Is Your Organization Ready for Knowledge Management?
An Innovation Culture Index

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Abstract:

Managing the collective knowledge of individuals has been a dominant business theme for decades, and numerous organizations have launched knowledge management (KM) or innovation-oriented initiatives. This research builds on prior theoretical work on how an organization's culture and structure influence its KM programs. A 16-item innovation culture index is developed and tested on a large non-profit organization to provide senior managers with empirical evidence that offers an initial baseline assessment of organizational innovativeness and metrics for evaluating continuous improvement efforts.

Keywords: Knowledge management; innovation; organizational culture; organizational structure; non-profit

1. Introduction

Capturing and managing the collective intellectual capital of organizations has been a dominant theme for decades across a diverse range of both for-profit and non-profit organizations. Numerous organizations have launched knowledge management or organizational innovation initiatives over the past 20 years – often with mixed results (cf. Bryan, 2004; Choi and Chandler, 2020; Chong and Choi, 2005; Davenport, 1998; Gilmore, 2003; Lang, 2001; Spender, 1996). Knowledge management (KM) typically refers to an organization's investment to improve the internal exchange of proprietary information via dialogue or codified content. While knowledge is commonly recognized to be a source of competitive advantage and a prerequisite for organizational innovation (cf. Alkaffaf, et al. 2018; Arsawan, et al. 2022; Dobni, 2008; Hameed, et al. 2025; Klasser, et al., 2024), the fact remains that most of an organization's crucial knowledge resides with individuals, not the organization. We know that individual learning does not easily translate into organizational learning (cf. Cohen and Levinthal, 1990; Dixon, 2000; Henard and McFadyen, 2006; Jaworski and Kohli, 1993; Rossi, et al., 2015), so unlocking this individual knowledge is vital to long-term organizational success.

While individual knowledge can be highly valuable, it is self-contained and difficult to both extract and disseminate. Knowledge sharing is problematic even in small organizations, and the issues of KM are magnified when the number of company divisions is in the teens and the number of employees is in the hundreds or thousands (Hume, et al., 2012a; Lettieri, et al., 2004). Yet, while the task of capturing diffuse knowledge is difficult, the power of such large-scale knowledge sharing greatly overshadows what individuals or small teams can accomplish on their own. Accordingly, while most organizations recognize the need for KM initiatives, these are often delegated to the information technology (IT) departments without tying it to an overall organization-wide strategy (Ballantine, 2000; Burk, 1999; Malhotra, et al., 2017; Valentine, 2018).

While the IT facet of organizational knowledge management is certainly important (Garcia Sanchez, E. et al., 2017), the problem with many KM initiatives is that some organizations merely create an inventory of individual knowledge without parsing out the knowledge that is strategically relevant or sharing the knowledge across the organization. Most knowledge transfer in organizations is limited to face-to-face interactions between individuals. In practice, discoveries and insights from one part of an organization rarely, if ever, get shared with other parts of the organization due to structural or cultural organizational barriers. This lack of knowledge sharing often leads to lost productivity, individual frustration, and operational inefficiencies.

A strategic analysis of organizational knowledge entails focusing on facets that are critical to the organization's competitive performance (Suparwadi et al., 2024). Gonzalez and Martins (2014) explored knowledge management initiatives from an organizational development perspective, identifying five key characteristics that have implications for the success of KM and other innovation-oriented initiatives. Chief among these characteristics were organizational culture and organizational structure. Organizational culture and organizational structure are foundational elements that jointly shape the success and effectiveness of knowledge management initiatives. Culture represents the shared values, behaviors, and assumptions that guide how employees interact and respond to change, while structure defines the formal framework of roles, communication, and authority. When these elements are aligned to support learning, trust, and collaboration, they create an environment where knowledge is more likely to be freely shared, captured, and applied. A culture that values

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transparency and continuous improvement reinforces KM behaviors, while a flexible and decentralized structure enables faster decision-making and knowledge flow across departments and levels.

Conversely, when organizational culture or structure discourages openness or imposes rigid hierarchies, knowledge may become siloed or hoarded, undermining any KM efforts. In this sense, culture and structure serve as either enablers or constraints on KM program effectiveness. For KM initiatives to thrive, there must be deliberate alignment. Structures should facilitate cross-functional interaction, and cultural norms should encourage participation in knowledge-sharing activities. In organizations where this alignment is achieved, KM initiatives are more likely to be embedded in daily work practices, which drives innovation, problem-solving, and continuous performance improvement. In the following sections, a conceptual overview of relevant KM concepts is presented. Then, a concise quantitative survey is developed that managers can use to assess their organization's current state of innovative absorptiveness and provide periodic benchmark evaluations. The survey instrument is subsequently tested at a large, multi-faceted organization. The manuscript concludes with a discussion of implications for managers as well as limitations and further research opportunities.

