KNOWLEDGE MANAGEMENT AND THE CREATION OF BUSINESS VALUE

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ABSTRACT

Knowledge management (KM) initiatives that create business value are a major focus for many organizations. While academics often couch KM success in terms of process outcomes, some argue that the organizational outcomes perspective of KM success held by many practitioners is clearer, where KM success is tied to its impact on organizational performance. This study proposes an integrated model that incorporates both perspectives, in which the business value of KM is the dependent variable and effective KM process implementation is an important antecedent. We also hypothesize that two contextual factors, top management support and organizational culture, are positively related to business value. Data collected from a U.S. national survey of 268 information technology (IT) executives support the significance of these relationships. Furthermore, this research identifies key KM barriers as well as benefits that influence top management support of KM, KM process implementation, and indirectly business value. Practical and research implications are discussed.

Keywords: Knowledge management, business value of KM, KM Success, KM barriers, perceived KM benefits, process implementation

INTRODUCTION

Researchers and practitioners have used a variety of competing perspectives in evaluating the success of knowledge management (KM) initiatives. Two of the most common viewpoints regard KM success as either: 1) a process measure or 2) as an outcome measure [42]. As a process measure, the focus is on the effective implementation of knowledge processes (i.e. creating, storing, sharing, and knowledge codification). KM success as an outcome measure is seen as an evaluation of the outcomes of knowledge process capabilities existing within an organization as a result of KM initiatives, (e.g., the company's competitive capacity and position in the market).

Practitioners are more likely to support the definition of KM success as being tied to its impact on organizational performance, whereas academics tend to focus on the process perspective [42]. Chua et al. [15] note, however, that organizations launch knowledge management initiatives to improve business processes as well as to enhance organizational outcomes. The gap in the literature is a research model that combines the strengths of both the process measure and outcome measure viewpoints of KM success rather than focusing on only one perspective, and thus overlooking the value of the other. This research fills that gap. Recognizing the strength of both perspectives, the current research presents an integrated model in which KM process implementation is considered as an antecedent to the business value of KM, the dependent variable.

The business value of KM is defined as the degree to which KM can assist an organization when competing in changing market spaces, gaining and maintaining market and customer share, and facilitating flexibility to address organizational and regulatory changes. We argue that effective KM process implementation is a necessary, but not sufficient condition to achieve this outcome. Other contextual factors are required for such success as well and are also considered in the research model.

The remainder of the paper is as follows. First, we review the literature related to KM and its business value for the organization, presenting our research model and associated hypotheses. Next we empirically test the proposed model using data collected from information technology (IT) executives, and analyze the data using Partial Least Square (PLS) methodology. Finally, we report the results, presenting implications for academia and practitioners regarding the factors that support KM success in organizations.

LITERATURE REVIEW

Knowledge Management

The IT literature distinguishes knowledge from information and data. Although many managers think of them as interchangeable concepts, knowledge is something different from information and data [26]. While there are differing definitions, Vance [80] suggests that data are raw facts, information is data which is interpreted meaningfully, and knowledge is information which is thought to be true. Others define knowledge as "a justified personal belief that increases an individual's capacity to take effective action" [2]. Knowledge management is the systematic process of acquiring, organizing, and communicating the knowledge of organizational members so that others can make use of it to be more efficient and productive [3]. The most important goal in this process is to increase innovativeness and responsiveness [36].

In general, two types of KM can be identified: operational knowledge management and strategic knowledge management [79]. Operational knowledge management is related to making connections between people and the systems used in order to distribute and transfer knowledge. The focus is on preserving the store of organizational memory by capturing and maintaining valuable lessons learned from past practices of key employees. Strategic knowledge management refers to the process of connecting organizational knowledge with business strategy [60]. The emphasis is increased performance based on the strategic use of knowledge management systems [24].

Knowledge Management and Processes

Organizational knowledge represents intellectual capital that must be captured by the organization in order to extract its value to the business [66]. Knowledge is noted as an essential resource and the foundation of value creation for the firm [66]. In order to maximize the value of knowledge, organizations need to create an appropriate system to support the flow of knowledge by creating and enacting knowledge management initiatives.

Knowledge has been viewed as a process that includes acquiring, organizing, and communicating the knowledge of organizational members. The ability of organizations to create, acquire and deploy this asset is an essential capability for organizations [75] and efforts to transfer knowledge efficiently and effectively continue to be a major focus for organizations as they face increasing global competition [60].

Much of the academic literature has focused on KM processes and the value derived from those processes. The KM process is described as the series of activities involved in knowledge creation and knowledge sharing in organizations that includes socialization, externalization, combination, and internalization [58]. Thus, organizations should focus on activities that involve the processes of creating, storing, retrieving, transferring, and applying knowledge [2].

