



# Conceptual Model for Organizational Knowledge Management Improvement via Cloud-based Platform in Gulf Region HEI

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## Abstract

The active higher education environment in the Middle East has resulted in respective institutions seeking a different alternative to enhance their data technology platform expenses as well as operational effectiveness. The emergence of cloud computing has resulted in improved technology, offer HEIs with software as well as alternative infrastructure. This article discusses ways through which organizational knowledge management (KM) can be improved in HEIs based on cloud platforms. Knowledge management systems (KMS) offer links within academic and administrative service stakeholders to enhance management practices and satisfy student needs. This study uses a systematic literature review to gather information. The framework accommodates practices in HEIs and is designed to enhance organizational learning. From the findings, knowledge acquisition, storages, distributions, and uses are highly dependent on the institution's capacity to exploit and accommodate new knowledge. Institutions have a responsibility to integrate employee's precise expertise with hierarchal coordination which allows for physical knowledge storage through IT-related practices. Given the KM stages, HEIs can incorporate computing applications either PaaS, IaaS, or SaaS to effectively address their KM needs. The effective adoption of cloud-based platforms enhances organizational KM and thus, the proposed conceptual framework offers a basis for institutions to choose an appropriate platform based on their needs giving them to seek alternative service vendors where possible.

**Disciplinary:** Organization Management, Education Technology, Information Technology.

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# 1 Introduction

Organizational knowledge management (OKM) is referred to as the procedure of defining, structuring, retaining as well as sharing knowledge and skills of employees in a given organization to enhance the organization's efficiency (Ahmad et al., 2017). Technology has experienced a rapid growth that results in more data creation which remains inadequate for companies unless significant information is extracted. As such, knowledge management (KM) involves the retrieval of significant skills from external sources, using KM to make decisions and share the same knowledge within and outside the organization. Technological reliance has continuously become common in contemporary error as its benefits engulf its disadvantages. Higher education institutions (HEIs) are expected to be innovative for them to remain competitive. In relation, HEIs are faced with the need to acquire the latest software and application to enable them to train students and enhance communication around institutions. Galvis (2018) notes that HEIs are seeking substitute affordable ways of purchasing such software and applications. Clouding Computing can solve this issue through the provision of required software and application at affordable or no cost.

HEIs have two basic cultures that benefit from cloud computing including administrative and academic cultures. Cloud Computing uses three models to provide HEIs with services depending on the resource required. These include Infrastructure as a Service (IaaS), Software as a Service (SaaS), and Platform as a Service (PaaS). SaaS offers users a platform to access diverse applications over different devices using program interface for instance web browser. Google Apps is perceived to be among web-based applications that provide quick and easy access to different Apps braced by Google anywhere anytime over the internet. In the context of HE, this technology is used by all students, tutors as well as administrative staff to carry out their tasks anytime anywhere. Salloum et al. (2018) indicated that over 95% of students in Oman, as well as the United Arab Emirates, had phones and over 80% relied on them for study purposes. Different research carried out at Al Buraimi University College perceives Google Apps as a collaborative tool among teachers to enhance professional learning to their students and that it stores most of the university's crucial documents (Weber et al., 2017).

Habibi et al. (2018) also conducted qualitative research interviewing professors in the UAEs concerning the effect of using Google Apps for communication and collaboration skills among students and concluded that the academic sector is set to adopt Google Apps across their strategies after they receive sufficient training.

Alharthi et al. (2017) assessed the adoption of Google Apps among IT staff and students in HEI in Saudi Arabia and resolved that IT staff have adopted Google Apps as a major means of communication amongst themselves although it is less used between them and students.

Higher Education Institutions (HEI) face new challenges such as rapid educational reforms, huge data conception, growing IT demand, and technologically innovative trends (Sutin, 2018). Cloud computing that solves these issues must be well integrated by KM concepts and practices.

Knowledge management using cloud computing has been suggested by several researchers to solve these issues and address other Contemporary problems in HEI. Ali et al. (2018) concluded that KM can benefit from cloud computing incorporation by enhancing the decision-making process, improving response to essential academic problems, and increasing knowledge sharing effectiveness. For HEI to benefit from cloud computing integrated with KM concepts, functional models adopted need to have effective KM practices as well as suitable infrastructure. However, there is limited research on how HEI can enhance organizational KM using cloud computing. This study, therefore, aims at answering the research question?