2. The knowledge concept

There are two broad emphases in scholastic KM research: the concept of knowledge and the concept of knowing (cf. Ihrig, et al., 2011; Im, et al., 2016). The concept of knowledge can be viewed as a level of diffusion within a reference environment whereby knowledge is held by individuals, groups, larger organizations, and multiple organizations. The concept of knowing is viewed as an organic entity that is accumulated dynamically due to an incremental process whereby available information is synthesized with the memory of both the individual and the organization. The sharing of knowledge (which leads to knowing) is widely recognized as an intangible activity that resists attempts to constrain it by strict control mechanisms. This sharing cannot be coerced. Individual knowledge will only be shared on a voluntary basis; thus, it is important to have a greater understanding of both organizational structures and culture.

Creating an effective KM platform begins with making a distinction between knowledge and information. While these terms are often used interchangeably, they are quite different. Information is the input data that is used to inform a decision. Knowledge is what provides the context to how individuals think and approach a decision (Spender, 1996). In most organizations, knowledge typically has a much longer shelf life than information, yet even the most proprietary knowledge has an eventual half-life whereby it eventually becomes common knowledge. Non-profit organizations, in particular, often underestimate the value of knowledge assets relative to their for-profit peers (Hume and Hume, 2016). Effective KM initiatives must, therefore, enable an organization to cultivate and share new ideas. Both organizational culture and organizational structure are important enablers of this (Cardoso et al., 2012; Gonzalez and Martins, 2014; Pandey and Duta, 2013; Wilkinson and Young, 2006).

Knowledge is typically categorized into explicit knowledge and implicit (or tacit) knowledge (cf. Nelson and Winter, 1982). Explicit knowledge answers the questions of 'what' and 'how,' whereas implicit knowledge answers the relatively more important question of 'why.' Explicit knowledge is easily codifiable material such as processes, procedures, policies, and specifications. It can be easily transmitted across individuals via books, manuals, or databases. Capturing this type of knowledge is the dominant focus of most contemporary KM initiatives, yet it is arguably the least valuable of the two types. Implicit knowledge is more difficult to ascertain. It is often referred to as *sticky* knowledge because it resides in the heads of employees, customers, and suppliers. It is difficult to quantify, yet far more valuable to organizations than explicit knowledge. The very nature of its stickiness also makes it difficult to capture and transmit to others. One of the central goals of KM is to make implicit knowledge more explicit, which serves to boost overall organizational intelligence.

While individual knowledge is routinely differentiated as being either explicit or implicit in nature, organizational knowledge is better viewed as the skilled process of leveraging resources to the point that knowledge is permanently embedded in the organization. Organizations can only collectively learn and freely share their knowledge and experiences when employees' sense of self and identity is malleable and becomes influenced by the social identity of the organization (i.e., culture). Individual employees need to be socialized into an organization in such a way that they share and contribute to the collective knowledge that underpins the organization as a whole, thus underscoring the importance of both structure and culture (Zheng et al., 2010).

3. Organizational structure

Competitive advantage from knowledge management comes through the internal exchange of insights that help employees think differently when they are making decisions or taking action Balachandran and Eklund, 2024; Shafique et al., 2022). Knowledge exchange helps to minimize duplication of work activity and assists in learning for future activities and product or service improvements. While transmitting explicit information is relatively straightforward and low in cost, accomplishing the exchange of implicit knowledge is more difficult for organizations because people must be persuaded that the quality of the thoughts, the facts, and the logic presented to them by others is superior to what they already know. Motivating employees to use the knowledge of others can sometimes be just as difficult as motivating them to share their own knowledge.

Organizational structure plays a key role in this process (Chen et al., 2010; Ferede et al., 2024; Jinjing and Karia, 2024; Tsai, 2002). By designing a strong structure for knowledge sharing and creating a culture that encourages individuals with distinctive knowledge to produce and share that content, organizations can effectively aggregate the multiple ad hoc, face-to-face knowledge management mechanisms that already exist into a larger repository that is available to the organization at large (Burk, 1999). Some crucial questions, however, are to determine which insights are most relevant to collect, how much

to collect, and from whom (Rossi, et al., 2015; Wenger and Snyder, 2000). Employees will only participate in a KM initiative when the effort is valuable enough to justify the time spent by both those who input knowledge into the platform and those who withdraw it. Thus, the structure of a KM initiative must also include a rewarding aspect (Bartlett and Ghoshal, 1998; Goh, 2002). To incentivize individuals to *contribute* and *consume* communal knowledge, the platform needs to make sure that this knowledge is insightful and informational.

