

Information Technology Knowledge Management taxonomy to enhance government electronic services in existence of COVID 19 outbreak

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Abstract

Information technology and the need for timely and effective communication during the Covid-19 have made most governments adopt technological approaches to provide their services. E-government services have been adopted by most governments especially in developed countries to quickly and effectively share information. This study discusses the reasons why governments in the Gulf region should develop a new model for information technology knowledge management practices. To achieve this, the author identified possible benefits of adopting information technology knowledge management practices and why most governments in the Gulf find it hard to adopt them. Knowledge management allows for learning, transfer as well as sharing of information between government organizations and citizens and with the development of technology, the effectiveness of electronic services can easily be achieved. Also, effective adoption of information technology can improve knowledge management with the help of techniques that enhance capture, storage, retrieval as well as sharing of information. The author used systematic literature review to select 28 journals and articles published post 2019. IEEE, Google Scholar and Science Direct were used to select potential studies from which 722 journals and articles were selected. Through screening and eligibility assessment, 21 articles were retained while the back and forward search had 7 more articles which were also included in the study. Using information gathered from these articles and journals a new conceptual model was developed to help improve information technology knowledge management for governments in the Gulf region to effectively deliver e-services during Covid-19. This model was developed based on the process of KM, Theory of Planned Behavior and Unified Theory of Acceptance and Use of Technology. Based on the developed model. From UTAUT model, performance expectancy, effort expectancy as well as social influence had a great impact.

Key words:

Information Technology, Knowledge Management, Government E-services, Performance Expectancy, Effort Expectancy.

1. Introduction

1.1 Background

Different organizations currently experience diverse drawbacks to keeping their operations running.

Among these issues are increased employee turnover and the need to not only make accurate but also quick decisions. These challenges and others related to this can be addressed by implementation of operative knowledge management practices with the help of technological solutions (Hock-Doepgen *et al.*, 2021). According to Santoro *et al.* (2019), public sectors globally are aiming at becoming more effective as well as efficient so as to address the constantly emerging wants of their citizens. Following the onset of Covid-19, most governments have relied on technology as a tool to offer their beneficiaries with essential services. As such, Abdulrahim & Mabrouk (2020) note digital transformation continue to be significant for both public and private organizations not only as a response to Covid-19 but also, the speed at which technology has taken over most people's lives.

1.2 Previous Findings

Although most governments continue to rely on technology in response to Covid-19, not all public and private services have adopted to it. According to Elavarasan & Pugazhendhi (2020), most governments lack knowledge and training that can allow transform through technology during the current pandemic. While most public administration services are making great progress, total possibility of most States to adapt technology remain untapped. A study by Dwivedi *et al.* (2020) found out that the present escalating need of government operational change due to Covid-19 is interfering through technology transformation how knowledge management practices are looked at so as to effectively address people's social needs or enhance service delivery. Therefore, understanding as well as predicting such changes is significant for policy makers and government executives to effectively prepare, devise, implement as well evaluate government's technology related decision.

Less research is conducted in the Arab countries regarding KM and Al Yami & Ajmal (2019) associated it with increased levels of illiteracy, lack of enough ICT as well mediocre investments in research and development and further explain that, in case this situation continuous, the gulf region will continue lagging behind. Rashid & Bin

Yeop (2020) found out that Arab countries including Saudi Arabia, Kuwait as well as Oman are using colonial legacies' public administrative practices and therefore encounter many challenges making government services more effective.

1.3 Research Problem

For some time, there have been lively debates regarding the role of information technology in knowledge management. On one hand, Alvarenga *et al.* (2020) allude that information technology is pervasively adopted by most organizations and therefore qualifies to be considered as a natural medium for knowledge flow. A study by Israilidis, Odusanya & Mazhar (2019), also concluded that most firms adopting knowledge management practices to achieve their goals basically depend on implementing effective IT infrastructure. On the other hand, Zaim, Muhammed & Tarim (2019) note that knowledge management theorists warn against the attitude which forces management to adopt strong investments in information technology at the expense of investing possibly in human capital. This is argued on the assumption that IT-centered knowledge management approaches are more like to objectify as well as petrify knowledge into static inert hence overlooking the value of tacit knowledge. Contrarily, the existence of Covid-19 has changed how different organizations operate. For instance, different governments have and continue to shift to technology as an effective way to offer their services to beneficiaries. Although this has been effective in most countries, this study suggests that the gulf region requires a scientific taxonomy to develop their IT knowledge management to improve services provision. As such, this research aims to answer the following research question:

What information technology knowledge management taxonomy can be adopted to enhance government electronic services in existence of COVID 19 outbreak in the gulf?