- [How can HEIs improve organizational knowledge management through cloud based platforms?](#)

This study develops a conceptual framework that offers a clear view to be used by HEIs to respond to the needs of improving their organizational knowledge management using cloud computing services. This framework can be used to improve knowledge management in HEIs and also help these institutions to understand the abilities they require to cross over to the Cloud spectrum. The framework aims at reducing hardware expenses, improving available solutions on computing and storage as well as enhance quality and accessibility to education. Second, by proposing a conceptual framework, this study offers a novel explanation for HEIs' need for continued adoption of new technology. Lastly, HEIs in the Middle East are continuously concerned with IT costs thus this study's findings provide HEIs with a variety of cloud computing options to choose from throughout the KM process.

## **1.1 Operational Definition**

Cloud computing and knowledge management are the major variables of this study. This study uses cloud computing to refer to technological services that allow the use and storage of data without directly involving the user. On the other hand, knowledge management is used from a perspective of organizational practices ranging from creating, sharing, and transferring knowledge as well as information within and outside institutions.

## **2 Research Method and Practices**

This study follows a systematic literature review by adopting several procedures. First, this study only included researches that offered guidance on directing literature review. Also, literature reviews on precise topics were left out but included diverse spheres of knowledge management and cloud computing within both the administrative and academic culture of HEI. Second, this study identified literature by searching for keywords using Google Scholar. According to Martín-Martín et al. (2018), Google Scholar is among the most adopted databases by research from different fields to search for quality journals. Considering improvements in modes of information archiving as well as retrieving, this study restricted its publications to 2017 and 2020 to ensure that findings are built on the most current literature with regards to information retrieval as well as synthesis in the contemporary digital error. This study started by searching keywords on Google Scholar including “methodology review” and “conducting literature”. Several potentially relevant journals were

found and any duplicates were discarded. Third, fifty-seven of the potentially relevant journals were screened for their relevance to the research topic. A parallel independent assessment was conducted and discrepancies identified between the reviewer's findings were resolved and therefore, forty-six pieces of research were considered relevant. A full-text article was then obtained for quality assessment.

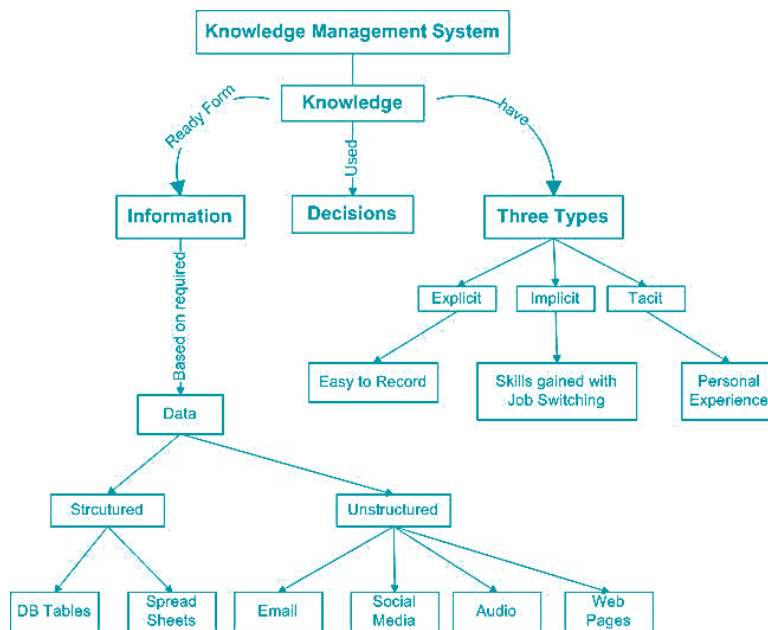
Fourth, the researcher skimmed through entire texts of the articles to intensely assess the quality as well as the eligibility of the researches. This study deemed journals published by highly ranked publishers as high-quality studies thus used them for literature review. Additionally, technical reports, as well as online presentations, were not discarded as Russell et al. (2017) opine that they don't have an effective peer-review process. As such, this study only used very high-quality journals that were appropriately cited. Additionally, this study conducted a second parallel and independent assessment on quality and eligibility and after discrepancies were resolved, twenty-six more articles were discarded due to several reasons including lack of guidance regarding methodology review, review of the exact research topic, and also the study could not find full text for some articles. Therefore, only twenty journals were retained for the study.