Recent research asserts that organizations should integrate processes with data models in order to improve knowledge management efforts [56]. Processes are dynamic and subject to various influences including prior processes, decisions made by those involved, and both internal and external changes within the organization [56]. As much of the firm's core value lies within its business processes, a focus on KM processes that capture the series of activities involved in processes as well as the range of variables that affect those processes is essential. Therefore, the current research recognizes the value of effective KM process implementation and also evaluates potential barriers that can negatively affect KM process implementation. However, this research goes a step further to assert that KM process implementation itself has an impact on business value by improving organizational performance.

Knowledge Management and Business Performance

Knowledge has been recognized not only as a process but also as a critical competitive asset. Previous research [3, 32, 69] suggests that IT enables KM capabilities which in turn lead to firm performance. KM capability refers to a "firm's ability to create, transfer, integrate, and leverage related knowledge across its business units" [76] and is a critical mediator between IT and firm performance. According to Alavi and Leidner [3] "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".

The Resource-Based View (RBV) of the firm posits that appropriate allocation and use of a firm's resources are vital to the success of the firm. This view proposes that the firm's capabilities and resources are critical indicators for its competitive advantage [8]. Based on RBV, the knowledge-based theory of the firm suggests that knowledge is the critical production input and primary source of value [33]. This view suggests that knowledge assets may produce long-term sustainable competitive advantage [3] and increase financial firm performance [25, 77].

In fact, the knowledge-based view of the firm focuses on knowledge as the foundation of a firm's competitive advantage and one of the key drivers of the firm's value [10, 32, 33]. The value of knowledge increases when it is stored, networked, reused and integrated into business processes [23]. Thus, KM success has been defined as "reusing knowledge to improve organizational effectiveness by providing the appropriate knowledge to those that need it when it is needed" [42]. But researchers also note that in order for IS initiatives to be successful, top management support is essential [6, 14, 81]. The argument is made that top management support of KM leads to KM project success [17]. Support from top management is widely understood to be necessary for any system's success. But in order to secure that type of support, managers need to see evidence that KM process implementations can benefit the organization in tangible areas such as improvements in marketing, sales, and financial management [2].Therefore, we argue that the perceived benefits of KM have a positive effect on top management support of KM processes and therefore a positive effect on the business value of KM.

Another crucial element affecting the success of any KM initiative is the culture of knowledge sharing that exists within the organization. Case studies such as Teo et al. [78]show that in order for a KM program to be successful, a knowledge sharing culture must exist. Thus, we also include organizational culture as an antecedent to assess KM business value, with the realization that top management support will also have an effect on the organizational culture of knowledge sharing.

Knowledge management affects organizational performance on several levels [18]. KM can facilitate innovativeness and organizational efficiency. Knowledge management can also contribute to learning and growth. In the Balance Scorecard model (BSC), this type of learning is important so that it can be translated to create value to the customers [27].

RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

The Business Value of KM

Research asserts that traditional financial accounting measures (e.g. ROI, EPS) can be too restrictive, giving misleading signals about continuous improvement and innovation [43]. Fliaster [29] argues that the strong orientation of the executive culture towards short-term financial performance measures and its ignorance of people issues are supported by current remuneration systems. This emphasis on short-term indicators such as profit, turnover, cash flow and share prices, is not fully suitable for measuring corporate performance.

Cotora [16] indicates that it is not possible for a performance measurement system to measure corporate performance or to analyze the pattern of value creation without identifying the inter-relationships and the conversion process among situations, contexts, and intangible values such as knowledge, competencies, and partnerships. Consistent with this literature, we take a broader approach to our analysis of the business value of KM, incorporating not only KM processes as an antecedent, but organizational culture and top management support as well.

According to RBV, knowledge should be managed by organizations in order to become a competitive advantage for them [41]. Because of the restrictions of the short term view of financial measures and based on the resource based view of KM, we use the business value of KM as a competitive capability that affects organizational performance.

Knowledge management is performed in a social context. Researchers have recognized the context-dependent nature of knowledge management activities to innovations and business value [4, 49]. Although a KM system may be intended to be used in a particular way, research has shown that there are complex social processes that can influence how the KM system actually gets used by employees [24]. In this research, we argue that top

management support and organizational culture are important social contextual factors that may affect the business value of KM.

Researchers believe that top management support leads to IS success and strong top management commitment leads to superior conversion effectiveness and higher IS performance at the same level of IS investment [12, 21, 31, 51, 84]. Other research has shown that organizational culture is an important success factor for KM [17, 54, 61]. One of the most important challenges for KM efforts is to create a supportive culture of KM practices which highly values knowledge and encourages its creation, sharing and application [85].

