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# Knowledge Management Hybrid Strategy with People, Technology and Process Pillars

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## Abstract

The importance of knowledge management (KM) contributes organizational competitiveness, which is widely addressed and became a central topic of management agenda in the last decade. This chapter examines three major KM pillars, including people, process, and technology, for effective KM deployment. Based on a questionnaire-based survey, the study investigates the perceived importance of three KM pillars that influence organizational inclinations of KM strategies and ultimately affect organizational performance. Quantitative findings are sought from 44 key informants in organizations. The results show a hybrid strategy that balances the importance of people, process, and technology pillars brings desirable impact on organizational performance, comparing with the KM strategy inclined to a particular KM pillar. Recommendations of KM endeavors on three KM pillars are provided to suggest the joint efforts from both management and employees.

**Keywords:** knowledge management, process, people, technology, hybrid strategy

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## 1. Introduction

Knowledge management (KM) has been recognized as an imperative element for leveraging organizational effectiveness and performance. Organizations practicing effective KM methods achieve positive results in their organizational competitiveness, particularly innovation and creativity [1–3]. Despite the positive effects of KM, research on the KM pillars remains diverse. This study examines the interplay of the three major KM pillars acting as the platform for effective KM instigation.

On the basis of interviews with KM-intensive organizations, their good practices were categorized through a thematic analysis. Thereafter, an exploratory quantitative study from a sample

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of 44 respondents in different organizations was conducted to examine the relationship of the three major KM pillars. The survey results were further examined to evaluate the effects on organizational performance. Organizations harnessing a hybrid strategy to balance deployment of people, process, and technology gain positive results in their performance. The findings can provide direction for future studies to facilitate management in the deployment and integration of the KM pillars for attaining desirable organizational outcomes.

## 2. Knowledge management pillars

To understand effective KM practices, interviews were conducted with the senior management from two locally renowned KM-intensive organizations; the interviewees serve as key informants who steer and propagate KM. The qualitative data from these organizations were analyzed and thematized into three essential KM pillars, namely, people, process, and technology, which constitute organizational performance (**Figure 1**) [4–7].

### 2.1. Pillar of people

KM is embedded in working processes and practiced by each individual at different organizational levels, spanning from the senior-most to junior-most personnel. Typically, top managers champion the instigation of KM programs, provide vision to align the organizational strategy with the KM programs, and oversee the diffusion of KM initiatives throughout their organizations [8]. Members at different organizational levels act as knowledge workers who harness and utilize the knowledge assets residing in their cognitive repositories [9]. Through collective inquiry, sharing, and assimilation of knowledge, innovations and desirable organizational outcomes are boosted [1, 10]. Therefore, people are considered the heart of leveraging and creating knowledge for organizational competitiveness. Their cognitive minds influence their



**Figure 1.** Three knowledge management pillars.

approach to the processes of accommodating, validating, and creating different ideas solicited from different sources.

## **2.2. Pillar of technology**

Using communication and collaboration technologies to support knowledge management is ubiquitous. Its effect is universally discussed as an indispensable means to facilitate the acquiring, codifying, indexing, updating, and disseminating of knowledge among employees [10–12]. Organizations invest in KM technology, such as document management systems and yellow pages, which enables the presentation of captured knowledge in readily available forms for different users.

Equipped with collaborative-oriented KM technology, employees can connect to one another within (e.g., through organization-specific intranets) and outside organizations (e.g., through the Internet) for rapid knowledge flows with enhanced time value. Employees using KM system (KMS) with learning and creation intention aim to capitalize knowledge assets through social networking and collective inquiries [12, 13]. With trust and reciprocity of exchange, employees share resembling identity over communities of practices to explore or exploit more new ideas and collaboration. User-oriented KM systems (KMS) supports, such as training workshops and forums, may further assist the adoption of KM processes in daily operations.

## **2.3. Pillar of process**

Knowledge is mostly characterized by its tacit and intricate nature, and it resides in the mind of individuals [14–17]. Through individual inquiry and exploration, knowledge is activated from one's repository and externalized in different formats. By engaging through group dialogue, interaction, and exchange, knowledge can be pooled from different sources and created into different explicit stances. KM processes can generally be defined as an array of designated practices facilitating the flow and added value of knowledge. These processes not only help organizations identify and acquire knowledge from multiple sources but also allow their employees to explicate and disseminate knowledge in comprehensible formats. Valuable knowledge, skills, and competencies are documented and stored in knowledge repositories assuming various forms (e.g., minds of employees). Structured and planned documentations enable employees to share and retrieve relevant knowledge for implementing associated tasks. Employees can also assimilate new knowledge input to reconfigure existing knowledge and create new ideas for enhancing organizational goals [18, 19].