Lastly, a back and forward search was also utilized for more literature. Upon finding the relevant review of the article, the best examples were considered to be eligible according to their adherence to the appropriate referencing, after which consideration was given to cloud computing and knowledge management specifically in the Gulf. After critical considerations, eight more journals were selected bringing the total of the journals used to twenty-nine.

From every journal used, information was collected with reference to two sub-topics: organizational knowledge management and cloud computing, and the former divided into four distinct categories including knowledge acquisition, storage, distribution, and use. Additionally, reflective as well as formative measures are relied on to test previously suggested models for KM. Formative measures were taken for information quality since it gives results in actionable as well as specific concept attributes (Luftman et al., 2017). Also, from a formative context, weighted indicators are adopted to establish practical insights which critically guide practical enforcement.

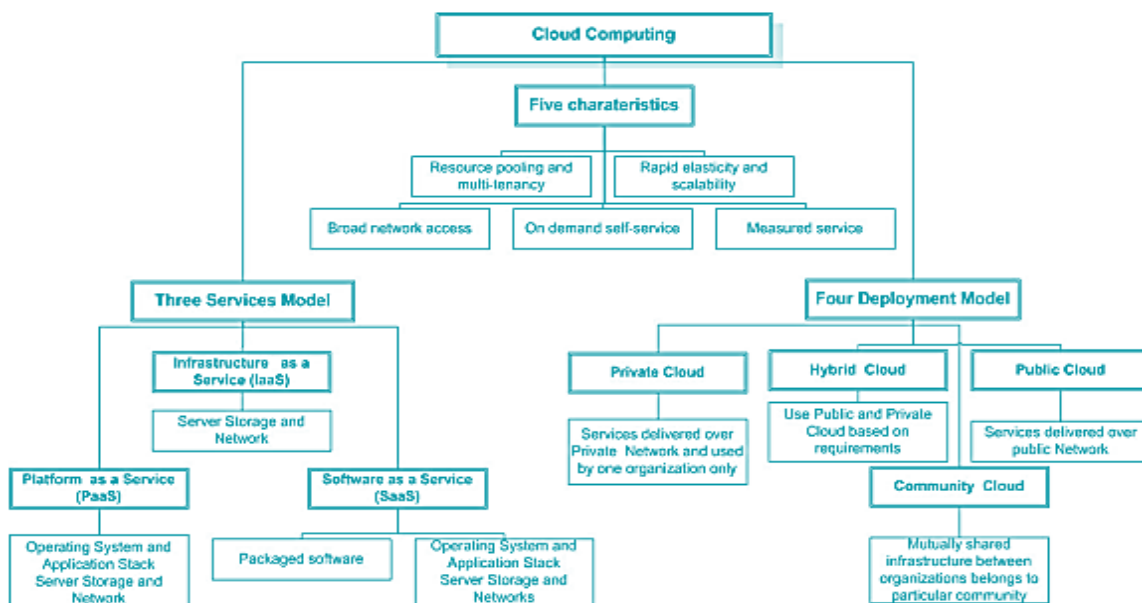
### **3 Results and Discussion**

In some cases, most organizations in the Middle East nations have been capable of outsourcing explicit as well as tacit knowledge using overseas vendors (Russell et al., 2017). This can be achieved by switching to knowledge-based practices that allow for the creation, acquiring, and sharing of knowledge more effectively among organizations and other users (Mahdi et al., 2019). Lack of knowledge results in ineffective organizational management and the authors suggest that HEI in the Middle East pursue reliable academic and organizational practices that can utilize research, knowledge creativity as well as innovation to address issues using locally affordable sources (Hartono et al., 2019). Figure 1 shows a knowledge management model.