Organizational learning has been studied for roughly three decades, and its influence on KM and innovation has been established in both public and private organizational settings (Cheng et al., 2024; Hussain et al., 2022). At its core is the concept of absorptive capacity – both at an individual and organizational level (cf. Cohen and Levinthal, 1990; Jaworski and Kohli, 1993). Absorptive capacity is the belief that individuals and organizations must have a sufficient stored amount of existing knowledge in order to recognize and assimilate relevant new knowledge. Knowledge is often viewed from two broad perspectives: depth and breadth. A depth of knowledge is developed over time as one learns information and develops skills. As this information is shared across individuals, the organization-wide depth of knowledge also increases. A breadth of knowledge occurs by incorporating information from sources that are external to the individual. These sources can take multiple forms and can arise from both inside and outside the organization. A structure to share and exploit external knowledge is a crucial component of innovative capabilities, yet without a depth of knowledge, it is difficult to recognize new knowledge that might be applicable to a current problem.

Organizational learning involves balancing the generation, development, and acquisition of new knowledge (i.e., exploration) with integrating, disseminating, and applying that newfound knowledge (i.e., exploitation) (Cohen and Levinthal, 1990). It is sometimes viewed as the process of improving work practices. An organization's absorptive capacity depends upon the absorptive capacity of its individual members, and its success or failure depends heavily on how well (or poorly) knowledge is communicated within and across divisions. Assuming sufficient levels of knowledge overlap from these exchanges, an organization's capacity for both recognizing new/unique knowledge and making novel/new associations far exceeds that of what any single individual could accomplish. How an organization structures itself for KM initiatives is crucial to maximizing this capacity (Chen and Huang, 2007; Chen et al., 2010; Liao et al., 2011; Tsai, 2002).

If an organization does not structure itself for individual and organizational absorptive capacity, it is likely to suffer what scholars refer to as lockout. When there is an insufficient depth and breadth of knowledge within an organization, individuals begin to look inwardly at past solutions for answers to current problems (Arthur, 1989; Cohen and Levinthal, 1990). Employee beliefs and viewpoints tend not to change because the organization as a whole might not be aware of marketplace signals and opportunities that would otherwise alter its view on any given situation. When new opportunities arise, these organizations might not recognize or appreciate them without a proper organizational structure.

Organizations with higher levels of absorptive capacity tend to be more proactive, less parochial, and better equipped to exploit opportunities that present themselves. Those with relatively lower levels tend to be reactive and overly focused on responding to current failures or crises. Interestingly, if organizations do not develop these capabilities relatively early on, the not invented here (NIH) syndrome seals in this lockout effect as new ideas, practices, and technologies might be too distant from the organization's existing knowledge base to be appreciated (Arthur, 1989). In sum, KM-oriented organizations need to have a dual focus. Efforts to boost individual knowledge levels should be coupled with an organizational structure that promotes communication and engagement and rewards employees for participation in the platform. This is one way overall organizational learning occurs and matures over time.

4. Organizational culture

As research on KM has matured, efforts have increasingly shifted from a technological focus (e.g., IT) on inputs and outputs to an emphasis on altering the nature of organizations to facilitate knowledge flow. Managers and scholars alike are increasingly focused on the impact of factors such as organizational culture, organizational structure, and other mechanisms of knowledge transfer on an organization's innovation capabilities and culture (cf. Aggarwal, S.H., et al., 2022; Bezzina, F. et al., 2020; Hameed, M.M.A., et al., 2025). Developing a strong innovation culture is a crucial determinant of an organization's innovative capabilities (Dobni and Klassen, 2021; Klassen et al., 2024). In knowledge-sharing initiatives, however, the efforts of individuals often clash with organizational culture. In fact, organizational culture is uniformly noted as the greatest barrier to widespread KM adoption (Zheng et al., 2010). Far more KM program failures are attributable to cultural factors than to technological barriers. Implicit knowledge is retained by culture (Gonzalez and Martins, 2014) as individuals are encouraged to share knowledge acquired through shared experiences (Alavi and Leidner, 2001).

Knowledge transfer requires the willingness of individuals to work with colleagues and share knowledge to their mutual benefit. As such, knowledge transfer is unlikely to occur in organizations whose existing culture does not promote sharing (Chang and Lin, 2015). Employees must have some level of cooperative behavior in order for a KM initiative to have a chance of success. Without a natural extant tendency to share or collaborate, creating such a culture from scratch is nearly impossible. Trust between individuals and in the organization is also a critical existing component to developing a knowledge-sharing culture. Without a fundamental level of organizational trust, mechanisms to encourage collaboration will not work (De Long and Fahy, 2000).