Our research model investigates the relationships between KM Process Implementation, Top Management Support, and Organizational Culture with Business Value (see Figure 1). Additionally, our model investigates how the perceived barriers and benefits of KM influence these proposed antecedents of business value.

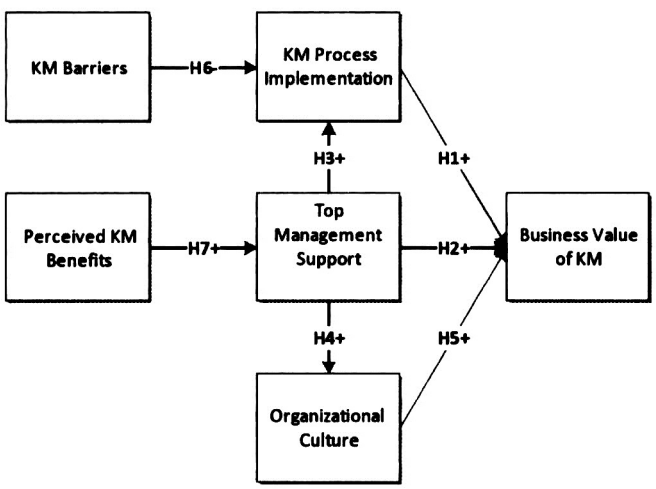


FIGURE 1. Research model

Knowledge Management Process Implementation

KM literature focuses on the development of structures and systematic processes to improve the connections between individuals in the organization who need certain knowledge and those who have it. The KM process model is based on organizational learning and memory perspectives that includes the stages of acquisition, storage, and retrieval [83]. Knowledge sharing occurs between individuals, from individuals to groups, across groups, and from the group to the organization. The knowledge serves as a source of competitive advantage only when it is stored, shared, and reused [3, 17].

KM process implementation can be explained by the relationship of organizational strategy, individual experiences, technology and mechanism [5]. Once knowledge is created, it can be used repeatedly by others in the organization and once shared, creates the stimulation of new knowledge which adds even greater organizational value [3, 67]. KM process implementation is an important factor affecting business value. Successful KM process implementation will result in value creation by KM processes related to the creation, storage, sharing, and application of knowledge in organizations. Therefore, we hypothesize that:

H1: KM process implementation positively affects KM business value.

Top Management Support

The IT literature studies the value of KM by investigating KM success [42]. High levels of top management support are an important factor affecting IS success [6] and IS performance in organizations [81]. Research shows that top management support has a significant impact on IS efforts in organizations [14, 64]. One study found that top management support increased the likelihood of IS project implementation, which in turn also increased the likelihood of organizational success [44] and that insufficient top management support is one of the most important impediments to IT success [73]. Some have argued that top management support of KM leads to KM project success which results in successful implementation of KM processes related to the capture, storage/ retrieval, transfer, and application of knowledge [17]. These are important indicators for creating, maintaining, and sustaining a competitive advantage for organizations [33, 50].

We suggest that top management support of KM process implementations will positively affect the business value of KM. One possible reason for this effect is that when top managers support KM they will provide sufficient resources which are necessary for KM success. This success will be translated to enhanced business value. Another reason is that managers' support will motivate employees to support KM implementation. Employee support will result in KM performance improvements and business value for organizations. We propose that:

H2: Top management support of KM positively affects KM business value.

Knowledge management processes in organizations include: (1) knowledge creation, (2) knowledge storage/retrieval, (3) knowledge transfer, and (4) knowledge application [37, 62]. One of the most important factors leading to successful implementation of IS in an organization is the existence of sufficient resources [44]. These resources play both motivating and sustaining roles for IS implementation efforts [51].

The IS literature suggests top management support as an important factor to support IS implementation efforts [20, 22, 70, 74, 82, 86]. Thus, we posit that top management support has a positive influence on KM process implementation in the same manner. When managers support KM process implementations, not only will they provide necessary resources for its implementation but they also motivate employees to connect with those efforts as well, increasing the likelihood of success. We hypothesize that:

H3: Top management support positively affects KM process implementation.

Organizational Culture

Organizational culture has been defined as the "system of meanings that accompany behaviors and practices recognized as a distinct way of life"[34]. It is the shared beliefs, ideologies, rituals, myths, and norms that influence organizational actions or behavior [68]. Research shows that organizational culture can be a critical factor in the success of IS project implementations [44]. Top management is an important factor that can affect organizational culture through enhancing innovativeness among employees [38].