## **3. Organizational performance**

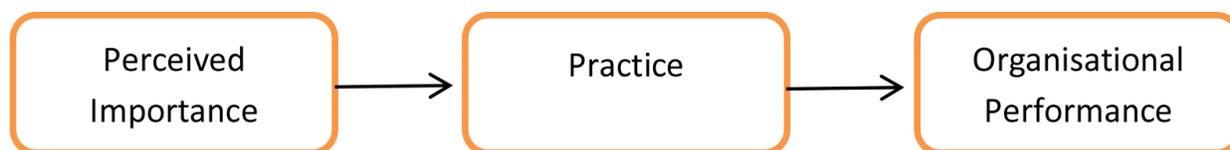
A central tenet of harmonizing the three KM pillars is their association with organizational performance. Prior research indicates that effective human resources deployment, such as organizing employees to work as a team to leverage collective expertise, can be conducive to innovative activities [13, 20]. Management should also integrate KM processes allowing employees to harness, access, share, use, and create knowledge at different stances [21].

Equipped with KM technology, employees can leverage personal knowledge and improve skills through sharing and collaborative learning [9].

In this study, management who can utilize knowledge can leverage their capabilities to improve business profitability, streamline working processes, and influence coordination of efforts as well as responsiveness to market-changing innovation [16, 18, 22], thus contributing to desirable organizational performance.

#### 4. Perceived importance, practice, and performance

Prior study explained that although most companies find KM promising, they can only capitalize on a few processes [19]. They further asserted that action is vital to turn knowledge into practice, which, in turn, allows knowledge workers to learn from mistakes and move on to the next stage. As an exploratory examination, the current study focuses on the practice of the three KM pillars in organizations. The relative importance and hierarchical position of the three KM pillars are then examined. The perceived importance of KM pillar is construed to influence the way management steers the KM program. Accordingly, the congruence between perception and the KM orientation is investigated. Given the different KM strategies and mix of the KM pillars, organizational performance is expected to vary. The notions are illustrated in **Figure 2**.



**Figure 2.** Framework of perceived importance, practice, and performance.

#### 5. Methodology and data collection

This exploratory study employed questionnaire-based survey for data collection. Pilot tests with one professor and one business practitioner were conducted in order to solicit feedback on the structure, readability, and completeness of the questionnaire. In 2013, the revised questionnaires were distributed to 93 study informants, with a cover letter to depict the major objective of the study. To improve the understanding of information from respondents with conception and experience of KM, study informants who engage, steer, or participate in organizational KM were primarily solicited to participate in the survey. The data collection period lasted about 5 months, with 44 valid questionnaires were returned for analysis.

In order to minimize the social desirability bias, anonymity was stated explicitly to all study informants in the cover letter. The study mainly examined the constructs of perceived

importance of the KM pillars, practice of KM pillars, and organizational performance. To assess the interplay of the three pillars and their effects on organizational performance, the study also conducted tests of the correlations of the three pillars with the organizational performance. Each pillar was measured with multiple questions. Except for questions regarding the demographic background of respondents and the company information, all questions adopted a five-point Likert scale (**Table 1**).

Characteristics	Number of respondents	Percentage of respondents
<i>Gender</i>		
Male	29	65.91
Female	15	34.09
<i>Age group</i>		
Under 25	2	4.54
25–34	10	22.73
35–44	30	68.19
45–54	2	4.54
<i>Business sector</i>		
Banking and insurance	6	13.63
Engineering	10	22.73
IT and telecommunication	10	22.73
Manufacturing	5	11.36
Wholesale, retail, export, and import	13	29.55

**Table 1.** Profile of respondents.

## 6. Results

To assess the interrelationships among the three KM pillars, descriptive statistics and correlation coefficients were derived with the aid of Statistical Package for the Social Sciences (SPSS). The perceptions of respondents were also examined to evaluate whether the three pillars influence how they harness knowledge assets.

### 6.1. Perceived importance

All 44 respondents expressed a unanimous agreement toward the importance of the three KM pillars, namely, people, technology, and process, to organizational growth. The awareness and recognition toward the three pillars are presumed to influence the KM agenda and endeavors in their organizations.