The organizational structure in place has a pronounced impact on culture (Bhatt, 2002). Dictatorial, top-down approaches to securing KM adoption are also often resisted, especially in geographically dispersed organizations. When considering cultural change initiatives, it is crucial to identify the key aspects of the current social architecture (i.e., the collective ways employees work together to accomplish

tasks). In many organizations, these are often informal. Regardless of whether the established hierarchy is *structurally* defined (i.e., org chart) or *socially* defined (i.e., sub-unit value determinations), a poor culture can often be detrimental to the cause of learning and innovation. Individuals either in an out-group or lower in the organizational hierarchy are often too intimidated to engage in the critical cognitive behaviors that are essential to KM programmatic success. Cultural biases across divisions – resulting from funding disparities, organizational castes, etc. – can also create barriers to organization-wide adoption of KM initiatives.

Organizational culture impacts knowledge sharing and innovativeness in multiple ways (cf. Gonzalez and Martins, 2014). First, an innovative culture can have a positive impact on knowledge acquisition by priming individuals with a learning orientation. Second, it can also facilitate the sharing, or distribution, of knowledge across the organization through avenues such as trust and motivation. Third, an innovative culture can lead to a virtuous cycle of knowledge sharing and utilization. In sum, such a positive culture helps to boost the overall absorptive capacity of both individual employees and the organization as a whole. In the next sections, we detail the development and testing of a survey tool to assess an organization's current level of organizational structure and culture as they relate to overall organizational knowledge sharing and innovativeness.

5. Innovation culture index

A large, non-profit organization (detailed subsequently) sought consultation and strategic assistance in the development and deployment of a knowledge management system. While extensive previous work had been conducted to develop the information technology platform of the KM system, the organization sought additional counsel on how to (a) position the system within its existing culture and (b) develop metrics to evaluate goal attainment in subsequent years. The primary early focus of the present research was on understanding the dynamics of the sponsoring organization's current culture relevant to innovativeness and knowledge sharing while simultaneously creating a measure to assist in future assessments of progress. While innovation-focused scales can be sourced from extant literature (e.g., Klassen et al., 2024; Parolin et al., 2020; Sanzo-Pérez et al., 2023), most are directed at a specific industry or category of innovation, and several are quite lengthy in nature. As such, it was decided that the original construction of a concise yet comprehensive measurement scale that could be widely applicable to a range of profit and non-profit organizations was preferable.

The Innovation Culture Index (ICI) survey was designed to provide managers with a straightforward measure to assess the current level of innovativeness and knowledge sharing across an organization. Previous research notes the importance of also developing an instrument that can assess changes over time (Sanzo-Pérez 2023). Thus, the ICI was intended to serve as a source of measurement for both an initial assessment of an organization prior to the launch of a KM-style program and a periodic assessment of goal achievement (e.g., annual reviews). Using the innovation literature as a guide to bolster the index's construct validity, the goal was to create a scale that would quantitatively evaluate individuals on the two important KM facets of organizational structure and organizational culture, as theorized by Gonzalez and Martins (2014). The dual goals of comprehensiveness and simplicity also drove the scale development. In a further effort to strengthen both the content validity and face validity of the index, the authors conducted semi-structured qualitative interviews with a convenience sample of managers at the sponsoring organization.

The goal of these interviews was to ensure that respondents interpreted the scale items as intended, viewed the items as appropriate to the task at hand, and verified that the items comprehensively reflected the dimensions of innovation culture. The interview guide involved open-ended, non-directive questions following the commonly accepted constant comparison method for qualitative inquiry. Data analysis was an ongoing and iterative process that gradually evolved throughout the data collection phase. The average duration of each interview was 30 minutes. The information was analyzed in search of recurrent themes or patterns (i.e., relevant to structure and culture) via categorization, abstraction, comparison, integration, and iteration to help develop initial scale items. These interviews were complemented by a subsequent panel discussion of the findings with key organizational personnel assigned to the project.

In a further effort to assess content validity, all proposed scale items were presented to the two most relevant managers participating in this research process for review prior to organization-wide distribution. Both managers validated the final index scale items. All items were reflective and comprised of single-item scales. Five-point Likert scales were used for all survey items anchored by "Strongly Disagree" and "Strongly Agree." Given the exploratory nature of this present research, a principal components analysis (PCA) incorporating Varimax (orthogonal) rotation was utilized to assess the scale dimensionality toward organizational culture and structure (cf. Tabachnick and Fidell, 1996). Table 1 highlights the final 16 scale items developed for this research.