Top management support is indicated as a significant predictor of organizational security culture [47]. Managers' support of KM underscores to employees its importance in the organization, resulting in knowledge sharing and support of

KM by employees. These behaviors influence organizational culture as knowledge oriented based on behaviors central to knowledge creation and transfer [19]. Therefore, we hypothesize that:

H4: Top management support positively affects organizational culture

Organizational culture provides an integrated framework that regulates the context for social interaction and goal accomplishment through creation of meaning and is a major factor in leveraging knowledge [35]. This is especially evident since it influences the behaviors central to knowledge creation and transfer [19]. Organizational culture shapes assumptions about which knowledge is worth creating and how knowledge is transferred and utilized within the organization [1]. Organizational culture forms a bridge between individual learning and growth and organizational learning and growth that will create business value base on the balanced scorecard model [53]. We hypothesize that:

H5: Organizational culture positively affects KM business value.

Knowledge Management Barriers

Several studies in the literature examine different barriers for KM [72]. Scarcity of time, lack of awareness, and lack of top management support are indicated as barriers for KM implementation [40]. Additionally, organizational culture, leadership, lack of understanding, efforts vs. reward, technology and knowledge complexity can all act as barriers to KM process implementation [55]. We posit that KM barriers have a negative influence on KM process implementation because these barriers have negative effects on employees, technology, and other factors that lead to unsuccessful implementation of KM processes. We hypothesize that:

H6: KM barriers negatively affect KM process implementation.

Perceived KM Benefits

Practitioners value KM when it leads to desirable organizational benefits [2, 46]. Knowledge management can benefit organizations in different areas such as marketing, sales, and financial management. However, in order for KM benefits to be realized, organizations need more than just technological facilities. They also need long term investment in aligning the cultural, managerial and organizational elements necessary to leverage knowledge management [2]. In order for top management to make such an investment, they must be convinced that KM can deliver on its promise of improved organizational effectiveness. Therefore, we posit that:

H7: Perceived KM benefits positively affect top management support.

METHODOLOGY

Instrument Development

The written survey instrument was developed and refined through in multiple stages. First, we reviewed the literature to develop relevant scale measures. Existing scales were used when possible. Three academicians with IS survey expertise from two different research institutions and two CIO's from different Fortune 1000 companies reviewed the initial survey. Modifications were made based on the comments of these experts. Next, twelve executives from a large society of IT manager's Knowledge Management Working Group reviewed the survey. Additions and modifications were made based upon their comments. The Working Group once again reviewed the survey. Additional modifications were made based upon this round of comments. Next, a pilot study was conducted in which 70 IT executives answered the survey electronically. Satisfied with the responses, content, and clarity of the survey, the final instrument was created.

The cover letter sent with the sent with the survey as well as the objective listed on the survey itself clearly stated that the questions concerned knowledge management. All items were measured on a 5-point Likert scale ranging from Strongly Agree to Strongly Disagree. We used 3 items in order to measure KM business value in our respondents' organizations. The individual items were: (1) Our business is well positioned to compete in the changing market space, (2) Our business has the short and long term strategy in place to maintain market and customer share, and (3) Our business structure is flexible and adequate to execute organizational and regulatory changes.

Organizational Culture was measured using 3 items: (1) We effectively manage processes and share information across all business functions, (2) Company performance would improve if people in all work groups did a better job of sharing their business knowledge and expertise, and (3) The company is committed to using technology to develop and maintain a competitive advantage.

Top management support of KM was measured by 4 items: (1) Knowledge management is high on the priority list of my CEO. (2) Knowledge management is high on the priority list of the CIO today, (3) Our firm has spent a considerable amount of effort and resources developing a knowledge management strategy, and (4) Knowledge management is a recognized responsibility of our organization's functional areas.

KM process implementation was measured by the following items: (1) Our company uses an effective process for managing the creation, storage, and retrieval of important business documents, (2) We have clearly identified business managers who are responsible for the integrity and timeliness of all company data, and (3) We have clearly defined and well-followed policies for information creation, update, access, and management.

Perceived benefits of KM was measured by 6 items: (1) Knowledge management can help my organization become more competitive in the market place, (2) Knowledge management can help my organization respond to customers in a more effective or timely manner, (3) Knowledge management can help me be more effective in my job, (4) Knowledge management efforts will have a direct positive impact on our company's bottom line, (5) Knowledge management can help my organization be more effective, and (6) Knowledge management will reduce costs. The items were adapted from Chau and Tam [13].

KM barriers was measured using the following items: (1) Quality or completeness of electronic documents to support knowledge sharing, (2) Lack of IT software tools to make knowledge sharing easy to do for employees, (3) Lack of motivational incentives to encourage knowledge sharing in the organization, and (4) Lack of metrics or measurement methods for quantifying KM costs and benefits. The items were adapted from Lai and Guynes [52].

