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Abdullah Fahad AlMulhim

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*Corresponding author: Abdullah Fahad AlMulhim, Department of Business Administration, College of Business, Jouf University, Sakaka, Saudi Arabia
E-mail: Afalmulhim@ju.edu.sa

MANAGEMENT | RESEARCH ARTICLE

The impact of administrative management and information technology on e-government success: The mediating role of knowledge management practices

Abdullah Fahad AlMulhim[1]*

Abstract: This study examines the impact of administrative management and information technology on e-government success with the mediation role of knowledge management practices. For this purpose, data was gathered from 163 public sector participants in the Al-Jouf region of Saudi Arabia. This study uses partial least squares structural equation modeling (PLS-SEM) to test and validate the research model and proposed hypotheses. The findings show that information technology and administrative management significantly increase e-government success and knowledge management practices. Moreover, the findings revealed that knowledge management practices play a vital mediating role between information technology and administrative management to make e-government success more successful and to reduce risk. Furthermore, this study strengthens the theoretical and practical implications of e-government by developing a link with socio-technical systems theory as well as with Fayol's administrative management theory. In the end, the study recommends that policymakers and managers take serious steps to attain advantages in the application of technologies in e-government to fulfill the renewable and changing needs of beneficiaries.

Subjects: Public & Nonprofit Management; Strategic Management; Management of Technology & Innovation

Keywords: information technology; administrative management; e-government success; knowledge management practices; Al-Jouf region; Saudi Arabia

1. Introduction
Technology has invaded all fields of life, and the importance of e-government has been increasing worldwide, not only for citizens' ease of use but also for transparency and to eliminate corruption (Máchová et al., 2018; Sadik-Zada et al., 2022). E-government electronically provides enhancements to different stakeholders such as employees, citizens, local governments, and businesses (Chohan & Hu, 2022; Ciesielska et al., 2022). However, the actual implementation of e-governance is an extraordinary task. The administration faces multiple challenges, such as psychological resistance from citizens, the country's digital infrastructure (websites, apps, etc.), and the legal substructure. As such, governments cannot resort to e-governance without giving due regard to challenges and objections from specific stakeholders (Bamufleh et al., 2021; Turban et al., 2021).

Successful implementation of e-governments in different countries has necessitated that administrations become online savvy. Policymakers, society, and researchers are analyzing this dramatic change (traditional to digital) in government service more closely, trying to find more appropriate implementation within the limitations of the country's resources. Therefore, successful implementation depends on aspects such as administrative management, the use of information technology, and knowledge management practices (Abu-Shanab & Shehabat, 2018; Sulistiawaty et al., 2021).

In this situation, e-governing needs well-standardized web development and application, which cannot be processed without information technology know-how (Tan et al., 2022). Electronic management of data is insufficient to bring a government online; it also needs continuous enhancement, which is only possible with the help of information technology. At the same time, administrative management makes information public during the development and application of e-government (Chen & Kim, 2019); if this data is managed inefficiently, it can cause the e-government to fail. Furthermore, knowledge management practices, an important indicator of e-government, are imperative for the delivery of quality government service (Cheshmehzangi, 2022) and play a significant role in collaborating with information technology teams and administrative management to enhance the capability of e-government service (Sachan et al., 2018).

Recent research (Ciesielska et al., 2022; Tan et al., 2022; Turban et al., 2021) has been conducted on e-government and the factors contributing to its successful execution. But in some studies, there is no significant data on the interaction of e-governance with either public employees or knowledge management practices. Some studies uncovered significant challenges, such as the inability to use information technology, the absence of an independent governing body, or inadequate information on technological infrastructure for e-governance success (Abu-Shanab & Shehabat, 2018; Choi & Chandler, 2020). However, Sachan et al. (2018) explained that good e-government delivery needs a good knowledge management strategy, which has not been well detailed. On the other hand, Sulistiawaty et al. (2021) proved by data analysis that knowledge management practices do not have a direct influence on e-government success and further explained that knowledge management practices only mediate the effect of information technology on e-government and do not play any role as mediator between administrative management and the success of e-government.