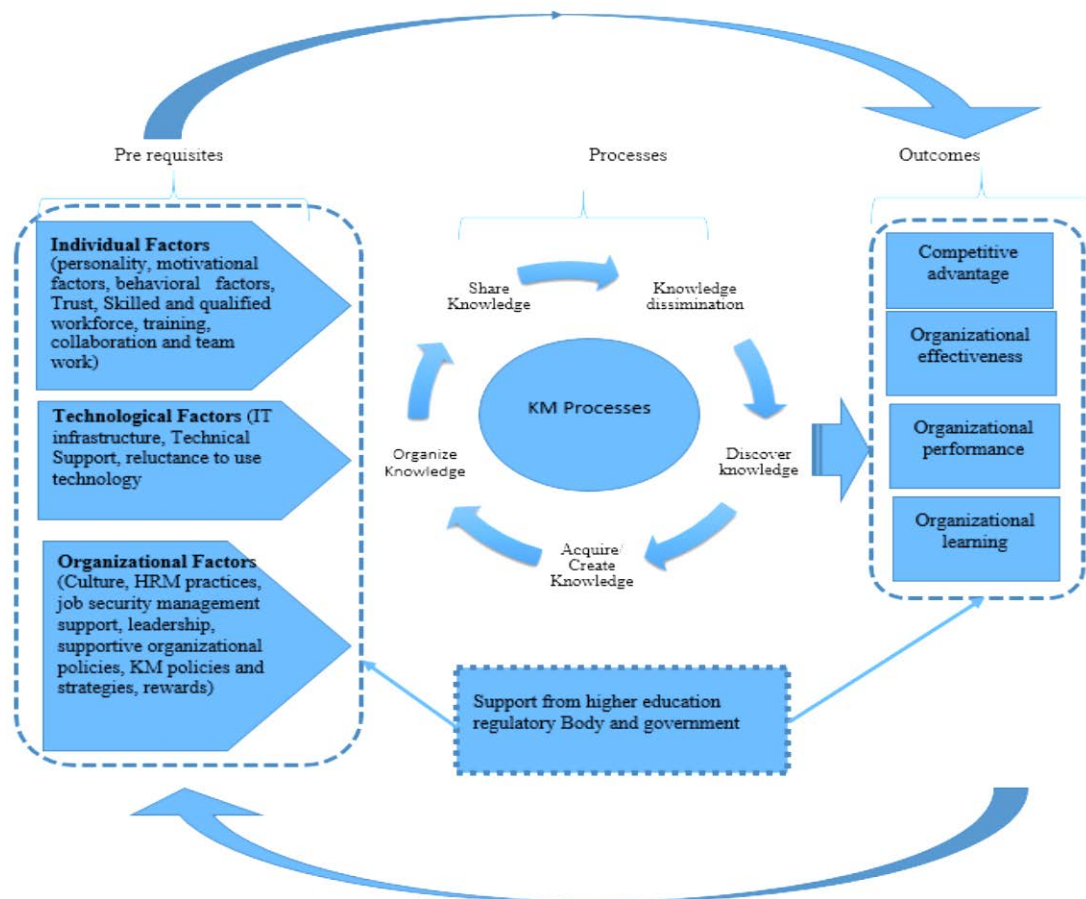
**Figure 1:** Knowledge Management Model (Antunes & Pinheiro, 2020).

The process of acquiring and distributing knowledge belongs to the HEIs knowledge management system. As indicated by authors, knowledge management has currently gained much recognition across most HEIs in Saudi Arabia and UAE and has not only earned space for knowledge delivery across the Middle East but also become a significant activity considered for curricula designs as well as knowledge processes (Al-Kurdi et al., 2020). Implementation of KM thus helps HEIs improve knowledge structure and decision-making process and can also enhance adoption of learning tools through IT technologies. IT industry in any domain presents significant opportunities for expansion of KM to appropriately align with dynamic environments (Jabeen et al., 2018). Cloud computing offers practical KM techniques and also provides internet space to enable institutions to attain and manage knowledge virtually. Technology-based cloud computing has been adopted across most HEI in the gulf to manage diverse knowledge as well as services to effectively address intuitional needs. Figure 2 exhibits a cloud computing tree model.