Data Collection

The questionnaire was mailed to 2,450 IT executives in the United States, with 142 undeliverable. Three weeks after distribution, an electronic reminder was sent, yielding 276

TABLE 1: Demographics

Industry	#	%
Banking and Finance	7	2.5
Electronics	27	9.8
Food and Beverage	18	6.5
Health	21	7.6
Consulting	112	40.6
Industrial and Automotive	34	12.3
Insurance	10	3.6
Metals and Metal Products	23	8.3
Petrochemical	7	2.5
Process Industries	6	2.2
Retail/Wholesale	0	0.0
Telecommunications	0	0.0
Transportation	0	0.0
Other/Missing	11	4.0
Total	276	100

responses, an 11% response rate. This is a slightly higher response rate than other published research that surveyed IT executives [28]. Non-response bias was assessed by treating responses received after the deadline given (three weeks after the survey was mailed) as being representative of non-respondents bias [45]. T-tests on key constructs and demographic variables showed no significant differences between respondents and non-respondents. Responses were received from firms in twenty-two states with a median of 4,000 employees. The industry breakdown of responding firms is shown in Table 1.

RESULTS

We used Partial Least Square (PLS) with Smart PLS as our statistical analysis tool. PLS uses metric properties of the scales to measure variables and strength and direction of relationships among them [7]. A three-step analysis procedure was conducted which consisted of (1) an assessment of the measurement model to assess item reliability and validity, (2) a check for the presence of common method bias, and (3) a structural model assessment to assess the model's predictive power.

Measurement Model Assessment

The adequacy of the measurement model is an important concern which is examined by analyzing reliability and validity [39]. The reliability of each construct was assessed by inspecting Cronbach's alpha and composite reliability, in which values above the benchmark of 0.70 are typically deemed as adequate [59] Convergent Validity was assessed by Average Variance Extracted (AVE). Values of 0.5 or above indicate sufficient convergent validity and demonstrate that the latent variable explains more than half of the variation of its indicators [30]. In Table 1, the diagonal values represent square root of AVE which is a measure for variance shared between a construct and its indicators, or convergent validity. According to Table 2, Cronbach's alpha, composite reliability, and AVE values demonstrate the internal consistency and convergent validity of constructs based on the above constraints.

Two methods were used to examine discriminant validity. First, AVE values are supposed to be greater than off-diagonal correlations. This is true in our case as shown in Table 1. Second, each construct's related items must load highly on the construct it measures and cross-loadings should be lower than the within-construct item loadings [48]. Table 3 reflects loading values of all items used in the measurement instrument. The two criteria for establishing discriminant validity are acceptable.

Common Method Bias

Common method bias is a significant source for measurement errors [63] that indicates the possibility for erroneous conclusions [11]. Common method bias is present if 1) a single factor emerges from the factor analysis and 2) the presence of a single factor which accounts for the majority of the covariance among the variables [63]. Six factors emerged from the factor analysis and account for 67.39% of the variance in the data with the first factor accounting for less than 50% of the total variance. Thus, common method bias is unlikely to be present.

Assessing the Structural Model

In order to assess the structural model we examined path coefficients and the R-square values. Path coefficients test the strength of the relationships between independent and dependent variables in the model and R-square value indicates the predictive