In contrast, Williams (2021) explained knowledge management as the live wire of government agencies that ensures the delivery of e-government services through the assistance of technology. Almukhlifi et al. (2019) explained that e-government implementation is still limited in Saudi Arabia despite its noteworthy development and expansion. Further, this study relates the socio-technical systems theory with e-government. There are some studies, such as (Kompella, 2017; Zhang et al., 2018) and recently (Bakunzibake et al., 2019; Tangi et al., 2021) that relate the socio-technical systems theory but limit its view and do not explain its implication for making e-government successful, whereas many studies (Gohwong, 2015; Hatchuel & Segrestin, 2019; Holzer & Lin, 2007; Oluwalogbon & Adedeji, 2018) examined Fayol's administrative management theory. However, all these studies were conducted in different countries with different administrative management systems.

From the above discussion, it is clear that further exploration into how to successfully implement e-government in developing countries, such as Saudi Arabia, is still needed. Therefore, this study aims to examine the impact of administrative management and information technology on e-government success with the mediation role of knowledge management practices in the Al-Jouf region, Saudi Arabia. The popularity of e-government is increasing with advancements in technology, and after the introduction of Vision 2030 in Saudi Arabia, the administration enhanced the country's capacity to bring digital transformation to all sectors (Muzafar & Jhanjhi, 2020). The findings of this study will provide theoretical and practical contributions, not only for the Al-Jouf region in Saudi Arabia but for other similar countries. However, the analysis results will pave the

way for central and local government administration to make e-government services more successful.

2. Literature review

2.1. Socio-technical systems theory
The term "socio-technical systems" was first introduced by Eric Trist, Ken Bamforth, and Fred Emery during World War II (Long, 2018). The core idea of the socio-technical theory is to design and enhance any public and private organizational systems. This theory also treats the socio and technical aspects of collectively solving complex system problems (Borrás & Edler, 2014; Yusof & Yusuff, 2013) in the institutional arrangement and performance, which can be improved if the organization's socio and technical structures are collectively understood as a dependent part of the system. Every institute wants to investigate novel technology from all perspectives. This means that using technology in one part of an organization can help develop it in other parts (Bednar & Welch, 2020). So, socio-technical systems are created by multiple subsystems, which interrelate and contribute to the success of that particular organization or sector. The subsystems can consist of infrastructure, culture, process, technology, people, procedure, and goals (Bakunzibake et al., 2019; Sony & Naik, 2020). There is a strong association between the knowledge management process and socio-technical systems theory. Furthermore, information technology in knowledge management handles knowledge and expedites collaboration among the parties (Grundstein & Rosenthal-Sabroux, 2007). This theory is very beneficial to e-government for providing structure to the government (Kompella, 2017). Information technology in the presence of knowledge management practices and socio-technical systems theory enhances the capacity of e-government (Kompella, 2017).

2.2. Fayol's administrative management theory
Henri Fayol developed an administrative management theory which enhances an administration's capability by applying 14 roles: work division, authority, and responsibility, unity of command, unity of direction, etc. In addition, Fayol elaborated on the vital function of administration, such as planning, organizing, coordination, command, and control (Poudyal, 2013). In the public sector, this theory calls for an administration to develop its administrative structure for formalizing the division of power, distribution of the workforce, and power of authority in their relevant areas of responsibilities (Hatchuel & Segrestin, 2019). Further, this theory is very important for knowledge management practices because it provides direction to management for developing organizations to better understand and utilize knowledge resources, improving decision-making and organizational performance (Khorasani & Almasifard, 2017).

Fayol's administrative management theory can be utilized with e-government in various ways. One example is that the principle of division of work can be applied to the design of e-government systems, with different government agencies and departments responsible for specific aspects of the system. The principle of unity of command can be implemented to ensure that citizens only interact with one government agency, rather than multiples, for a specific service (Oluwalogbon & Adedeji, 2018).

