IMPACT OF THE USAGE OF INFORMATION TECHNOLOGY TOOLS ON KNOWLEDGE MANAGEMENT PROCESS: A CASE OF MINISTRY OF LABOUR, UNITED ARAB EMIRATES (UAE)

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A thesis submitted in
Fulfilment of the requirement for the award of the
Master of Science in Technology Management

Faculty of Technology Management and Business
Universiti Tun Hussein Onn Malaysia

FEBRUARY 2023

To the memory of

I dedicate this thesis to my dear and beloved parents and family for their exceptional support, encouragement and prayers, in spite of the hard times they went through to keep me on the track to complete my master's program. Their constant support gave me the strength to withstand the obstacles I went through during my academic journey.

ACKNOWLEDGEMENT

ABSTRACT

The usage of IT tools is essential for knowledge management; however, studies reported that the role of IT in the knowledge management process has not been that successful mainly due to the improper usage and integration of information technology into knowledge management. In the UAE, there is no clear evidence for any study that has investigated the usage of IT tools in enhancing the KM process. Accordingly, the current study aims to identify IT tools and the effect of their usage on the KM process (knowledge sharing and knowledge application) in government organizations in the UAE. The current study employed a quantitative research design, and the data were collected through a survey. The sample size of the research is 269, who were selected based on convenience non-probability random sampling. The data was analysed using SPSS and PLS-SEM. The first research objective led to the identification of Cloud Computing (CC), Online Conferencing Systems (OCS), and Mobile Technology (MT) as the IT tools that affect the KM process. This objective was supported by the analysis of the mean values of each factor through SPSS, which showed that these factors have high mean values as follows: 3.988 for Cloud computing, 4.162 for OCS, and 4.146 for MT. The second research objective showed that only the usage of MT has a significant relationship with the knowledge management process (knowledge sharing and knowledge application), while the two variables CC and OCS do not have a significant relationship with knowledge sharing and knowledge application in government agencies in the UAE. The third research objective showed that Organization Culture (OC) significantly mediates the relationship between CC, MT, and OCS and the knowledge management process (knowledge sharing and knowledge application), but it did not significantly mediate the relationship between the CC and knowledge application. This research contributes to the understanding of the relationship between the usage of IT tools and the KM process in emerging countries since the usage of Information Technology tools is significant in supporting the KM process in organizations, especially since organizational culture is essential in supporting the KM process with the usage of IT tools. Also, policy and decision-makers need to consider the usage of IT tools and promote it in the organizational culture to support the enhancement of the KM process in the organization.

ABSTRAK

Penggunaan alatan IT adalah penting untuk pengurusan pengetahuan; walau bagaimanapun, kajian melaporkan bahawa peranan IT dalam proses pengurusan pengetahuan tidak begitu berjaya terutamanya disebabkan oleh penggunaan dan penyepaduan teknologi maklumat yang tidak betul ke dalam pengurusan pengetahuan. Di UAE, tiada bukti jelas bagi mana-mana kajian yang telah menyiasat penggunaan alat IT dalam meningkatkan proses KM. Sehubungan itu, kajian semasa bertujuan untuk mengenal pasti alatan IT dan kesan penggunaannya terhadap proses KM (perkongsian pengetahuan dan aplikasi pengetahuan) dalam organisasi kerajaan di UAE. Kajian semasa menggunakan reka bentuk penyelidikan kuantitatif, dan data dikumpulkan melalui tinjauan. Saiz sampel penyelidikan ialah 269, yang dipilih berdasarkan persampelan rawak bukan kebarangkalian kemudahan. Data dianalisis menggunakan SPSS dan PLS-SEM. Objektif penyelidikan pertama membawa kepada pengenalpastian Pengkomputeran Awan (CC), Sistem Persidangan Dalam Talian (OCS), dan Teknologi Mudah Alih (MT) sebagai alat IT yang mempengaruhi proses KM. Objektif ini disokong oleh analisis nilai min setiap faktor melalui SPSS, yang menunjukkan faktor-faktor tersebut mempunyai nilai min yang tinggi seperti berikut: 3.988 untuk pengkomputeran Awan, 4.162 untuk OCS, dan 4.146 untuk MT. Objektif kajian kedua menunjukkan hanya penggunaan MT mempunyai hubungan yang signifikan dengan proses pengurusan pengetahuan (perkongsian pengetahuan dan aplikasi pengetahuan), manakala kedua-dua pembolehubah CC dan OCS tidak mempunyai hubungan yang signifikan dengan perkongsian pengetahuan dan aplikasi pengetahuan di agensi kerajaan. di UAE. Objektif kajian ketiga menunjukkan bahawa Budaya Organisasi (OC) secara signifikan menjadi pengantara hubungan antara CC, MT, dan OCS dan proses pengurusan pengetahuan (perkongsian pengetahuan dan aplikasi pengetahuan), tetapi ia tidak secara signifikan menjadi pengantara hubungan antara CC dan aplikasi pengetahuan. Penyelidikan ini menyumbang kepada pemahaman tentang hubungan antara penggunaan alat IT dan proses KM di negara-negara membangun memandangkan penggunaan alat Teknologi Maklumat adalah signifikan dalam menyokong proses KM dalam organisasi, terutamanya kerana budaya organisasi adalah penting dalam menyokong proses KM. dengan penggunaan alatan IT. Selain itu, dasar dan pembuat keputusan perlu mempertimbangkan penggunaan alatan IT dan mempromosikannya dalam budaya organisasi untuk menyokong peningkatan proses KM dalam organisasi.