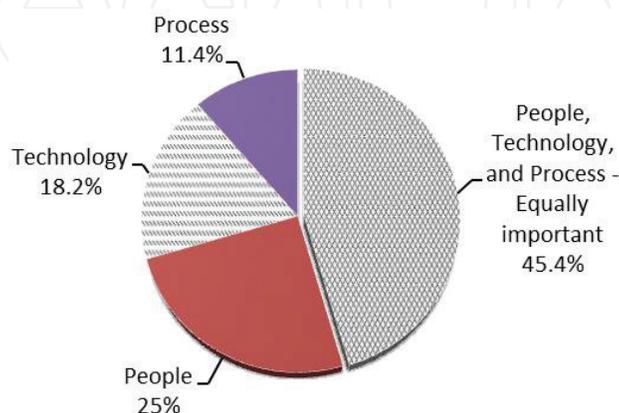
Upon their consensus, the respondents were asked to rank the order of the three pillars in their organizations according to importance. Two diverse views were identified from the respondents: (1) the three pillars are conceived as equally important and (2) a specific KM pillar is more crucial than the other two KM pillars. In **Figure 3**, nearly half of the respondents (45.4%, 20) explicated that people, process, and technology are inseparable and valued equally significant in their organizations. The rest of the respondents (54.6%, 24) perceived their organizations to have dissimilar emphasis over the three KM pillars. This dissimilarity accounted for the diversity in their organizational profile, history, competitive edges, and environment.

The 24 respondents were further asked to reflect their views toward the most important and rudimentary pillar in their organization and rank the three pillars accordingly (from the most to the least important pillar). The result is illustrated in **Figure 4**; 11 respondents (25.0%) perceived “people” as the most important pillar, followed by eight respondents (18.2%) for “technology,” and finally five respondents (11.4%) for “process.”

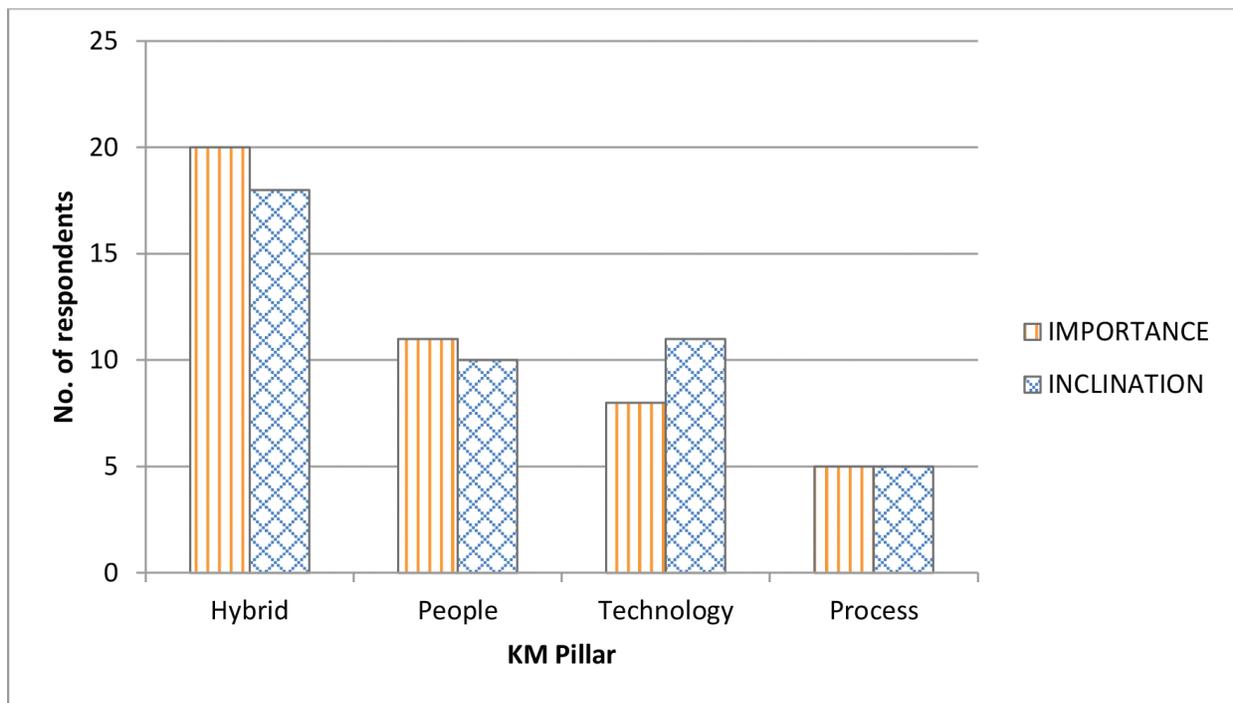
Apart from the ranking order of KM pillars, the 24 respondents were asked to reveal their perception toward the degree of importance of the KM pillars. The study employed a 5-point Likert scale (ranging from 5 = most important to 1 = least important) and computed the mean scores accordingly. The higher the mean, the higher the perceived importance of the particular pillar toward the organizational performance. Among the three KM pillars, “people” was rated with a mean score of 4.19, which was higher than “technology” and “process” pillars with respective scores of 3.88 and 3.71.