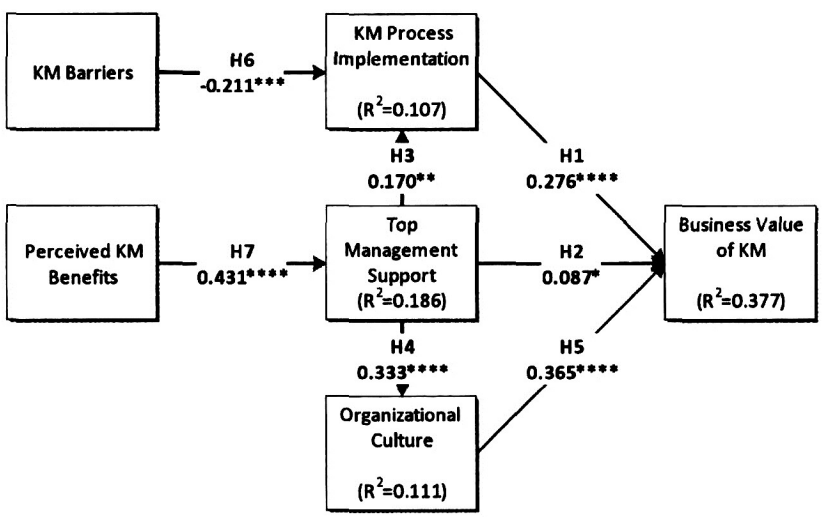
TABLE 2: Measurement Model Assessment

	AVE	Composite Reliability	Cronbach's Alpha	Perceived KM Benefits	KM Barriers	Org.l Culture	Top Mgt. Support	KM Process Implemt.	Business Value
Perceived KM Benefits	0.67	0.92	0.90	**0.81**					
KM Barriers	0.44	0.74	0.58	-0.06	**0.66**				
Organizational Culture	0.63	0.83	0.71	-0.02	-0.25	**0.79**			
Top Management Support	0.70	0.9	0.85	0.43	-0.45	0.33	**0.83**		
KM Process Implementation	0.66	0.85	0.75	-0.08	-0.28	0.62	0.26	**0.81**	
Business Value	0.67	0.85	0.75	0.01	-0.26	0.56	0.28	0.52	**0.81**

TABLE 3: Construct Loadings

	Mean	Std. Deviation	KM Barriers	Perceived KM Benefits	Organizational Culture	KM Process Implementation	Top Management Support	KM Business Value
Barriers1	3.817	0.987	**0.8132**	0.2163	0.2056	0.2452	0.4902	0.1781
Barriers2	4.042	0.848	**0.5103**	0.0991	0.0811	0.0799	0.0273	0.1622
Barriers3	3.654	0.948	**0.5302**	0.1441	0.1055	0.1639	0.0175	0.2112
Barriers4	3.49	1.044	**0.8179**	0.0493	0.2389	0.2288	0.5074	0.1866
Benefits1	3.928	0.869	0.0687	**0.8085**	0.0363	0.1059	0.3802	0.0205
Benefits2	3.148	1.069	0.0477	**0.8416**	0.0092	0.0529	0.3956	0.0517
Benefits3	2.605	1.050	0.0455	**0.8238**	0.0044	0.0221	0.3566	0.019
Benefits4	2.97	0.945	0.0536	**0.8718**	0.0023	0.0943	0.386	0.007
Benefits5	3	1.011	0.0551	**0.8469**	0.0497	0.0683	0.3304	0.044
Benefits6	3.179	1.016	0.0508	**0.7226**	0.0762	0.0478	0.2382	0.0203
Culture1	3.087	1.039	0.2329	0.0828	**0.7522**	0.6022	0.2137	0.4234
Culture2	2.525	0.894	0.0959	0.0392	**0.7647**	0.404	0.2184	0.4105
Culture3	3.046	0.894	0.2657	0.0403	**0.8648**	0.4917	0.343	0.5086
Impl1	2.578	1.156	0.231	0.0025	0.5158	**0.7928**	0.2697	0.5019
Impl2	3.209	1.125	0.2428	0.1028	0.494	**0.829**	0.1786	0.3883
Impl3	2.205	1.255	0.2331	0.116	0.509	**0.8226**	0.1888	0.3741
Support1	2.49	1.278	0.425	0.3928	0.3016	0.201	**0.873**	0.2497
Support2	2.829	1.151	0.3421	0.3796	0.1596	0.1473	**0.7675**	0.146
Support3	2.772	1.023	0.4013	0.3821	0.3308	0.2895	**0.8742**	0.2787
Support4	2.643	1.020	0.3626	0.2929	0.2941	0.2365	**0.8276**	0.2497
Value1	3.171	0.987	0.2707	0.0314	0.5139	0.4907	0.2589	**0.8593**
Value2	3.24	1.159	0.1568	0.0219	0.3788	0.3606	0.1871	**0.7485**
Value3	3.171	1.065	0.2124	0.0079	0.484	0.4297	0.2394	**0.8439**

power of the model for dependent variables. All seven hypotheses were supported at varying levels of significance. The overall results of the analysis are shown in Figure 2 and Table 4.



* P<0.1; ** P < 0.05; *** P < 0.01; **** P < 0.001 (two-tailed significance)

FIGURE 2. PLS Results

TABLE 4. Summary of Hypotheses

Hypothesis	p-value	Path Coefficient
H1 KM process implementation positively affects KM business value.	<0.001	0.276
H2 Top management support of KM positively affects KM business value.	<0.10	0.087
H3 Top management support positively affects KM process implementation.	<0.05	0.170
H4 Top management support positively affects organizational culture.	<0.001	0.333
H5 Organizational culture positively affects KM business value.	<0.001	0.365
H6 KM barriers negatively affect KM process implementation.	<0.01	-0.211
H7 Perceived KM benefits positively affect top management support.	<0.001	0.431

We also performed a post hoc analysis for the mediating effects of top management support, KM process implementation, and organizational culture with the approach outlined by Baron and Kenny [9]. While top management support has a direct effect on the business value of KM, using the Sobel test, we found that it also has indirect effects mediated by KM process implementation ($t = 4.29$) and organization culture ($t = 3.10$), respectively.