1.4 Significance of the Study

This study suggests a new framework that can offer governments in the gulf region new information technology knowledge management so as to increase governments electronic services during the Covid-19 pandemic. Moreover, this framework can also help other organizations in both private and public sectors such as schools and hospitals to develop or improve existing information technology management practices.

1.5 Limitation of the Study

Some reviews did not offer precise summaries of the researches that were used to draw conclusion while others greatly depended on few databases to source for richer studies. As such, these researches were rejected hence reducing total number of journals adopted for this research. Even so, the researcher effectively adopted the inclusion

and exclusion method to separately evaluate previous researches to gather rich data which was used in this study.

1.6 Operation Definition

Information technology, knowledge management and electronic services are key variables in this research. Information technology in this study is used to refer to developing communication networks for organizations, safe guarding data as well as information, developing and implementing databases for more effective service delivery. Second, Knowledge management here refers to the process of developing, sharing and utilization of knowledge as well as information in a given information. In this essence, knowledge refers to both explicit and tacit. Lastly, electronic services are services provided by a given organization for effective communication and information sharing of information whilst relying on technology.

2. Research Methods and Procedures

Systematic literature review was adopted for this research. According to Xiao & Watson (2019), systematic literature review is effectively conducted in four stages; first, the researcher specifically selected studies that provided vivid guidance about literature review used and also, literature reviews that seemed to directly address our study's research questions were rejected. Additionally, the researcher adopted identification approach to select top ranked journals by basically searching for key words through databases as well as other reliable sources. The author searched for studies related to information technology knowledge management and government electronic services in the Arab Gulf regions these using IEEE, Google Scholar as well as Science Direct. During this process, references for each potential journal were also scanned to increase accessibility to more valuable researches. To attain this the following keywords were used to search for relevant journals; *knowledge management practices, government electronic services and information technology knowledge management*. The author then specified the searches to Gulf region including several countries such as Saudi Arabia, Oman, UAE, Kuwait and well as Bahrain. Additionally, these searches were limited to the governments and their organizations. Finally, the author limited the search to journals published from 2019 which are highly ranked to ensure that findings are based on rich and more recent content.

Third, after the author completes the inclusion and exclusion process, journals perceived to have enough content for this study were listed in a table and screened for both eligibility as well as relevancy to the research topic. During this process, duplicate articles were identified and only one from each set of duplicates was selected while others were discarded. Additionally, the author carried out a parallel assessment to ascertain discrepancies and effectively resolved them. The author then developed a list

of full-text journals to conduct quality assessment. Fourth, gathered journals were compared to knowledge *management practices, government electronic services and information technology knowledge management* and assessed for eligibility based on the inclusion and exclusion approach. The author thus selected journals that aimed at assessing user perceptions towards government electronic services or comparing public to private electronic services published post 2019. Additionally, selected articles were peer-reviewed. Moreover, articles that aimed at assessing and/or comparing information technology, knowledge management and electronic services were disregarded. Also, articles that just focused on investigating implementation of knowledge management, information technology as well as electronic services were also rejected. Lastly, inclusion of studies also dwelt much on top ranked articles with appropriate references.

Moreover, the author conducted a separate independent parallel assessment to ascertain the quality and also, eligibility and, discrepancies were solved. Some articles were also excluded at this point for various reasons among them lack of clear literature review of the research topic, lack of precise direction of adopted methodology as well as lack of full text. Finally, the research also carried out a back and forward search which allowed for collection of more literature for more reliable results and informed conclusion. After assessment of journals' literature reviews, some more journals were found to be eligible following their adherence to the need referencing.