Table 1. Items and principal component analysis of ICI scale

Item	Loading Factor[1]	Loading Factor[1]
The topic of innovation is regularly discussed at our division/unit staff meetings	.589	
My division/unit actively encourages employees to submit innovative ideas on a regular basis	.663	
I feel comfortable offering my ideas on innovative improvements to my peers	.829	
I feel comfortable offering my ideas on innovative improvements to my managers	.843	
Successful innovative ideas are rewarded in my division/unit	.625	
Successful innovative ideas are openly shared across my division/unit	.693	
My division/unit has a formal process for submitting innovative ideas		.624
If I submit an innovative idea, I clearly know how that idea will be evaluated by others		.548
I am encouraged to spend work time thinking about innovative ways to improve my division/unit	.655	
It is clear to me why innovation and knowledge sharing is important to the [organization]	.576	
My division/unit shares innovative ideas from other divisions that might be helpful to us	.541	
[Organization's] executive level managers actively support and promote innovation	.545	
My division/unit level managers actively support and promote innovation	.710	
If I have an innovative idea, I clearly know whom to tell it to	.666	
My division/unit has a designated "innovation champion" who leads our innovation efforts		.826
Several people in the [organization] act as "innovation champions"		.829

[1] PCA extraction using Varimax rotation and Kaiser normalization.

The sample size is in line with what Comrey and Lee (1992) denote as "good," and each component factor exceeds the critical threshold of .32 (Tabachnick and Fidell, 1996). As a general rule of thumb, factors exceeding .71 are considered "excellent," .63 "very good," and .55 "good" (Comrey and Lee, 1992). In the analysis, both the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests – extraction communalities and rotated varimax factor loadings – were used to analyze the ICI scale items (cf. Kareem and Patrick, 2019; Tabachnick and Fidell, 1996) and the average variance extracted (AVE) for each factor exceeded 0.50. The ICI scale had a KMO measure of sampling adequacy of .91. Values close to 1.0 indicate that patterns of correlations are relatively compact and that PCA should yield distinct and reliable factors (Kareem and Patrick, 2019). To check the significance test of the PCA, Bartlett's test of sphericity was used. For PCA analysis to be appropriate, this test must be statistically significant. The Bartlett's test (2051.88; $p < 0.001$) suggests that PCA is appropriate. Eigenvalue thresholds greater than 1.0 were applied for extracting components.

6. Methods

Organizational setting. While the ICI survey is an appropriate scale for both for-profit and non-profit (NFP) organizations, we chose to initially evaluate it in an NFP setting for a variety of reasons. Non-profit organizations are under increasing pressure to adopt for-profit practices such as knowledge management. The vast majority of scholastic and practical evidence on knowledge management centers on large, for-profit organizations. Relative to for-profit organizations, non-profit entities often suffer from a lack of professional staff focused on knowledge capture, mature process management systems, performance measurement systems, and proficiency in implementing organizational change initiatives (cf. Hume and Hume, 2016; Lettieri, et al., 2004; Rossi, et al., 2015; Swanson, 2013; Taylor and Taylor, 2013).

Importantly, NFPs do not typically recognize the creation of profit for stakeholders as their primary mission. This is a major constricting factor for NFPs because a shared profit motive is often credited with generating employee buy-in to KM initiatives.

Regardless of organization type, all KM initiatives require strong leadership and widespread organizational support to succeed. These are often in relatively short supply in NFP organizations. Changing government policies, political positioning, and shifting organizational structures each contribute to the unique difficulties that non-profit organizations face relative to their for-profit peers. In contrast to for-profit firms, non-profit organizations typically operate locally and specifically to their mission. NFPs typically have limited resources, financial constraints, strict protocols of decision-making governance, legislative oversight, and a lack of funding for information technology solutions (Hume, 2012a).

As such, an NFP setting provides us with a strict and conservative evaluation of the survey instrument. As noted previously, a large regional NFP agreed to implement the ICI survey in exchange for a comprehensive analysis of the organization's innovativeness culture and the development of a key progress metric. The organization used in survey development and deployment was a diversified governmental organization focused on transportation and infrastructure solutions. The organization employs more than 10,000 people and is comprised of ten major divisions and 40+ individual units. It operates on the Atlantic coast of the United States and has an operating budget of approximately $5.0 Bil (USD).