## 6.2. Practice

Emanating from theory of action advocated by Argyris and Donald [23], individuals are encompassed with a disparity between their “espoused” theory and theory in use. For example, participants in community of practice clearly know the benefits of knowledge sharing. However, in practice, employees may not explicate or externalize their knowledge continually because of different private agendas held or reciprocity toward community members.



**Figure 3.** Perception of the most important knowledge management pillar.



**Figure 4.** Perceived importance and inclination of knowledge management pillars.

A similar assertion is found in the current study. Despite the slight disparity, the perceived importance of KM pillars communicated to others is realized to be only partially congruent to the respective KM pillar deployment. To illustrate this point, all 44 respondents were further asked to evaluate the inclination of their KM strategy. The findings (**Figure 4**) presented four major KM strategies adopted in the organizations, namely, hybrid, people-oriented, technology-oriented, and process-oriented [24, 25].

In connection with the previous finding, 18 of the 20 respondents revealing the equal importance of the three KM pillars asserted that a “hybrid” strategy of KM practice is deployed in their organizations. Their KM plans incorporated and assimilated the three KM pillars to leverage people to engage in various KM processes, with the aid of KM-related technology to drive innovation and organizational improvement. They emphasized the interdependence and indispensability of people, process, and technology enabling organizational members to explore and exploit different types of knowledge.

Likewise, 10 of 11 respondents discerning “people” as the most important KM pillar, asserted that people-oriented KM strategy is carried out in their organizations. They emphasized that sources of innovation and new ideas are primarily instigated from people, given that most of the knowledge are tacit in nature and deeply residing in the mind of individuals. The organizations deploy diverse groups of KM people to articulate, interpret, and share knowledge among one another.

Concerning the supremacy of the ubiquitous technology in organizations, 11 respondents asserted that the technology-oriented strategy is adopted in their organizations, whereas only 8 respondents conceived “technology” as the most important pillar in the previous session.

The 11 respondents explained that technology is extensively used in their workplace to connect, communicate, and collaborate with parties in and outside the organization. Technology facilitates the integrative (e.g., new and old knowledge combination) and interactive flow (e.g., different knowledge workers exchange knowledge) of knowledge assets.

The five respondents valuing “process” pillar mostly concurred that KM strategies are primarily process oriented. The process-oriented strategy is characterized as a deliberated series of KM activities, including acquiring, storing, retrieving, reusing, applying, and creating knowledge, sequentially integrating with other organizational operations through the knowledge workers or technology-enhanced platforms.

