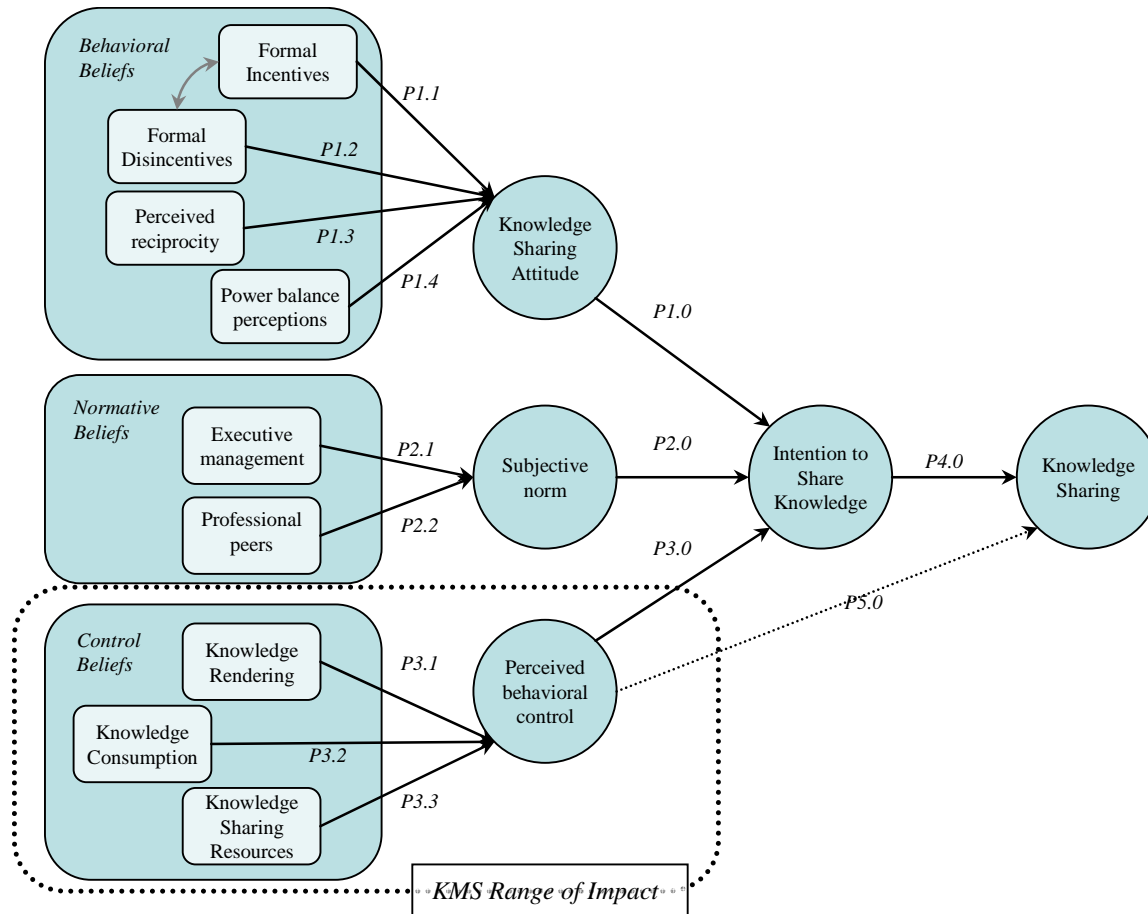


Figure 3. Social and technical factors of knowledge sharing behavior

Conclusion

The application of Ajzen's theory of planned behavior to knowledge sharing within the context of knowledge management initiatives can provide several insights into the determinants of knowledge sharing behavior. By reinforcing the importance of formal incentive structures and cultural factors in shaping the behavioral and normative beliefs of members, the model directs the attention of business leaders to those issues that must form the foundation for successful management of organizational knowledge resources. In addition, the model illustrates the value and limitations of knowledge management systems in support of such efforts.

Perhaps most importantly, the current analysis illustrates the observation that the development of knowledge management within a firm cannot be pursued effectively in an isolated or casual manner. Nor can it be simply purchased in a suite of software. Rather, significant knowledge management implies a comprehensive consideration of the structures,

resources, processes, and culture of a firm. Without such a broad perspective on the part of organizational planners, knowledge management initiatives are likely to be hindered by the presence of conflicting forces and mismatched resources.

The foregoing discussion provides a basis for a theoretical investigation of knowledge sharing behavior, but the work of detailed research remains. The proposed model must be subjected to empirical testing, review, and refinement to ensure that the implications it presents can offer substantial support to the work of business leaders in their efforts to achieve effective knowledge management.

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Appendix 1. Definition of Key Constructs of the Knowledge Sharing Model

Construct	Definition
Knowledge Sharing Attitude	A disposition toward knowledge sharing that is based on the degree to which knowledge sharing behavior is positively or negatively valued
Formal Incentive	A formal organizational mechanism that rewards knowledge sharing behavior
Formal Disincentive	A formal organizational mechanism that (usually inadvertently) inhibits knowledge sharing behavior
Perceived Reciprocity	A belief about the degree to which sharing of one's own knowledge has a positive effect on others' willingness to share their knowledge in return
Power Balance Perception	A belief regarding the effect of knowledge sharing on the extent of his or her organizational power.
Subjective Norm	The perceived social pressure to engage or not to engage in knowledge sharing
Executive Management Expectations	The perceived expectations of senior managers regarding one's engagement in knowledge sharing
Professional Peer Expectations	The perceived expectations of peers regarding one's engagement in knowledge sharing
Perceived Behavioral Control	The degree to which one believes he or she is able to engage in knowledge sharing
Knowledge Rendering Beliefs	The degree to which one believes a given mechanism or system is conducive to effective rendering of the relevant knowledge
Knowledge Consumption Beliefs	The degree to which one believes a given mechanism or system is conducive to effective consumption of the relevant knowledge
Knowledge Sharing Resources Beliefs	Control beliefs about the degree to which resources available to support knowledge sharing behavior are easy to use
Intention to Share Knowledge	The degree of one's propensity to share knowledge
Knowledge Sharing Behavior	An observable sharing of one's knowledge

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