The researcher had 711 journals from the search (See Fig.1). 68 were excluded since they were duplicates. The researcher screened titles and abstracts of the remaining 643 journals and 511 were rejected. The remaining 132 full text articles were related with adoption of knowledge management and assessed evaluated using the inclusion and exclusion criteria that eliminated 111 more journals for not having meaningful relations with knowledge management in government electronic services and therefore 21 journals were select for this study. To increase total number of journals for richer literature review, the researcher also carried out a back and forward search and selected 7 more articles. Therefore, 28 journals were used for this research (See Table 1).

2. Results and Discussion

Several studies have indicated that different countries in the Gulf region adopt knowledge management differently at for different reasons. A research by Mc Evoy, Ragab & Arisha (2019) summarized key influencers for adopting knowledge management within most public sectors under four aspects; a lot of governments have for long been striving to enhance public service effectiveness and therefore, adoption of KM can help facilitate knowledge transfer as well as sharing between the governments and

their citizens; the need to develop or enhancing knowledge repertoires that may already be existing; the need to rely on knowledge to make decisions and policies to meet defined goals and; to maximize responsiveness. In relation, Butt & Ahmad (2019) also found out that the effectiveness of public sectors in most organizations as well as the shift to more enhanced decision making in the United Arab Emirates are major reasons for adopting KM initiatives. These findings further indicate that, governments need not to focus on implementation of KM programs for specifically organizational reasons but rather aim at developing intellectual capital as well as involve the public in the process of making decisions through transparent information and knowledge sharing.

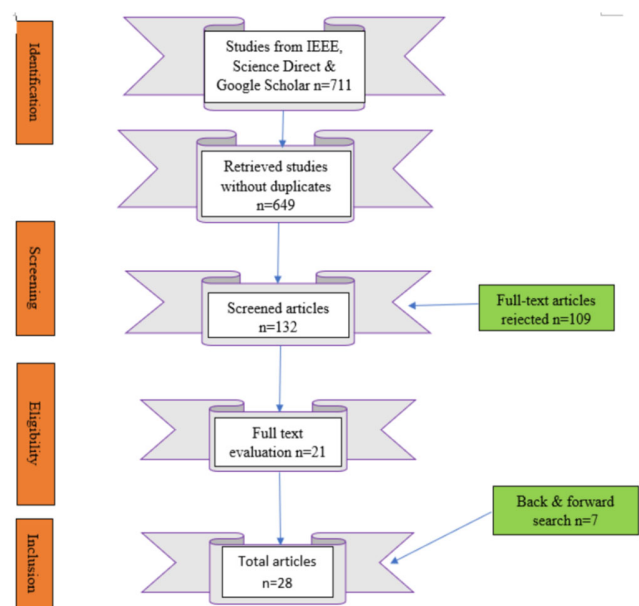


Figure 1: Systematic Literature Review

Areed, Salloum & Shaalan (2021) assessed the impact of knowledge management in public organizations in Saudi Arabia, Kuwait and Oman categorizing knowledge as tacit to imply knowledge from recorded data and that which is knowledge achieved through learning and experience and concluded that, knowledge management help organizations enhance associations, efficiency, prevention of knowledge overflow, improve decision and policy making as well as fostering innovation. According to Tong & Baslom (2019), the countries in the Gulf region have been affected by different aspects including increased levels of illiteracy and that KM adopted is from Western countries such as Britain and U.S.A. On the other hand, Mc Evoy, Ragab & Arisha (2019) found out that the delayed adoption of KM in the Gulf region is highly contributed to by economic as well as political bottlenecks that have been on for decades. A study by Sfeir (2019) evaluated KM practices and the challenges

in the Gulf region and found out that cultural issues contributed to a great extent and this included over dependence on social networks as well as their links to work relationships referred to as “*wasta*.” According to Weir, Sultan & van de Bunt (2019), *Wasta* is perceived to favor unqualified people and overlook the qualified at workplaces. As a result, most people are recruited in unsuitable jobs. According to AlBadri & Badawood (2020), some Gulf region countries indicated that the concept of knowledge management is not just unclear but also vague and the reason for this could be that, KM was introduced to this region recently and therefore requires more time to be effectively adopted. As such, these findings further suggest that organizations should invest more in training workshops as well as seminars to help employees get a clearer understanding of the benefits of KM and its effect on the entire organization.