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LIST OF ABBREVIATIONS

IT	-	Information Technology
KM	-	Knowledge Management
CC	-	Cloud Computing
MT	-	Mobile Technology
OCS	-	Online Conferencing System
UAE	-	United Arab Emirates
SEM	-	Structural Equation Modeling

CHAPTER 1

INTRODUCTION

1.1   Introduction

The rapid growth of information technology (IT) and its influential domains affect all human aspects of life, including organizations through information technology tools and knowledge management processes. IT tools have transformed individual, organization, and government functions and helped to improve job performance (Ihnatenko *et al.,*2020). Undoubtedly, quick access to accurate information through IT tools is a key factor in the global competition era (Sharma & Sharma, 2020). Since information is a criterion and a touchstone for organization improvement, IT tools are growing rigorously around the world. Organizations require this technology to survive, and any organization ignore will likely be doomed to fail (Martínez-Caro *et al.*, 2020).

Due to the current information age explosion, it makes organizations emphasise information through using IT tools, which is considerably important in every aspect and dimension of the organization. One of the main elements related to the use of IT tools is facilitating knowledge management process (Gloet & Samson, 2020). Knowledge management process supports knowledge sharing with others and improves knowledge application to support the organization's performance (Obeso, *et al.,*2020; Ihnatenko, 2020).

Within the context of the IT tools and knowledge management processes, this chapter introduces the research; it starts with the background of the study, followed by problem statement, research questions, it continues with the aims and objectives of the research. The chapter also explained the significance of this research as well as the scope of the research.

1.2   Background of the Study

There is a constant discussion on the dynamic existence of market conditions and the advanced economy's sources of productivity. It asserted that knowledge, as the main economic resource in the advanced economy, easily overtakes capital and labor. In an enterprise, intangible assets are commonly regarded as critical components for improving productivity. This has forced scholars and practitioners to address the manner in which knowledge assets are managed; hence, in management science, knowledge management (KM) emerges as an important term. KM has been identified as one of the key drivers of organizational change and wealth formation, but it remains a source of uncertainty both theoretically and practically (Nauman *et al.,*2022).

While knowledge management is about managing the organization knowledge, IT tools have become essential to KM. Information technology tools for knowledge management is attributed to different forms of technology dealing with the processing, keeping and sending information electronically through computers, transmission via faxes, micrographs, and telecommunications (Gloet & Samson, 2020). So, the advancement of IT tools lead to the improvement of KM processes since technology tools have made knowledge practices, such as knowledge sharing and knowledge application, easier and more effective (Obeso *et al.,*2020). That is, Information Technology tools help to record, store, process, transfer and receive information. The resulting revolution in IT has enabled a lot of workers and employees to work at home, which shows the influence of IT tools on KM of the organization (Laudon *et al.,*2016).

With the aid of IT tools, the organizational framework may provide an environment suitable for creating and executing strategic knowledge management directly through decentralization, coherence, informality, and/or through the development of social interactions in order to enable the individual and mutual sharing of knowledge and experience indirectly. In other words, several variables are affected by knowledge management, but IT tools play a successful role in implementing knowledge management. Given the importance of knowledge management tools in information technology, it is therefore essential to apply them in order to strengthen and monitor the processes of change and growth within different organizations. The benefit is clearly shown by the efforts of business organizations to use knowledge management as much as possible in processes of growth and also in organizational change (Peppard *et al.,*2016).