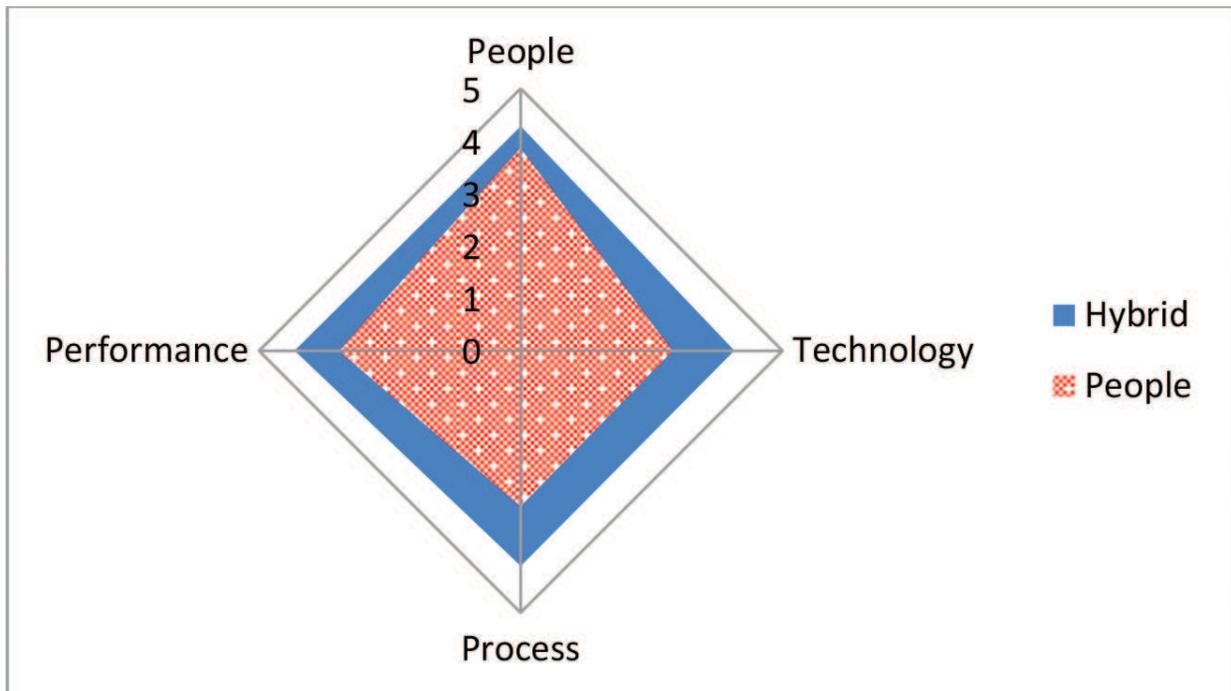
Other than the congruence of the KM perception and KM strategy, understanding the effectiveness of their KM practices is important to evaluate organizational performance. The general results of organizational performance presented in **Table 2** showed that organizations adopting a “hybrid” strategy attained better scores than those organizations adopting KM strategies driven by a particular KM pillar. The 18 organizations demonstrated and experienced the highest organizational performance (mean = 4.32); the three KM pillars were well-adjusted and developed, resulting in moderately high scores of 4.28, 4.08, and 4.11 for people, technology, and process, respectively.

Organizations with KM inclinations showed interesting findings with regard to KM effectiveness. The results from people-oriented organizations revealed that the pillar of people performed the best with the mean score of 3.87, followed by process and technology with mean scores of 2.97 and 2.90, respectively. Technology-oriented organizations deployed efforts and realized highest effectiveness in the pillar of technology when compared with the results of other two pillars (technology = 4.36, process = 3.12, people = 2.33). The KM effectiveness of process- and people-oriented organizations demonstrated a similar pattern. In process-oriented organizations, the most effective KM pillar is process (mean = 4.0), followed by people and technology, which shared the same mean value of 3.40.

Recognizing the organizational performance of other non-hybrid organizations with less favorable results is necessary (**Figures 5–7**): people-oriented, process-oriented, and technology-oriented organizations obtained a mean of 3.47, 3.4, and 3.06, respectively. Although the inclination toward a particular KM pillar enables organizations to exploit their KM resources, the inattentive practice or under-utilization of other KM pillars may hinder their long-term

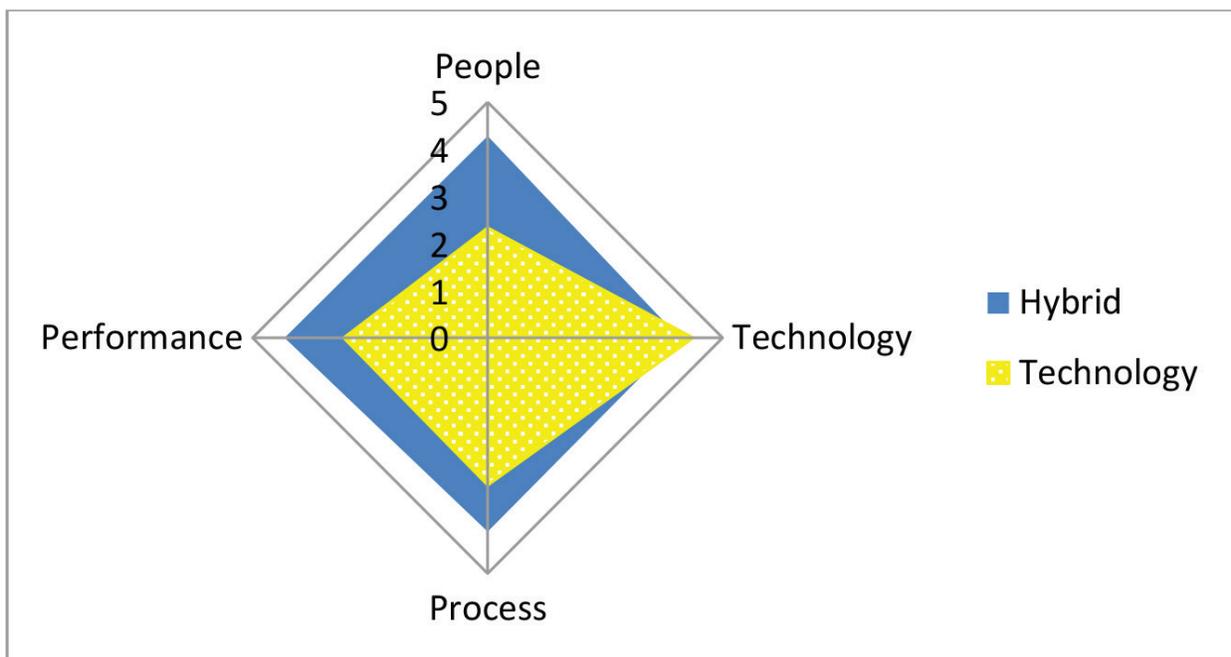
		Strategy			
		Hybrid	People	Technology	Process
Pillar	People	4.28	3.87	2.33	3.40
	Technology	4.08	2.90	4.36	3.40
	Process	4.11	2.97	3.12	4.00
	Organizational performance	4.32	3.47	3.06	3.40