Based on studies carried out in the Gulf Region, various government levels have support national programs with the aim of improving awareness regarding strategic importance of KM in different countries’ economic as well as social development. For instance, Yunus & Rashid (2019) found out that the UAE has greatly improved the concept of KM by adopting unique initiatives including establishment of free zones like knowledge village, internet city as well as media city in order to attract international training institutes. Abusweilem & Abualoush (2019) characterize knowledge management process into creation and acquisition, diffusion and integration as well as storage. A study by Alshahrani, Stewart & MacLure (2019) on the role of technology on KM in Kuwait, Oman and Saudi Arabia indicated that, primarily, IT helps organizations in the phase of creating knowledge by adoption data mining as well as data visualization techniques. Secondly, storage of knowledge is also supported by IT tools in line with management systems and finally, the process of knowledge transfer is also aided by IT tools whilst adopting application as well as consumption of cloud computing.

According to Mittal & Kumar (2019), KM and IT play a complementary and critical role in ensuring organizational success. Although, IT has proven to be effective in knowledge management for most organization, some governments still experience drawbacks in adopting IT practices. Alkhawaiter (2020) conducted a systematic literature review to assess the challenges of adopting IT in public services in the Gulf region using 29 articles and summarized findings as indicated in figure 2. These findings farther concluded that accessibility to service systems, technical skills, IT infrastructure and management affect adoption of IT techniques to enhance KM to great extent while cultural and social factors as well as training and one’s personal skills had least effect. On the hand, Elnaghi *et al.* (2019) found that although trainings and personal skills did not seem to have an effect on the general

public’s perception of KM, it had a great influence on how governments in the Guld region delivered e-services to the public.

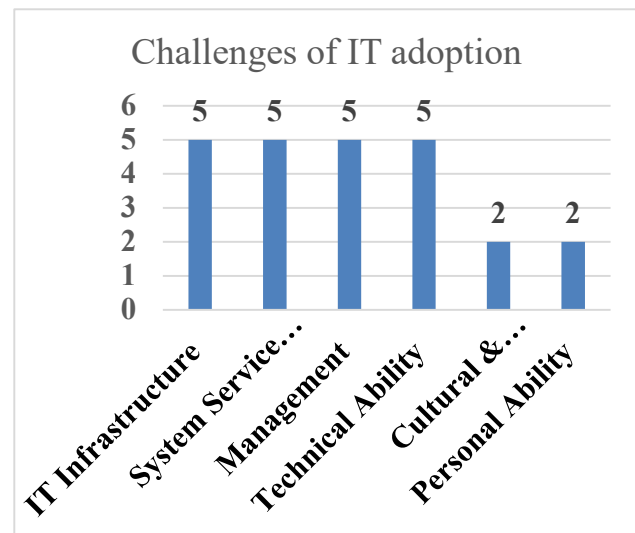


Figure 2: Factors affecting IT adoption in Gulf governments
Source: Elnaghi *et al.*, (2019)

Additionally, other studies have characterized acceptance and adoption of IT based on different aspects. For instance, a study by Badawood & AlBadri (2021) on the need for incorporating IT in KM practices concluded that, performance expectancy, effort expectancy, social influence as well as facilitating conditions had a great impact. In relation, research by Alhuwail & Abdulsalam (2019) noted that some reasons for IT consumption among Gulf region countries include increased accessibility to crucial information by citizens and convenience of accessing such information. Raudeliuniene, Albats & Kordab (2020) also concluded that information technology continues to be a vital contributor to effective knowledge management with the ability to capture, store, transform as well as share knowledge. Moreover, Ncoyini & Cilliers (2020) affirm that basically, KM aims at integrating one’s tacit knowledge and available explicit knowledge in order to direct an individual’s development as well as organizations.