In addition, we investigated the importance of KM process implementation and the two other contextual factors by examining various models. In a model with KM process implementation as the sole antecedent of the business value of KM, KM process implementation explained 27% of the dependent variable variance. However, when the social contextual factors were added, 38% of the business value of KM was explained in the full model. Thus, the full model explains a significantly greater amount of variance than the model with only KM process implementation.

DISCUSSION AND IMPLICATIONS

Knowledge assets are fundamental capabilities for organizations [75] and knowledge management enabled by IT affects organizational performance [18]. We proposed and tested an integrated model that incorporates both the process and the organizational outcomes perspectives of KM success. We found that rather than focusing on only one perspective, as past research has done, a model that utilizes the strengths of both viewpoints offers a better understanding of factors leading to KM success. In keeping with the practitioner view, we evaluated KM success as an outcome variable tied to organizational performance [42]. However, consistent with Chua et al. [15] we acknowledged that organizations launch KM initiatives to improve business processes as well as to enhance organizational outcomes. Therefore, building on several studies demonstrating the factors affecting KM success, this study investigated the effect of KM process implementation and two social contextual factors – top management support of KM and organizational culture – on the business value of KM. Our results show positive relationships between KM process implementation, top management support, and organizational culture with the business value of KM. These factors account for 37.7 percent of the variance of KM business value.

Our study contributes to theory by integrating the process perspective of KM success with the organizational outcome perspective. While academics often focus on the process perspective of KM success, many practitioners favor the organizational outcomes viewpoint [42]. Our first hypothesis, which states that KM process implementation positively affects KM business value, is strongly supported and shows that KM process implementation is a necessary condition for KM business value. This demonstrates the efficacy of combining the process and organizational outcomes perspectives of KM success and indicates it should be considered in future KM research. The implication for practitioners is that successful implementation of KM processes, including the creation storage, and retrieval of knowledge, is important for enhancing business value.

This study also contributes to understanding that, while successful implementation of KM processes is critical to value creation, social contextual factors are important as well. Top management support has a central and complex role in creating business value through KM. While top management support of KM only marginally affects KM business value (H2), it significantly influences both organizational culture (H3) and KM process implementation (H4). Our post hoc analysis also shows that top management support indirectly influences KM business value, being mediated by organizational culture and KM process implementation.

The support of Hypothesis 3 demonstrates that top management support of KM directly affects organizational culture. As organizational culture can influence the behaviors central to knowledge creation and transfer [19], it is incumbent upon the organization to realize that their culture is actually constructing the framework for its employees' social interactions and goal accomplishments. Development of norms and values that recognize the importance of knowledge sharing may require the restructuring of organizational culture from one where individuals are relatively private to one in which business knowledge and ideas are actively shared throughout the company. Therefore, managers who support KM initiatives in their organizations can promote a knowledge-centric culture since users generate their own social representations of KM systems within their own workgroups [24].

Hypothesis 4 shows that in order for the implementation of KM processes to be successful, top management must be supportive. This means that KM initiatives should be given adequate resources and priority. Top management should also demonstrate their support of KM by engaging the organization's functional areas and making it a recognized responsibility of these areas. Prior research has shown that to be the most successful, implementation of KM processes should involve "key knowledge activists in the organizations, mainly middle-managers composing a governance committee supported by top administration" [57]. While our research specifically targeted the criticality of top management support, it is consistent with the notion that "buy-in" from all managerial levels is important. Managers can signal their support not only through directives but also by becoming role models in sharing knowledge and KM system utilization. This corresponds with literature that shows that viewing KM solely in the IT group's domain is a recipe for disaster.

Future research should focus on the specific mechanisms that are most effective for signaling management's support of KM. For example, what policies and practices yield the greatest results? What communication mechanisms are most effective? What are the specific contexts in which these policies, practices, and communication techniques are most successful? In addition, the effect of top management support on business value can be tested for business value of other information systems in organizations.

Past knowledge management research has shown that organizational culture is influential in promoting positive knowledge management behaviors [19]. A knowledge sharing culture empowers employees to discover solutions to company

issues and promotes exchanging knowledge with members from all facets of the organization. Thus, norms and assumptions embedded in organizational culture provide the context for leveraging knowledge, and, in turn, positively impact business value (H5).