Pilot rollout. Rather than launching the Innovation Culture Index (ICI) organization-wide, managers from the sponsoring organization opted for a targeted pilot rollout. This strategic approach focused on individuals from 19 units known for their openness to innovation and knowledge sharing, which provided a suitable context for evaluating

the construct validity of the ICI before full-scale implementation. These units were selected based on prior organizational assessments and leadership insights, ensuring a sample predisposed to engaging meaningfully with innovation-focused initiatives.

The ICI survey was administered at the outset of a structured rollout meeting for each participating unit. Five identical rollout meetings were conducted in total, with no variation in content delivery, sequence, or facilitation protocol. The ICI survey was distributed during a break, prior to any formal presentation of the knowledge management (KM) program, thus minimizing priming or response bias related to the program's specifics.

Prior to the main pilot, a pre-test was conducted to validate the distribution mechanism and assess initial response patterns. Following the pre-test's success, the pilot study was launched under modified COVID-19 protocols. All rollout meetings and survey administrations occurred online. Survey links were distributed via a secure web platform that included informed consent documentation, frequently asked questions (FAQs), a summary of the study's purpose, and direct contact information for both the sponsoring organization's point person and the academic researchers involved.

Subject population. The pilot survey population consisted of 299 employees, with 287 valid responses retained after excluding incomplete submissions, resulting in a final response rate of 96%. Respondents represented a broad cross-section of the organization, with 39% having fewer than 15 years of tenure and 61% exceeding that threshold. Team-oriented work was the predominant mode (69%), and nearly half (48%) held some team leadership responsibilities, ensuring a balanced sample across role types and experience levels.

The ICI instrument is comprised of 16 core items and is designed to measure latent constructs central to innovation culture. In addition to the primary scale, four quantitative items and one qualitative open-ended question were included to gather supplemental insights. To assess the psychometric integrity of the ICI, exploratory factor analysis (EFA) was conducted on the pilot data. Results supported a multi-factor structure consistent with the theoretical framework underpinning the ICI. Preliminary EFA indicated a strong three-factor solution accounting for a substantial portion of variance and aligning with key dimensions such as "Collaborative Knowledge Sharing," "Organizational Support for Innovation," and "Risk-Tolerant Mindsets."

In line with previous innovation scale development initiatives (e.g., Dobni 2008, Klassen et al., 2024), internal consistency reliability was also evaluated, with Cronbach's alpha coefficients for each subscale exceeding the acceptable threshold of 0.70, further substantiating the ICI's construct reliability. Response times averaged under three minutes, indicating a strong balance between brevity and psychometric robustness. This pilot phase played a critical role in validating the structure, clarity, and utility of the ICI prior to its wider deployment. The results demonstrated that the instrument is both scalable and sensitive to key cultural dynamics within knowledge-driven organizations.

7. Results

The descriptive statistics for each item in the survey are noted in Table 2. In general, a mean value of 4.0 or higher for each item would indicate a strong to very strong level of agreement with each scale item. Indeed, values of 4.0 on each item were established as the long-term objectives by the sponsoring organization. Intermediate goals of 3.50 and 3.75 were also established for certain items as the management team seeks to improve the overall KM process at the organization-wide level over a three-year period. At this stage in the KM process, however, the ICI is being used to establish a baseline metric against which annual administrations of the survey can be measured. Thus, baseline scores less than 4.0 indicate current areas of opportunity and emphasis.

Table 2. Descriptive statistics for the ICI survey

Item[1]	Mean	Std. Dev.	Variance
The topic of innovation is regularly discussed at our division/unit staff meetings	3.41	1.02	1.04
My division/unit actively encourages employees to submit innovative ideas on a regular basis	3.50	1.09	1.18
I feel comfortable offering my ideas on innovative improvements to my peers	4.24	1.04	1.07
I feel comfortable offering my ideas on innovative improvements to my managers	4.10	1.08	1.17
Successful innovative ideas are rewarded in my division/unit	2.99	1.20	1.44
Successful innovative ideas are openly shared across my division/unit	3.38	1.13	1.29
My division/unit has a formal process for submitting innovative ideas	2.29	1.07	1.14
If I submit an innovative idea, I clearly know how that idea will be evaluated by others	2.71	1.13	1.28
I am encouraged to spend work time thinking about innovative ways to improve my division/unit	3.05	1.11	1.23
It is clear to me why innovation and knowledge sharing is important to the [organization]	4.13	1.02	1.04
My division/unit shares innovative ideas from other divisions that might be helpful to us	3.23	1.14	1.31
[Organization's] executive level managers actively support and promote innovation	3.38	1.12	1.25
My division/unit level managers actively support and promote innovation	3.67	1.12	1.24
If I have an innovative idea, I clearly know whom to tell it to	3.44	1.19	1.42
My division/unit has a designated "innovation champion" who leads our innovation efforts	2.23	1.21	1.46
Several people in the [organization] act as "innovation champions"	2.64	1.19	1.41