To enhance one knowledge as an asset, organizations create frameworks which aim at enhancing knowledge sharing and also, collaboration. According to Oktari, Munadi & Idroes (2020), there is need for the governments in the Gulf to embrace systematic knowledge practices so as to link citizens with its public service providers as well as external bodies. Following the existence of Covid-19, technological devices that enable individuals to share as well as retrieve information are significant for most countries since the public is easily notified on the progress

of the virus and the possible measures to minimize its spread. A study by Al Ahabbi *et al.* (2019) concluded that the main aspect regarding the effect of information technology on knowledge management in Bahrain's government organizations was thought by most citizens to be determined by the extent to which it enhances accessibility to information and solutions to some related issues. This research also indicated that consumers of IT in Bahrain believed that it was easier if they accessed information regarding Covid-19 at their own pace than when they are educated by other sources. Also, the need for effective communication to enhance knowledge development was found to directly influence perceptions of employees in government organizations perceptions

towards adopting technological practices alongside KM practices.

As presents in figure 3, the author used the Theory of planned behavior as well as the Unified Theory of Acceptance and Use of Technology to create a novel framework that can be used by governments of countries in the Gulf region to enhance government electronic services during Covid-19. This research has adopted these theories alongside the process of knowledge management. According to Chen *et al.* (2020) social influence from peers also affects how citizens react to and whether they use government electronic services or not.

Table 1: List of journals Reviewed

Authors	Information Technology	Information technology acceptance	Government e-services	Knowledge management
Abdulrahim & Mabrouk (2020).	✓	✓	✓	
Al Ahabbi, Singh, Balasubramanian & Gaur (2019)				✓
Al Yami & Ajmal (2019)			✓	✓
AlBadri & Badawood (2020)	✓	✓		✓
Alhuwail & Abdulsalam. (2019).	✓	✓	✓	
Alkhowaiter (2020)	✓	✓		
Alshahrani, Stewart & MacLure (2019).	✓	✓	✓	
Alvarenga <i>et al.</i> , (2020)	✓	✓		✓
Areed, Salloum & Shaalan. (2021).	✓	✓		✓
Badawood & AlBadri (2021).	✓	✓		✓
Chen <i>et al.</i> , (2019)	✓	✓	✓	
Elavarasan & Pugazhendhi (2020)	✓	✓	✓	
Elnaghi <i>et al.</i> , (2019)	✓	✓	✓	
Butt & Ahmad (2019)				✓
Dwivedi <i>et al.</i> , (2020)	✓	✓		✓
Hock-Doepgen <i>et al.</i> , (2021)	✓	✓		✓
Israilidis, Odusanya & Mazhar (2019).	✓	✓		✓
Mc Evoy, Ragab & Arisha (2019)				✓
Mittal & Kumar (2019).				✓
Ncoyini & Cilliers (2020)	✓	✓		✓
Oktari, Munadi & Idroes (2020).				✓
Rashid & Bin Yeop (2020).			✓	✓
Raudeliuniene, Albats & Kordab (2020)	✓	✓		✓
Santoro <i>et al.</i> , (2019)	✓	✓		✓
Sfeir (2019)				✓
Yunus & Rashid (2019).				✓
Tong & Baslom (2019).				✓
Zaim, Muhammed & Tarim (2019)				✓