**Table 2.** Correlation between knowledge management pillars and knowledge management strategy.

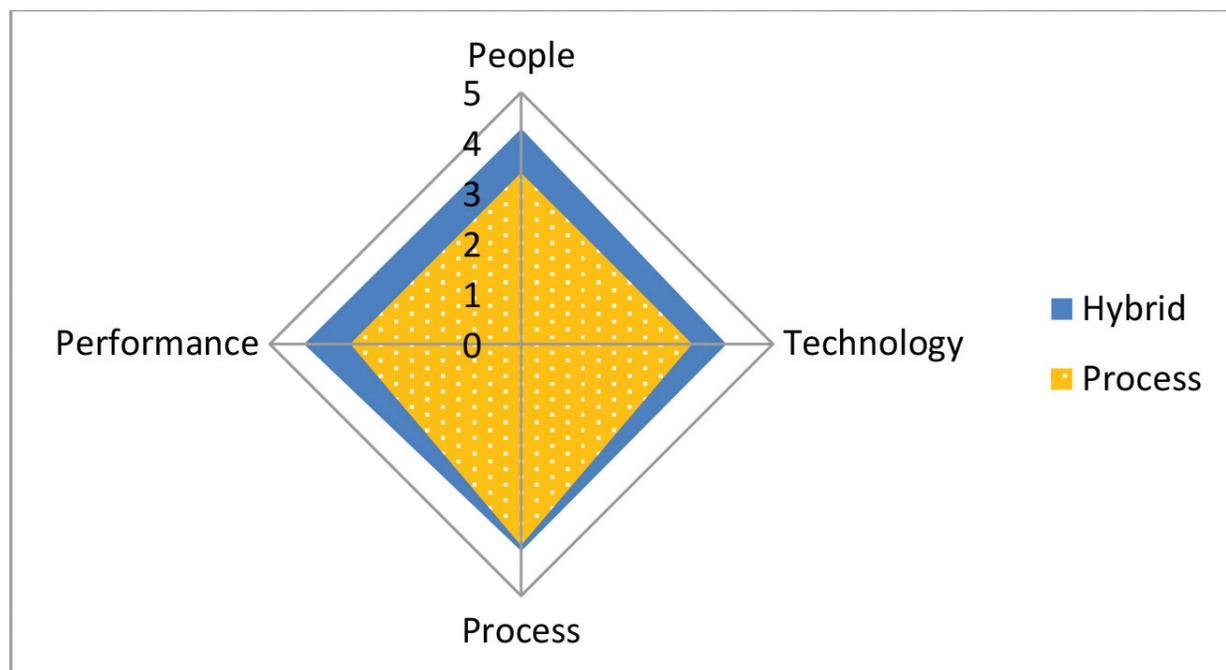


**Figure 5.** Organizational performance by hybrid strategy and people-oriented strategy.

growth in today's dynamic environment. Given the intricate nature of knowledge process, high mobility of the knowledge workers and swift change in advanced technology as well as support and championship from management are paramount for encouraging organizational members to explore the current knowledge sources in organizations or to acquire the pillars externally (e.g., recruitment of quality staff).