[1] Five-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree"

While a comprehensive breakdown of the survey results is not presented here due to confidentiality implications for the sponsoring company, some highlights of the findings are appropriate to demonstrate the insights that can be gleaned from the ICI survey. For example, the organization already excels in three of the 16 survey items according to pilot employee respondents. Notably, employees *feel comfortable offering their ideas* to both their peers and managers. These data support previously anecdotal comments from the qualitative interviews and indicate that not only are employees positively oriented toward innovation and organizational improvement, but their current comfort level in sharing personal ideas means that the KM program managers might not have to strongly "sell" the idea of why knowledge management is important to a group of employees who are positively predisposed to knowledge sharing. This observation is further supported by the results that employees *clearly understand why innovation and knowledge sharing are important to the organization*. This is a major hurdle for most non-profit (NFP) organizations, and this particular organization might not have to navigate it.

As indicated in Table 2, the majority of survey items were rated in the 3.0 – 3.9 range, which is encouraging and offers multiple areas of programmatic focus over the next few years. It should be noted, however, that each of these items had individual scores between 1 and 5 awarded by respondents. So, there is an appreciable variance in perceptions across employees. The first couple of areas requiring attention focus on whether or not *the topic of innovation is regularly discussed in unit/division meetings* and whether or not *unit/division leaders encourage the submission of ideas from their employees*. Scores of 3.4 and 3.5, respectively, indicate a fairly strong mean perception of agreement with these statements. These results were collected prior to the implementation of the KM initiative at each employee's unit, so the variance in responses across these two items should narrow in future ICI iterations, and mean evaluations should naturally rise as well. Managers and knowledge champions at the organization were reminded of the need to solicit knowledge from their employees by making it a regular activity at unit meetings.

While the pilot employees surveyed appear to be generally comfortable sharing knowledge with others, the actual act of *openly sharing it in the unit/division* does not appear to be happening universally. Thus, managers need to be reminded – via training and discussion – to make knowledge sharing a routine part of the unit activities. In a similar vein, *knowledge sharing across units/divisions* appears to be sporadic at present. Two items focus on perceptions of how well/poorly managers at all levels *actively support innovation and knowledge sharing*. Scores of 3.4 and 3.7, respectively, indicate a fairly strong baseline of support for these statements. Here again, manager training and KM program communications to all levels of management are vital in ensuring that these scores rise in future iterations of the ICI survey.

There are two areas requiring attention that are borderline areas of immediate concern for this particular organization. These are the perception that *successful ideas are not recognized* and that employees are *not encouraged to spend work time thinking about innovative ways to improve the unit/division*. Rewarding employees (both financially and

non-financially) is vital to the long-term success of any knowledge management program, especially those at NFPs. Since NFPs often lack the financial wherewithal of for-profit organizations, reward systems that encourage knowledge sharing by taking into account collaboration efforts and the sharing of best practices across units can be critical. The key is to establish procedures and processes that reward and encourage horizontal communication (cf. Bartlett and Ghoshal, 1998). Areas of immediate managerial concern equate to those items in the ICI survey that had mean scores less than 3.0. In general, this indicates areas of substantial concern that need to be addressed both immediately and in the future as a KM program continues to expand organization-wide. The first two such items are interesting and likely aren't inherently a long-term issue for the organization. Namely, respondents indicated that there is *no formal process for submitting ideas* and that employees are *unsure of how any idea submitted will be evaluated* by those in authority to do so. By definition, any KM initiative exists to eliminate the first issue, and the ongoing enhancements to the program by the leadership team should address and eliminate the second issue. In short, these are "good" areas of immediate concern to have because the remedy is straightforward. The remaining two issues, the *lack of designation of a unit/division knowledge champion* and the *lack of agreement that several people at the organization act as knowledge champions* are simply a matter of employee education. Since the ICI survey was completed by employees prior to being trained on the KM program and technical interface, it is understandable to see such low scores on the survey at this point in time.