**Figure 2:** Cloud Computing Tree model (Hu et al., 2017).

Studies that holistically focused on HEIs' KM indicated how significant it is to manage knowledge from a wider range across academic as well as non-academic parameters for the general improvement of performance (Al Ahbabi et al., 2019). HEIs should therefore use policies that effectively integrate administrative as well as academic KM techniques by use of people, process as well as technology (Al-Ahbabi et al., 2017). Mahdi et al. (2019) suggested the model Figure 3 for the assessment of KM in organizations.



**Figure 3:** Knowledge management processes (Mahdi et al., 2019)

The suggested conceptual framework is specifically developed to improve OKM using cloud-based platforms in HEI. This framework is based on a thorough investigation of literature and models concerning Knowledge Management in HEI.

Based on available research, organizational knowledge management can be enhanced based on four stages. First, knowledge acquisition accounts for the intraorganizational approaches which facilitate the development of tacit as well as explicit knowledge. Authors of knowledge acquisition focus on the learning process. According to Wang et al. (2020), the learning process results in two distinct organizational processes including an operational routine that is responsible for the functionality of the organizations and dynamic abilities that create room for improvement. In relation, dynamic abilities should help HEI to either adopt or enhance cloud computing services. Routines are meant to characterize institutional reactions to either internal or external stimuli which also results in two distinct behavioral patterns that are relying on the organization's

previously known procedures to attain its goal of making changes in the routines to increase competitiveness (Ramadan et al., 2017). To enhance OKM, this study's conceptual framework suggests the adoption of PaaS. PaaS solutions should help institution's personnel develop and maintain web-related applications without necessarily possessing precise expertise. However, cloud-based knowledge management allows IT practitioners within the HEIs to develop their own applications which when spread across other users can help solve issues online, acquire knowledge from diverse sources depending on their creativity and also share problems using the desired cloud.

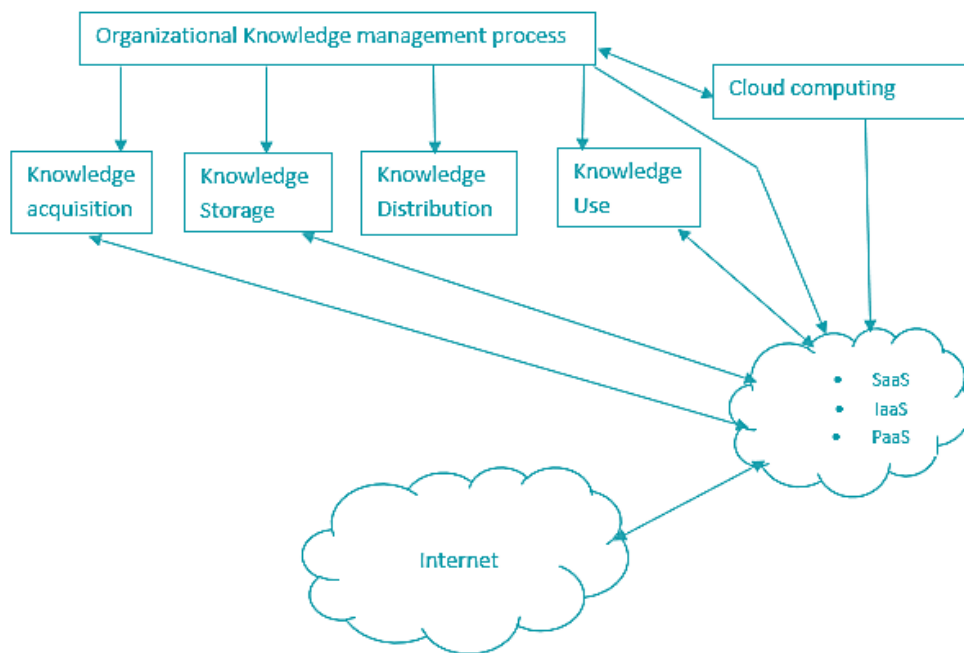
Some authors pointed that knowledge acquisition is dependent on the HEI's capacity to absorb and assimilate expertise for a sustainable competitive advantage. In relation, Shujahat et al. (2019) find the higher absorption ability HEI possesses the more dynamic they are. That is, for opportunity exploitation irrespective of the institution's actual performance, HEIs whose absorption capacity is lower are more reactive to look for ways to address their faults with regards to their performance standards which are not necessarily technological advancement.