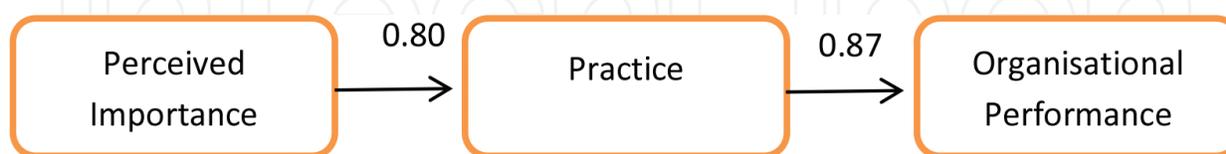


**Figure 6.** Organizational performance by hybrid strategy and technology-oriented strategy.



**Figure 7.** Organizational performance by hybrid strategy and process-oriented strategy.

The descriptive statistical results indicated that the gap between espoused theory (regarding their perceived importance) and theory in use (regarding the inclination practice) was further evaluated. **Figure 8** illustrates the correlation coefficients of the three major pillars. The perceived importance of KM pillars showed a relatively strong relationship with the KM practice (0.80). Most of the organizations are consistent with what they believe and communicate to others in regard to their KM strategies. No obvious disparity exists between their degree of championing KM and the degree they engage in KM. Similarly, the results demonstrated a strong relationship between the KM practice and organizational performance, with a correlation coefficient of 0.87. The KM strategy steered by management is important in promoting the synergistic coordination of different organizational resources to achieve desirable organizational results.



**Figure 8.** Correlation of perceived importance, practice, and organizational performance.

## 7. Discussion and KM in the future

The preliminary findings reveal that management and employees have variable perceptions toward the relative importance of the three KM pillars. Their inclined perceptions influence

the degree of KM pillar being practiced and exploited in KM programs. The current study also shows that organizations propagating hybrid KM strategy result in relatively higher effectiveness in organizational performance than those non-hybrid organizations do. The skewed emphasis on a particular KM pillar, such as technology orientation, seems like a one-legged chair that is rigidly stacked at a particular point.

Given the dynamic change of business environment, organizations not only have to maximize the effectiveness of organizational routines but also harness changes and develop new competitive strengths. The findings from current study encourage joint efforts from management and employees to configure a hybrid KM strategy, that is beyond the two-dimensional classification of KM strategies, either personalization or codification [26, 27]. The following section provides recommendation to management for courses of action to explore more on KM pillars that may be least attended or emphasized in current stage, ultimately to attain a desirable organizational performance.

### **7.1. Pillar of people**

The attitude of the top management toward KM serves as an explicit gauge for an organization-wide KM activity. Steered by the top management, a KM task force can be created to symbolize their dedication and enthusiasm toward their employees [8]. The key values and affirmative perception toward KM, such as knowledge is a fluid and growing asset; knowledge is not confined as personal power; and knowledge is best valued if it is shared, can be cultivated, and institutionalized to all employees. The vision to embody the significance of KM can attract additional dedication from employees when KM initiative is in its infant stage.

Centered as the frontrunner in KM community, the top management can stretch KM boundary and embody the KM significance to different departments. They can identify early adopters with enthusiasm for KM processes and involve them in propagating the KM vision through connections and interactions. Thereafter, the community can be further extended to diverse work groups/departments and encourage members to bring in a constructive disruption toward the status quo and stimulate other new ideas. The bond among people can be strengthened through the participation of knowledge workers characterized by different roles (e.g., novice, regulars, and experts) in the community. Regular meetings to exchange ideas or articulate competent skills to members are beneficial to peer learning.

Within the community, KM activists, including the top management and employees, can advance the KM perception as a spiritual KM culture. Fostering a knowledge-friendly culture with unwritten norms and beliefs is crucial because turning KM visible to all organizational members requires time. Organizations can encourage people to experiment with different ideas to develop a new working process that is in parallel with their autonomy in task. Such working atmosphere can facilitate open communication channels and knowledge-sharing sessions at both formal and informal setups, such as conducting a bimonthly good work practice sharing allowing employees at all levels to explicate or solicit feedback of their work practices.

## 7.2. Pillar of process

KM processes involve both formal and informal dynamics, ranging from casual conversations in the hallway to socialization regarding work processes over departmental meals to pre-arranged, focused discussion sessions held in meeting rooms. Organizations can devote extra efforts to engage major processes, including acquisition and capture, conversion and organization, storage and dissemination as well as creation and usage [27]. Further actions are required to interweave the KM processes holistically because such knowledge assets can be an added value to facilitate informed decision making and strategy.