One of the factors that influence KM is organizational culture through their behaviours and values, and the impact of organizational culture on KM has been proved in past literature (Afshari, 2020). KM practices focus on how new internal and external information is received, digested, and integrated into the organization memory so that organization staff can get meaning and put it in new data and information to take appropriate actions to improve the organization's competitive advantage and performance. This whole process is related to organizational culture since the values and behavioural norms of the staff are the centre of sense and meaning-making processes (Martínez-Caro *et al.*, 2020). This shows the tight relationship between IT tools, KM, and organizational culture.

In terms of the population in the UAE, the country saw rapid population growth during the last few years due to the noteworthy prosperity in several economic sectors, leading to an influx of personnel belonging to different cultures and having different religious backgrounds. The population of the UAE more than doubled from 4.1 million in 2005 to 8.3 million by year-end 2010. Of these individuals, the native Emirati population is less than one million (947,947).

The current population of the United Arab Emirates is 10,168,116 as of October, 2022, based on Worldometer elaboration of the latest United Nations data. According to the Statistics Centre, population statistics indicate that Abu Dhabi had

about 2.6 million residents, while the number was 2.3 million for Dubai as per the data provided by the Dubai Statistics Centre. The government of the UAE intends to create a better demographic balance in the context of the expatriates and the natives. In this regard, the President of the UAE, H. H. Sheikh Khalifa bin Zayed Al Nahyan, declared the year 2008 as the "year of national identity." Consequently, in this era of globalisation, the UAE began activities towards retaining the nation's identity. Population statistics of Abu Dhabi are shown in Table 1.1.

Table 1.1: Population Statistics for Abu Dhabi (as of 2021)

(www.worldometers.info)

Population					
Key Figures					
Indicator	2017	2018	2019	2020	2021
Total Population estimate – Emirate of Abu Dhabi	1,343,353	1,419,699	1,452,057	1,482,816	1,511,768
Population growth rate – Emirate of Abu Dhabi	5.68%	5.68%	2.28%	2.12%	1.95%
Population density estimate – Emirate of Abu Dhabi	72,241	76,346	32,358	30,759	28,952

The UAE is one of the most attractive markets of ICT in the region of the Middle East, since it focuses on digitalization initiatives with the aim of increasing the use of latest applications of technologies, including cloud, internet of things (IoT), big data analytics, and artificial intelligence (AI). Therefore, in the UAE, the ICT spending is expected to grow with a compound annual growth rate of 8% during the period 2019-2024 to become US$23bn by the year 2024 (Globaldata, 2022). Moreover, one of the strategic priorities for the government to achieve UAE vision 2021 is the competitive knowledge economy. Shifting to knowledge is based on a highly productive and competitive economy through investment in research, science and technology.

Knowledge management process refers to the company's implementation of a set of procedures for is intended to advance and apply knowledge since knowledge is continuously transformed into valuable data through the process of information management (Igbinovia & Ikenwe, 2017). Different scholars, like Igbinovia and Ikenwe (2017), have outlined some of the information management processes, which

are knowledge acquisition, knowledge storage, knowledge codification, knowledge sharing, knowledge application, and knowledge creation. But as all employees in any firm must essentially share knowledge and apply it in their work activities, so the current research concentrated on two aspects of knowledge management procedures, namely knowledge sharing and knowledge application.

Moreover, a baseline data of KM initiatives in both public and private UAE organizations (270 companies) was collected to assess their progress towards the usage of KM. Unfortunately, nearly 50% of the surveyed organizations are unaware of the KM concept (Ghabbour, 2017), which is the most important KM implementation barrier. In addition, most surveyed companies have currently focused only on the management of explicit knowledge practices with relative neglect of tacit knowledge; none of the surveyed companies hire KM officer or KM manager (Daleure, 2017). The UAE government has made great effort to support the application and use of IT tools in government organizations (Alkatheeri *et al.*, 2021), yet there is little investigation on the outcomes of these efforts. Hence, the focus of this study on government agencies since the main initiatives and strategies made by the UAE government have focused on this sector.

Besides, the issue of the business organisations in the UAE is that there is a weak knowledge management in the Middle Eastern countries in comparison with Western and Eastern business organisations, and these organizations have paid high attention to promote operational productivity but there is a need for more focus on the value of knowledge management (Raudeliuniene *et al.*, 2020). Neglecting the role of IT tools and KM has a negative impact on organisations' overall effectiveness and efficiency. Therefore, KM is an essential tool for gaining competitive advantage and improving performance, especially with using IT tools. Accordingly, the current study investigates IT tools impact on knowledge management processes in the context of the UAE.