In addition, our study adds to the literature by showing that a variety of KM barriers have a negative effect on KM process implementation (H6) and various benefits have a positive effect on top management support (H7). Based upon input from a panel of IT executives, we customized a scale measuring barriers to the KM environment that includes technological, motivational, and measurement related hindrances. The data show that KM barriers such as lack of IT software tools to enable knowledge sharing or lack of encouragement or incentives to share knowledge are negatively related to KM process implementation. Getting the "right knowledge to the right people at the right time" means that the technological infrastructure needs to be in place to do so. However, successful implementation takes more than just appropriate technology. In order for the knowledge to be useful, the electronic documents to support knowledge sharing must be of high quality and complete. This means that quality control procedures and metrics must be put in place. Not having incentives in place to motivate employees to share and use knowledge can also be a barrier. KM benefits especially focused on improving the effectiveness of employees and the organization as a whole are important for garnering top management support of KM. Therefore clear articulation of KM benefits to top management is critical.

Limitations

This study has several limitations including using only one respondent per organization. While the use of a senior IT executive as a "key informant" is a well-established approach used in empirical IS studies [e.g. 71], using several executives from different departments could allow for triangulation of the data. Second, the data used in this study was collected from United States managers. Cross cultural influences might also affect the results. Future studies can investigate cross cultural effects by using data from other countries. Finally, we chose some important social contextual factors to be included in our model. However, the addition of other factors such as the inclusion of the impact of IS key personnel might increase the variance explained of the business value of KM.

CONCLUSION

Many academic studies investigate KM success in terms of process outcomes. However, practitioners tend to favor the outcomes perspective of KM, in which KM success is linked to its impact on organizational performance. In this study, we incorporate both by creating an integrated model in which KM process implementation, as well as two other social contextual variables, top management support and organizational culture, lead to business value.

Prior research incorporated various methods to assess the business value of KM efforts, but financial measures based on traditional accounting practices are not suitable for fully measuring corporate performance impacts of KM initiatives. We instead, viewed KM from a competitive perspective. While many organizations are launching knowledge management initiatives in an attempt to improve their business processes, gain financial savings, and generate greater revenue, we also showed the impact of social contextual factors such as top management support and organizational culture on the business value added to the organization as a result of KM initiatives.

We found that KM process implementation, top management support, and organizational culture positively affect KM business value. In addition, top management support positively affects organizational culture and KM process implementation and these two constructs partially mediate the effect of top management support on business value of KM for organizations. Results of this study also support the negative effect of KM barriers on KM process implementation and the positive effect of perceived KM benefits on top management support.

The findings of this study suggest that the process and organizational outcomes perspectives can be integrated for a more complete assessment of business value. This research contributes to the literature by highlighting social contextual factors that are important to the business value of KM initiatives and demonstrating the central role of top management. We hope this research serves as a building block that combines the process and organizational outcomes perspectives as well as other social contextual factors.

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APPENDIX 1

Constructs	Measurement Items	Measurement References
Business Value of KM	BV1: Our business is well positioned to compete in the changing market space.	Self-Developed
	BV2: Our business has the short and long term strategy in place to maintain market and customer share.	
	BV3: Our business structure is flexible and adequate to execute organizational and regulatory changes.	
Organizational Culture	OC1: We effectively manage processes and share information across all business functions.	Self-Developed
	OC2: Company performance would improve if people in all work groups did a better job of sharing their business knowledge and expertise.	
	OC3: The company is committed to using technology to develop and maintain a competitive advantage.	
Top Management Support of KM	TMS1: Knowledge management is high on the priority list of my CEO.	Self-Developed
	TMS2: Knowledge management is high on the priority list of the CIO today.	
	TMS3: Our firm has spent a considerable amount of effort and resources developing a knowledge management strategy.	
	TMS4: Knowledge management is a recognized responsibility of our organization's functional areas.	
KM Process Implementation	PI1: Our company uses an effective process for managing the creation, storage, and retrieval of important business documents.	Self-Developed
	PI2: We have clearly identified business managers who are responsible for the integrity and timeliness of all company data.	
	PI3: We have clearly defined and well-followed policies for information creation, update, access, and management.	
Perceived Benefits	PB1: Knowledge management can help my organization become more competitive in the market place.	Chau and Tam [13]
	PB2: Knowledge management can help my organization respond to customers in a more effective or timely manner.	
	PB3: Knowledge management can help me be more effective in my job.	
	PB4: Knowledge management efforts will have a direct positive impact on our company's bottom line.	
	PB5: Knowledge management can help my organization be more effective.	
	PB6: Knowledge management will reduce costs.	
KM Barriers	KMB1: Quality or completeness of electronic documents to support knowledge sharing.	Lai and Guynes [52]
	KMB2: Lack of IT software tools to make knowledge sharing easy to do for employees.	
	KMB3: Lack of motivational incentives to encourage knowledge sharing in the organization.	
	KMB4: Lack of metrics or measurement methods for quantifying KM costs and benefits.	