Knowledge is intricate with its multiple facets [1, 2, 28]. Management must identify its paucity and presence at individual, group, and organization contexts. Therefore, employees are encouraged to tap in diverse sources, acquire the critical knowledge, such as core competencies and know-how residing in a particular employee's mind, or capture the knowledge embedded within a particular organization process, or deduce good practices adopted from outside organizations.

Efficiently and effectively conversing and organizing knowledge into the appropriate format for easy access and retrieval are crucial in the organizational KM agenda. Explicit knowledge, such as text-based reports and procedural manuals, is relatively communicable to others. Thus, experts can explicate their knowledge and codify them in a structured form. By contrast, tacit knowledge, such as capability to understand and to read the cues from customers' propensity to purchase, cannot be verbalized and articulated entirely to others. Organizations may have to devote extra resources to convert them into demonstrative video or narrative good practices that can be learned by knowledge seekers through a different mode.

Sharing is one of the most challenging processes if knowledge is confined as a personal asset rather than a social capital in the organization. Equipped with a sound incentive system (covering both monetary and non-monetary recognition), the infant KM stage may progress with a mandatory sharing from experts or experienced staff. During the growth stage of the KM program, sharing exercise can be regularly conducted with the active participation from the top management. Further sharing can be boosted on a voluntary basis, with many employees sharing and exchanging their good practices reciprocally through an informal setup, such as social conversation, or through a formal route, such as documented publications [28].

Knowledge creation is occasionally a spontaneous process, where innovative ideas are not confined to the domain expertise or experienced colleagues. It can also be an emergence of a novel idea or one that adds value to reconfigure a current idea or enhance working practices, which, in turn, can be applied in new contexts. Management can encourage employees to explore their ideas playfully through trial-and-errors for invention. Furthermore, management can provide extra "time" resources to support creation, such as releasing employees from work to cross-fertilize ideas with colleagues from different disciplines.

## 7.3. Pillar of technology

In some organizations, knowledge management is closely associated with sophisticated systems, enormous database, and advanced infrastructure. Management must realize that the presence of KMS offers no guarantee that the users will automatically come nor hoard knowledge

and skills from the repositories. KMS is capitalized as an effective and useful conduit when users interact, learn, and collaborate with others and harness reusable knowledge for their own work situations and processes [18, 29].

The perceptions held by the KMS users affect the extent of system usage, such as perceived ease of use and usefulness. Therefore, management can designate the IT staff for involving end users to participate in the KMS design and development process. The genuine needs in knowledge representation, expectation of feature-rich interface, and potential problems in the evolving knowledge repositories can be directly solicited. The involvement from end users reinforces the commitment and satisfaction when the system is launched because KMS is developed “for” them.

Undoubtedly, KMS enables organizations to be more agile and fluid because skills, competencies, and ideas can be stored, accessed, retrieved, and disseminated to the right people, at the right time, and at the right place [11, 12]. It presumably connects employees on a potentially fruitful platform that enables them to access, integrate, and generate knowledge. Therefore, management must be cautious to avoid putting excessive efforts in preserving and storing knowledge assets as stock in the repositories. Employees are encouraged to keep knowledge “alive” through a continuous review, updating, disposal, and sharing. Regular evaluations of system effectiveness, such as portal design and relevance of knowledge content for decision making are required.

## 8. Limitation and research directions

This study is an exploratory attempt to examine the KM pillars and impacts on organizational performance. Further studies should be conducted to overcome the limitations of the present study. First, the findings were drawn from individual study informants who engage in their organizational KM programs. Using the samples from multiple respondents of a work unit may shed new insights in KM, such as the degree of unanimity on KM pillars moderated by culture, private agenda, or work commitment. Second, the future research can collect more samples to generate additional statistical power and allow added robustness to the model testing. Third, in-depth examination of the hybrid strategy could be conducted to enable organizations to obtain a clear picture of their KM status. For example, future activity can be extended to the behavioral traits of knowledge workers, impact of different KM processes on sustaining competitive advantages, and complementary and substitutability roles of IT in KM process.

## 9. Conclusions

Knowledge management has become one of the most important activities across different organizations. Management is struggling with the efforts to embark on KM initiatives and the minimal return in competitiveness. This exploratory study identified three KM pillars acting as fundamental constituents driving KM programs to attain a desirable organizational performance. The findings showed that organizations perceived the KM pillars differently,

which influence their practices to implement KM strategy. The orientation toward different KM pillars resulted in varying effectiveness of organizational performance. Adapting a hybrid strategy is concluded to yield better results. Accordingly, actions are recommended to enable organizations to re-examine their current status and adopt changes for balanced KM programs.

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