1.3   Problem Statement

Recently, there has been a lot of interest in the academic and practical field of knowledge management (KM), but most of these studies have focused on the commercial rather than the public sector (Al Ahbabi *et al.,*2018). Since knowledge is a crucial resource for the public sector as it is for the private sector (Massaro *et al.,*2015), studies on KM in the public sector are fragmented and have failed to develop a coherent and consistent body of knowledge, which restrains understanding of KM in the public sector. This is especially true given that KM for the public sector is no longer a choice but rather an imperative if the respective country's public sector wishes to survive in the developing era of globalization (Al Ahbabi *et al.,*2018). Such limitations to the effective utilisation of KM in the public sector makes it the focus of the current research.

The usage of Information Technology (IT) in the knowledge management process is essential for an organization to move forward in future. Martínez-Caro *et al.* (2020) discussed that many organizations realized the importance of information technology for better organizational performance. For example, IT has been used to make essential changes in all its managerial system that affect work implementation and the organizations policies (Wiedenhöft *et al.,* 2020) and this essential to support knowledge management process in the organization (Yoshikuni & Albertin, 2020). With the advancement and increasing importance of knowledge management role within organizations that outline knowledge as the most strategic organizational resource, the question is still there to manage organizational knowledge effectively and efficiently to derive benefits from strategic goals.

Despite the importance of IT to the knowledge management process, many studies found that the role of IT in knowledge management process has not been so successful mainly due to improper usage and integration of information technology into knowledge management (Alrawi *et al.,*2018; Sachdeva *et al.,*2015; Hughes, *et al*, 2016; Morabito *et al.,*2015; Migdadi & Abu Zaid, 2016). Akram *et al.* (2018) stated that even though KM is a great asset to organizations to improve their competitive products and services, only a few organizations have efficient use of the

IT technologies to extract and then manage their knowledge resources. Moreover, past studies have highlighted that one of the issues related to KM is the lack of necessary KM tools and the weakness of the workers' IT skills (Akram *et al.,*2018).

In addition, knowledge management supports organizations to expand their capabilities by taking advantage of their staff's skills and intelligence because employees are the main source of new knowledge in any organization (Rana & Goel, 2017). This is related to organizational culture (i.e., the shared patterns of norms and values) to develop interpersonal interactions to ensure high quality knowledge management outcomes (Werner & Dickson, 2018; Kim & Chang, 2019). However, the issue is that even through organizational culture leverages knowledge management (Prasetyo, 2017), studies on knowledge management are constantly needed to examine the evolving role of organizational culture in facilitating the process of knowledge management (Afshari *et al.,*2020).

Many factors affect the necessity of adopting information technology since it has a direct impact on how to manage the information of the organization for better performance (Agrawal *et al.,*2021). Hence, the gap of this study is to relate the impact of the usage of IT tools on knowledge management processes in the UAE government agencies, especially that most of the studies on KM focused on private sector (Al Ahbabi *et al.,*2018). The study concentrates on recognizing the nature of the relationship between the usage of the tools of information technology and knowledge management processes to highlight the importance of the usage of information technology in knowledge management (Hughes *et al.,*2016). That is, there is a under investigation on the topic of the usage of IT tools and knowledge management processes in the context of the UAE, especially in the public sector, which shows the need for the current study to highlight the relationship between the two essential factors of any organizations, namely the usage of IT tools and KM processes, in order to improve the organization performance and its competitive advantage.

For these reasons, this study made efforts to relate knowledge management with the usage of IT tools to better understand their impact on UAE government organizations/agencies, especially that IT tools are advancing, which requires

capturing the new trends for better KM. To enable the UAE government to progress and develop their organizations' performance better, it needs to embrace information technology with their employees' mentality skills and creativity in achieving organizational culture characterized by experimentation and courageous decision-making. It also needs the pursuit of creativity and innovation as well as a complete knowledge of the work and its requirements (Chege *et al.*, 2020).

1.4   Research Questions

The research questions to be answered in this research are as follows:

1.   What is the level of the usage of the IT tools in terms of their usage in knowledge management process in UAE government agencies?

2.   What is the relationship between the usage of IT tools and knowledge management process in UAE government agencies?

3.   What is the mediating effect of organizational culture on the relationship between the usage of IT tools and knowledge management process in UAE government agencies?

1.5   Aim and Objectives of the Research

The aim of this study is to investigate the relationship between the usage of IT tools (Cloud computing, Online conferencing system, and Mobile technology) on knowledge management processes (knowledge sharing and knowledge application) in the UAE government agency/organization. This aim is achieved through the following objectives:

1.   To identify the level of the usage of IT tools related to knowledge management process among UAE government agencies.