2.3. Information technology and e-government success
Information technology plays a vital role in the development and modernization of all the country's sectors (Muzafar & Jhanjhi, 2020). The use of information technology enables an organization to bring innovation into the production process or provision of service by efficiently receiving, manipulating, and transferring digital data. In the public sector, information technology has motivated the government to invest more resources into endorsing internet usage and internet-grounded service (Almaiah & Nasereddin, 2020). By using information technology, the central government is electronically improving the quality of service to citizens, employees, and local government. In Saudi Arabia, after the introduction of the Saudi 2030 Vision, the perception, policies, service model, and other issues related to e-government have been considered

comprehensively by the researcher (Alharbi et al., 2021) and formed numerous national, provincial, and global organizations for the implementation of e-government policies. Modern development in the public sector converted this sector from traditional to online, and citizens can now access government services any day at any time (Sulistiawaty et al., 2021). Socio-technical systems theory is firmly related to information technology and the development of e-government because it smooths the way for manipulating electronic systems in the country (Sony & Naik, 2020). In contrast, Fayol's administrative management theory largely shapes the nature of government and gives specific aspects to management (Oluwalogbon & Adedeji, 2018). Therefore, e-government services are supposed to make government progress more well-organized due to enriched connectivity and ease of access. So, this study developed the hypothesis that:

H$_1$: *Information technology has a significant relationship with e-government success.*

2.4. Administrative management and e-government success

E-government is a platform and technique responsible for providing government services to a country's inhabitants and citizens with the help of technology (Basahel & Yamin, 2017). E-government enhances the government's ability to connect with its citizens in a short period of time (Alabdallat & Ardito, 2020). Numerous aspects contribute to the interruption of the success of e-government, such as the lack of detailed research for groundwork and progress, the deficiency of exploration into use cases, the nonappearance of supporting policies, and the failure of administrative management, of which certain aspects make e-government unsuccessful (Shen, 2019; Sulistiawaty et al., 2021; Twizeyimana & Andersson, 2019) because having only electrical data organization is inadequate to make e-government successful. Active administrative management is necessary to achieve and enhance e-government success (Ambira et al., 2019). The Saudi Arabian Vision 2030 is expected to bring novelty to the government sector through the implementation of e-government (Alabdan, 2019). Administration management is an important factor that can help implement e-government in an effective way. In this perspective, socio-technical systems theory provides a core idea for the administrative body to bring together technology and socio aspects (Chriss, 2022). On the other hand, Fayol's administrative management provides the government's vision for implementing five core ideas, such as planning, organizing, coordination, command and control (Poudyal, 2013). These functions help the government implement new ideas in the country. So, this study developed the hypothesis that:

H$_2$: *Administrative management has a significant relationship with e-government success.*

2.5. Information technology and knowledge management practices

Information technology's role in knowledge management is still being debated. On the other hand, information technology is used widely in organizations (Byukusenge et al., 2017) and is, therefore, known as a natural source for transmitting knowledge. The innovation due to execution technology positively relates to knowledge management (Hassan et al., 2018). Knowledge management practices enable the sector to accept the challenges posed by the environment and to create possibilities to get an advantage created by technologies (Ode & Ayavoo, 2020). So, information technology is restructuring organizations in both the public and private sectors and their capabilities for satisfying their stakeholders' demands (Tajdini & Tajeddini, 2018). Information technology enhances the government's capabilities and increases its performance (Antunes & Pinheiro, 2020; Ode & Ayavoo, 2020; Schniederjans et al., 2020). Information technology provides the government with ideas and support for security by utilizing information collected from citizens. Therefore, information technology can be perfectly executed in the country with the help of electronic knowledge management practices (Alabdan, 2019; Sulistiawaty et al., 2021). Fayol's administrative management theory motivates management to delegate power, administrative arrangements,

and responsibilities to subordinate sectors (Hatchuel & Segrestin, 2019). So, this study developed the hypothesis that:

H₃: *Information technology has a significant relationship with knowledge management practices.*

2.6. Administrative management and knowledge management practices

Administrative management assists in sharing knowledge and develops coordination between the people and the organization. At the same time, knowledge management practices provide specific knowledge to the administration to perform a specific task (Gharama et al., 2020; Li, 2021). Nevertheless, Sulistiawaty et al. (2021) explained that administrative management has no relationship to knowledge management practices. However, some studies, such as (Gharama et al., 2020; Ibrahim & Padilla-Valdez, 2021), explained and indicated the positive and significant relationship between administrative management and knowledge management practices. Furthermore, these studies determined that administrative management needs a stream of knowledge that collects data regarding targets. In other words, administration management plays an important function in making an organization successful, whether it's in the public or private sector. In perspective, Fayol's administrative management theory helps develop the administrative structure and division of work power that make the administration more effective (Hatchuel & Segrestin, 2019). So, this study developed the hypothesis that:

H₄: *Administrative management has a significant relationship with knowledge management practices.*

2.7. Knowledge management practices and e-government success

The major aim of the government sector is to provide all kinds of assistance to its citizens with speedy service and to improve the effectiveness of services (Alabdan, 2019). When citizens accept e-government, the communication and interaction between them and government organizations are enhanced (Almukhlifi et al., 2019). In this case, active knowledge management maintains this link and makes accepting e-government easier for the people. Therefore, e-government success is determined by knowledge management practices because it offers complete policies and procedures to succeed in e-government. Furthermore, knowledge management is very effective and appropriate for keeping e-government organized (Masenya, 2022). Therefore, complete dedication is a must for altering public administration from traditional to progressive in the provision of services (Sulistiawaty et al., 2021). However, knowledge management in the government sector is known as a complicated task because public sectors, in reality, construct, capture, establish, and cope with gigantic knowledge assets (Abu-Shanab & Shehabat, 2018). Therefore, operative knowledge management and administrative and legislative agendas are important features that affect e-government implementations and success (Glyptis et al., 2020). Fayol's administrative management theory is considered imperative for knowledge management practices because it provides direction to management in developing the organization, improving understanding and employing knowledge resources, decision-making, and organizational performance (Khorasani & Almasifard, 2017). So, this study developed the hypothesis that:

H₅: *Knowledge management practices have a significant relationship with e-government success.*

2.8. Knowledge management practices mediate the relationship between information technology and e-government success

Knowledge management is a particular way to achieve maximum government familiarity with data (Alqudah & Muradkhanli, 2021). In other words, knowledge management is the procedure of carefully coding phases to obtain, design, accomplish and share awareness inside an

organization to attain improved performance and less expensive rework, quicker work, and to achieve the best performance (Alvarenga et al., 2020). Knowledge management practices are crucial mediators that mediate the relationship between information technology and e-government success. Technology, combined with the organized data, increases effectiveness and proficiency, inventiveness, and novelty in deliberate public organization (Naruetharadhol et al., 2021). Furthermore, knowledge management practices provide the best application for e-government and articulate the abilities and awareness of the workforce with the assistance of information technology (Alqudah & Muradkhanli, 2021). Additionally, socio-technical systems theory interacts with the subsystem of the organization and provides citizens with capabilities, technologies, and sharing of norms and information. This theory enables management to understand the complex organizational system and provide the best input to stakeholders (Gao et al., 2021). Fayol's administrative management theory enables management to build that interaction between the citizens and government to specifically analyze the priority of needs and services (Oluwalogbon & Adedeji, 2018). So, this study developed the hypothesis that:

H₆: *Knowledge management practices mediate the relationship between information technology and e-government success.*

2.9. Knowledge management practices mediate the relationship between administrative management and e-government success

The government has a complex structure and needs to be more active in responding to innovation and the adoption of new technologies (Toshkov et al., 2022). During the digital process and in the understanding and automating of the public service online, there is a need for intellectual administrative management that converts the outmoded public sector in advance. This type of process needs workers to share their knowledge and skills. Hence, knowledge management practices and structures are crucial for the success of this process and the building of e-government tasks. Knowledge management practices in the public sector open prospects for the success of e-government (Abu-Shanab & Shehabat, 2018). So, knowledge has become the most significant resource for organizations, including e-government (Muzafar & Jhanjhi, 2020). Knowledge management stimulates education through the process of sharing knowledge that improves an organization or its subsystem to facilitate its stakeholders (Almukhlifi et al., 2019). Furthermore, it is the reality that with the arrival of innovative applications of service, the perception related to administrative management and e-government can be linked by knowledge management because knowledge management practices connect the physical things and support collaboration with the socio component (Alqudah & Muradkhanli, 2021; Toshkov et al., 2022). In this perceptive, socio-technical systems theory strengthens the mediating role of knowledge management practices. It provides a theoretical foundation linking administrative management to e-government because this theory gives strong engagement and understanding to make successful improvements (Gao et al., 2021). On the other hand, Fayol's administrative theory helps the administration in the division of labor, providing the service with proper planning and delegation of power. This theory assists in tracking the administration for evolving the organizations to enhance services and operate knowledge resources and improve decision-making (Khorasani & Almasifard, 2017). So, this study developed the hypothesis that:

H₇: *Knowledge management practices mediate the relationship between administrative management and e-government success.*

Therefore, the current research model is developed based on previous studies; the links of variables are labeled in Figure 1.