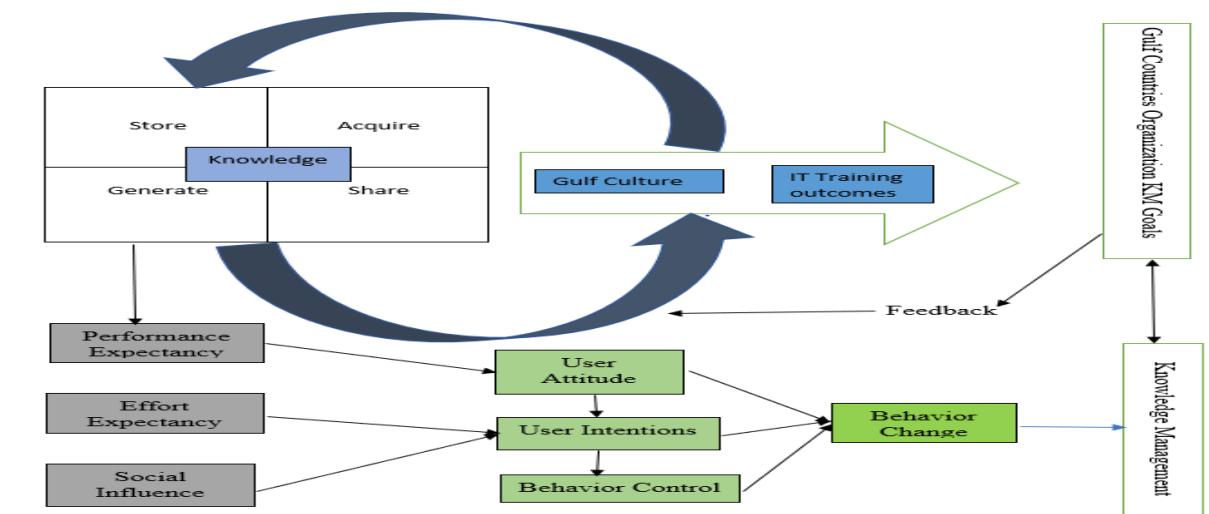


Figure 3: Suggested Model

4. Conclusion

The researcher aimed at assessing information technology knowledge management with references to government electronic services among Gulf region countries. The author evaluated the prospects and drawbacks associated with adoption of information technology practices to improve knowledge management. Based on the findings, this study has used the UTAUT model, Theory of Planned Behavior and suggested a new model that can be adopted by governments in the Gulf region to enhance effective knowledge management and deliver effective electronic services during Covid-19. This research offers not only the governments in the Gulf but those of developing and undeveloped countries with clearer understanding of approaches towards effective government electronic services delivery through effective information technology knowledge management practices given that most of them have been hit hard by the pandemic. Additionally, organizations can use this model to assess whether their information technology practices they are providing to citizens should be enhanced or discontinued.

References

- [1] Abdulrahim, H., & Mabrouk, F. (2020). COVID-19 and the Digital Transformation of Saudi Higher Education. *Asian Journal of Distance Education*, 15(1), 291-306.
- [2] Abusweilem, M., & Abualoush, S. (2019). The impact of knowledge management process and business intelligence on organizational performance. *Management Science Letters*, 9(12), 2143-2156.
- [3] Al Ahababi, S. A., Singh, S. K., Balasubramanian, S., & Gaur, S. S. (2019). Employee perception of impact of knowledge management processes on public sector performance. *Journal of Knowledge Management*.
- [4] Al Yami, M., & Ajmal, M. M. (2019). Pursuing sustainable development with knowledge management in public sector. *VINE Journal of Information and Knowledge Management Systems*.
- [5] AlBadri, H., & Badawood, A. (2020). Based model: Using knowledge management to enhance information technology training outcomes among markets requirements. *Indian Journal of Science and Technology*, 13(14), 1486-1492.
- [6] Alhuwail, D., & Abdulsalam, Y. (2019). Assessing electronic health literacy in the state of Kuwait: Survey of internet users from an Arab state. *Journal of medical Internet research*, 21(5), e11174.
- [7] Alkhawaiter, W.A., 2020. Digital payment and banking adoption research in Gulf countries: A systematic literature review. *International Journal of Information Management*, 53, p.102102.
- [8] Alshahrani, A., Stewart, D., & MacLure, K. (2019). A systematic review of the adoption and acceptance of eHealth in Saudi Arabia: views of multiple stakeholders. *International journal of medical informatics*, 128, 7-17.
- [9] Alvarenga, A., Matos, F., Godina, R., & CO Matias, J. (2020). Digital transformation and knowledge management in the public sector. *Sustainability*, 12(14), 5824.
- [10] Areed, S., Salloum, S. A., & Shaalan, K. (2021). The role of knowledge management processes for enhancing and supporting innovative organizations: a systematic review. *Recent Advances in Intelligent Systems and Smart Applications*, 143-161.