Second, this study found out that among the major roles of the HEI in the Middle East is the integration of one's specific knowledge as well as hierarchical coordination concerning the institutional failures (Al-Kurdi et al., 2018). Institutions, therefore, store knowledge physically which comprises IT as a key tool. Another major consideration by studies regarding knowledge storage is through knowledge institutionalization (Chou & Ramser, 2019). IaaS based applications enhance the organization's utilization of servers and storage disks. The adoption of visualization technology permits IaaS providers to offer users practical access to servers. KM based on cloud demands a stable infrastructure to store knowledge.

Third knowledge distribution allows for new information to be transmitted to other ends thus prompting new knowledge. Wilkins (2020) indicates that information sharing demands that HEIs mobilize skills so as to develop an information-sharing environment. Systematic transfer approaches have been proven by other studies to effectively disseminate knowledge as well as best practices (Cunningham, Menter & Young, 2017). The mere that HEIs possess knowledge is not enough and there should therefore be a flow of knowledge to enhance the learning process among individuals to increase performance. SaaS offers typical applications which are not developed such as emails which can be accessed through the web. HEIs are using SaaS applications including web and Google Apps collect, process, and share lots of data (Odeh et al., 2017). Knowledge transfer can therefore be identified through several ways including self-learning, changes through individuals contacts, knowledge transfer, and exchange among institutions.

Lastly, users should be able to access and use stored knowledge. Knowledge should be used so as new knowledge is developed through creation, innovation, integration as well as the extension of the present knowledge. According to Lopes et al. (2017), exploitative as well as explorative knowledge is used is linked directly to the institution's chosen strategy whether reactive or innovative. Knowledge use has been linked to the retrieval process and it is based on how practices are historically developed within HEIs. An increase in complexity of tasks should

translate to the use of knowledge in novel situations. This process needs interactive effort in research and knowledge evaluation. It is therefore noteworthy that HEIs' success is largely accounted for by the use of knowledge to research and exploit communication modes among significant stakeholders (Shams & Belyaeva, 2019). Digital natives who in most cases are students in HEIs present rely on the internet for their daily tasks as well as take part in online group activities including group study (Šorgo et al., 2017). To enhance student needs satisfaction, HEIs ought to understand what knowledge and content should be delivered to them. As such, it is significant for HEIs to acknowledge student expectations and understand the type of technology that should be integrated into teaching activities to ensure these expectations are met. In relation, the proposed conceptual framework is present in Figure 4.



**Figure 4:** A proposed conceptual framework for HEI on using a cloud-based platform.

## 4 Conclusion

According to this study's findings, there is a need for higher education institutions to incorporate knowledge management with cloud computing practices. These results suggest that knowledge management based on the Cloud platform provides cost-effective technologies as well as methodological solutions. This study shades more insight into cloud-based knowledge management providing institutions with different alternatives towards their competitiveness. These findings also provide a clear understanding of the best ways institutions can share knowledge within and outside. In relation, it can be used as a guide for HE students to assess and determine whether given cloud computing services should be discontinued, improved, or replaced by other related services. Moreover, this study can help the decision-making process in different organizations to more accurately and efficiently enhance knowledge management among users in the institution and other relevant organizations. Finally, HEIs can use these findings to adopt significant cloud services and applications to manage and enhance teaching as well as student-



teacher communication thus benefiting the community with knowledgeable service. Additionally, this study's findings help HEIs see opportunities to shift between vendors depending on the quality of cloud computing services they are offered. However, switching from present to new systems comes with both merits and demerits. Consequently, previous studies indicate that the benefits of adopting cloud computing in HEIs' knowledge management overwhelm the risks. However, possible risks however small should not be completely overlooked.

## 5 Availability of Data and Material

Data can be made available by contacting the corresponding authors.

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