2.   To investigate the relationship between the usage of IT tools and knowledge management process in UAE government agencies.

3. To assess the mediating role of organizational culture values on the relationship between the usage of IT tools and knowledge management process in UAE government agencies.

1.6   Significance of the Research

The current study has theoretical and practical significance. Theoretically, the importance of this study comes from caring about users, with the attention mostly be focused on information technology tools. Since this study concerned with using information technology tools for knowledge management processes, the findings and final structural model will provide a bulk of ideas to those interested in IT and KM, including academicians, scholars, and organizations' decision-makers.

Another theoretical significance is highlighting the importance of technical and non-technological approaches to knowledge management, which is related to knowledge-based theory of the firm in this research. In this research, organisational culture is a non-technical element, but the other IT tool elements (Cloud computing, Online conferencing system, and Mobile technology) are technological, while the independent factor is knowledge management. Relating the research investigation to the knowledge-based theory of the firm supports using the usage of IT tools and knowledge management as significant sources of any organization.

The importance of this research also comes from investigating information technology and its effect on the processes of knowledge management in the government agencies of the UAE. It is important for this study to discuss one of the organizational principles that use information technology, and it is one of the important topics in modern management, and to be an important source of organizational survival and continuity, particularly in companies that strive to follow a modern management strategy that aims to improve effectiveness and efficiency of performance. Therefore, decision-makers' findings can be utilized by decision-makers to apply the findings to improve organization performance through IT and KM.

Another practical implication is for policy-maker since information technology plays a key role in facilitating knowledge creation and management. Also, the findings extracted from this study can be used by experts, organizational policies and procedures, problem solving episodes, etc. because such elements are captured in the organizational knowledge base.

Another practical significance is that the concept of information technology is relatively recent in the environment, so that the subject of the concept applied to the study gives clear significance to advanced management methods in the acquisition of knowledge and skills within the scientific framework and is used to improve performance and increase productivity. The importance of this study stems from the importance of the UAE government agencies' usage of information technology as IT tools allows to incorporate modern working methods varies from conventional work, allowing them to address their problems and accept changes. This study may also draw the attention of decision-makers in the government agencies of the UAE to the value of using information system technology management to improve them, as well as to assist in the proper use of knowledge.

1.7   Scope of the Research

This study focuses on the impact of IT on knowledge management processes in the United Arab Emirate government agency. In terms of the research variables, the independent variables are the usage of cloud computing, usage of online conferencing, and usage of mobile technology, while the mediator is organization culture, and the dependent variable is knowledge management process (knowledge sharing and knowledge application). Since the IT and knowledge management are the main concern, the study uses government organizations of UAE. To be specific, ministry of labor is the case study of this research. In order to get rich data, the data has been collected from the operational and managerial staff of this ministry in the UAE by the end of the year 2021 using non-probability convenient sampling technique.

1.8 Operational Definitions

Knowledge Management Process: knowledge management process refers the "formation and consequent management of a surrounding which gives confidence for knowledge to be created, transferred, learned, advanced, planned and used for the welfare of the firm and its consumers" The British Standards Institution (BSI, 2003). In this research, knowledge management process will measured by investigating the usage of the process of KM in the organization.

Knowledge sharing: It is an act by which information, knowledge, ideas, skills and experiences acquired are exchanged and shared between individuals, organizations and institutions (Ikenwe & Igbinovia, 2015). In this research, knowledge sharing will be measured by the practice of the individuals in terms of sharing knowledge with the others.

Knowledge application: information can be used affectively and efficiently to fill a void or to fill a need. The proper application of the obtained, processed, generated and exchanged information requires proper communication of the knowledge to users (Dhamdhere, 2015). This variable will be measured by the practice of using knowledge to improve their work.

Information Technology (IT): organizing and communicating information effectively is referred to as information technology. Organizations may develop facilities and instruments to support the expansion of KM with the aid of information technology (Mathi, 2004). In this research Information Technology usage refers to the use of IT tools at the organization.

Cloud Computing Usage: it is a method that uses developments in ITs such as virtualization and grid computing to deliver a range of IT services via software and virtual hardware (as opposed to physical) provided (by data centers owned and operated by cloud providers and/or end users) according to user requirements and needs (Zhang *et al.,*2010). Cloud computing usage in this research refers to the usage of cloud computing in work activities, such as sending information to the others and getting updates about the work.

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