8. Implications for managers

The most valuable insights from a KM initiative are accomplished relatively slowly. Capturing knowledge is not a straightforward technological issue, such as finding the right configuration of databases or platforms. It is, first and foremost, a human capital issue that requires distinctive tools and understanding. This is why understanding an organization's culture and structure relative to knowledge management initiatives is important. Since knowledge itself is not static, understanding how your organization works and how it is likely to evolve in the future is critical to developing a KM strategy. Organizational culture cannot be changed overnight, and forcing employees to adopt a KM platform that is dramatically different from their current methods of knowledge sharing is likely to result in initiative failure. Organizational structure is more easily adapted but also takes time to develop and implement. Thus, it is important to ensure that employees can continue to use their preferred mode of knowledge sharing even while the migration to a new platform is underway. This mode is likely to vary across organization types.

The ICI survey was developed to provide managers with a two-sided tool to assist in developing, deploying, and improving knowledge management initiatives. The general nature of the index items makes the survey appropriate for a wide variety of for-profit and non-profit organizations. The survey assesses two critical foundations – culture and structure – that are present in all organizations and provides managers with both a baseline assessment of how much work has been accomplished to date (i.e., prior to an initiative rollout) as well as a

metric for routine evaluation of organization-wide progress toward program objectives (i.e., annual assessments). Benchmarks for what defines "success" will vary by organization and initiative. While scores of 4.0 / 5.0 will serve as a mark of excellence for some organizations, less lofty scores might work for other organizations that perhaps have more baseline work to accomplish. The ICI survey was specifically designed to be adaptive to the needs and goals of a diverse set of organizations.

The straightforward nature of the scale design and ease of completion for employees should not be underestimated by managers. Cumbersome and lengthy surveys are unlikely to be fully completed by individuals. While the ICI can be completed quickly by employees with little explanation necessary, the results can provide managers with very detailed insights into where to direct resources and energy. Breaking down responses across groups of employees or units can provide key managerial insights, which is why the demographic-type questions added to the ICI are important to contemplate.

For example, in the pilot survey of the sponsoring organization, a breakdown of question #5 ("Successful innovative ideas are rewarded in my division/unit"; μ=2.99) indicated that employees with more than 10 years of experience rated this item lower than the overall mean. Conversely, employees with less than 10 years of experience rated it higher than the mean score. Those employees with 16-20 years of experience rated this item the lowest, while those with under five years of experience rated it the highest. In short, those employees with the most relative organizational experience indicated that successful ideas are not rewarded (relative to their more junior peers). This came as a surprise to the sponsoring organization. The implications of these findings for top management, going forward, was the belief that widespread recognition and awards for contributions to knowledge management are crucial, especially for more senior employees.

Likewise, when breaking down question #8 ("If I submit an innovative idea, I clearly know how that idea will be evaluated by others"; μ=2.71), interesting insight became apparent to senior management. While the mean score among all employees surveyed was relatively low, employees with 6-20 years of experience rated this item lower than the overall mean. Conversely, employees with less than 5 years and those with greater than 20 years of experience rated it much higher than the mean. Employees with 16-20 years of experience gave it the lowest average scores. This "dumbbell" data result led to internal discussions and questioning that revealed that the onboarding training of relatively newer employees and the accumulated organizational experience of relatively more senior employees provided those groups of individuals with greater guidance and insight into how to navigate internal systems. That insight was somehow being lost on those with mid-level experience. This single finding led to a restructuring of overall training at the organization that extended beyond the KM initiative. By purposefully selecting certain demographic questions to add to the ICI, managers can use the survey to develop unique insights into their organization's structure and culture.

9. Limitations and further research

Like all exploratory research, this present research has its limitations. For one, it should be noted that the respondents in the research were hand-selected by management and do not represent the entire organizational population. Given that these data were sourced from employees who were pre-determined to be positively inclined to a KM or innovation initiative, it is likely that the results are positively biased and that subsequent sampling in an organization-wide rollout of the KM program would yield less favorable initial values and depress overall average scores per item. This fact, however, does not invalidate the ICI as a measurement tool but rather indicates that other organizations might experience relatively lower initial scores across the survey items when distributing to a general population of employees.

As noted previously, the respondents in this research were wholly comprised of employees from a non-profit organization. While this inclusion of NFP data contributes to the overall KM research stream, additional testing of the ICI survey in a for-profit context is warranted. The data presented here represent a baseline assessment of the degree of innovativeness in this particular organization. While annual administration of the ICI is planned after the organization-wide rollout is completed, research into the longitudinal effectiveness of the survey – both statistically and practically – is also warranted in further research.

While the ICI survey empirically addresses two of the key facets of knowledge management from an organizational development perspective (i.e., structure and culture), other facets, such as human resources development, teamwork, and development/absorption of knowledge (cf. Gonzalez and Martins, 2014) remain. Further empirical research into these areas would be beneficial to the innovation and knowledge management research streams.

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