- [11] Badawood, A., & AlBadri, H. (2021). Conceptual Model for Organizational Knowledge Management Improvement via Cloud-based Platform in Gulf Region HEI.
- [12] Butt, A. S., & Ahmad, A. B. (2019). Are there any antecedents of top-down knowledge hiding in firms? Evidence from the United Arab Emirates. *Journal of Knowledge Management*.
- [13] Chen, Q., Min, C., Zhang, W., Wang, G., Ma, X., & Evans, R. (2020). Unpacking the black box: How to promote citizen engagement through government social media during the COVID-19 crisis. *Computers in human behavior*, 110, 106380.
- [14] Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... & Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. *International Journal of Information Management*, 55, 102211.
- [15] Elavarasan, R. M., & Pugazhendhi, R. (2020). Restructured society and environment: A review on potential technological strategies to control the COVID-19 pandemic. *Science of The Total Environment*, 725, 138858.
- [16] Elnaghi, M., Alshawi, S. N., Kamal, M. M., Weerakkody, V., & Irani, Z. (2019). Exploring the role of a government authority in managing transformation in service re-engineering—Experiences from Dubai police. *Government Information Quarterly*, 36(2), 196-207.
- [17] Hock-Doepgen, M., Clauss, T., Kraus, S., & Cheng, C. F. (2021). Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs. *Journal of Business Research*, 130, 683-697.
- [18] Israilidis, J., Odusanya, K., & Mazhar, M. U. (2019). Exploring knowledge management perspectives in smart city research: A review and future research agenda. *International Journal of Information Management*, 101989.
- [19] Mc Evoy, P. J., Ragab, M. A., & Arisha, A. (2019). The effectiveness of knowledge management in the public sector. *Knowledge Management Research & Practice*, 17(1), 39-51.
- [20] Mittal, S., & Kumar, V. (2019). Study of knowledge management models and their relevance in organisations. *International Journal of Knowledge Management Studies*, 10(3), 322-335.
- [21] Ncoyini, S. S., & Cilliers, L. (2020). Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality, Eastern Cape, South Africa. *SA Journal of Human Resource Management*, 18(1), 1-11.
- [22] Oktari, R. S., Munadi, K., & Idroes, R. (2020). Knowledge management practices in disaster management: Systematic review. *International Journal of Disaster Risk Reduction*, 101881.
- [23] Rashid, M. S., & Bin Yeop, N. K. (2020). The Effect of Organizational Culture on Knowledge Management and Managerial Performance of Government Department in Dubai. *European Journal of Multidisciplinary Studies*, January–April, 5(1), 47-52.
- [24] Raudeliuniene, J., Albats, E., & Kordab, M. (2020). Impact of information technologies and social networks on knowledge management processes in Middle Eastern audit and consulting companies. *Journal of Knowledge Management*.
- [25] Santoro, G., Thrassou, A., Bresciani, S., & Del Giudice, M. (2019). Do knowledge management and dynamic capabilities affect ambidextrous entrepreneurial intensity and firms' performance?. *IEEE Transactions on Engineering Management*.
- [26] Sfeir, E. K. (2019). Wasta, the impact of preferment on organizational culture and human resource management. *International Journal of Applied Management Theory and Research (IJAMTR)*, 1(1), 16-31.
- [27] Tong, S., & Baslom, M. M. M. (2019). Knowledge management (KM) practices in education and learning: Establishing a knowledge economy in Saudi Arabia. *Humanities and Social Sciences Letters*, 7(1), 1-9.
- [28] Weir, D., Sultan, N., & van de Bunt, S. (2019). Doing business in the Arab world: Unlocking the potential of wasta. In *Globalization and Development* (pp. 323-341). Springer, Cham.
- [29] Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of Planning Education and Research*, 39(1), 93-112.
- [30] Yunus, N. K. Y., & Rashid, M. S. (2019). The Role of Knowledge Management to Enhancing Public Services in Dubai. *European Journal of Interdisciplinary Studies*, 5(1), 64.
- [31] Zaim, H., Muhammed, S., & Tarim, M. (2019). Relationship between knowledge management processes and performance: Critical role of knowledge utilization in organizations. *Knowledge Management Research & Practice*, 17(1), 24-38.