Figure 1. Research model.

Source: Developed by author
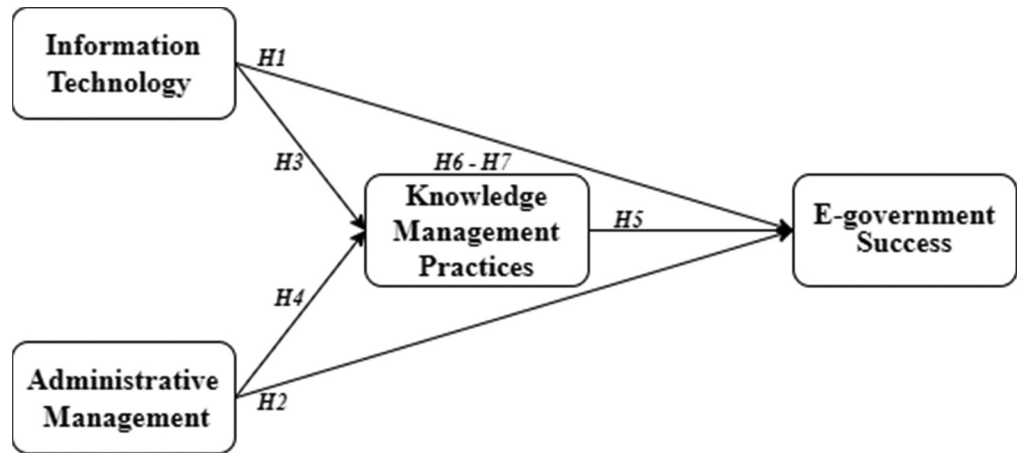
3. Methodology

3.1. Data collection

This quantitative study data was collected with the help of a public sector survey in the Al-Jouf region of Saudi Arabia. The Al-Jouf region is located in the north part of the country. The region covers approximately 38,700 square miles and has 24 public sectors. This study viewed the public sectors, such as the health department, education department, and civil defense department, from Sakaka, Tabarjal, and Qurayyat, all cities in the Al-Jouf region. These departments and cities will represent the whole public sector in the success of e-government because the Saudi Vision 2030 stresses digital transformation in all sectors, especially in the public sector, to promote e-government for giving citizens quick service (Alabdan, 2019). To increase the questionnaire's authenticity, it was written in English as well as Arabic. To remove any margins of error or ambiguity of questions, the questionnaire was presented to three professionals with the highest knowledge and expertise in the area of management and technological use. Further, an email was sent to the management of the public department to ask about their willingness to participate in the survey and notify them of the project. The questionnaire was distributed online and stressed its confidentiality and targeted participants. The management's response was very encouraging, and they provided permission to conduct the survey. This study selected participants randomly and sent them the questionnaire. The author only distributed 300 surveys due to time constraints, limited access to departments and lack of resources; in the end, only 163 responses were received, a response rate of 54.3%. Overall, the study was conducted from October 2021 to March 2022. In October, the author started writing articles, and data was collected in November, December, and January, while data analysis, interpretation, and conclusion were conducted in February and March. Table 1 explains the participants' profile: 70.6% are male; 29.4% are female. 19% of participants are age 30 or under, 28.8% are 31–40 years, 36.2% are 41–50, and 16% are 51+ years old. 22.7% of participants have 1–5 years of experience, 14.1% have 6–9 years, 27.6% have 10–14 years, and 35.6% have 15+ years of experience. Regarding education, 30.1% have less than a bachelor's degree, 58.9% have a bachelor's degree, and 11% have a graduate degree.

3.2. Measurement

This study adopted and used the Likert scale (1 = disagree and 5 = strongly agree). The scale of e-government success is measured by eight items: improved services, improved citizen participation, improved financial performance, improved administrative performance, contribution to social development, improved transparency level, improved accountability, and improved good governance image. The scale of information technology is measured by 12 items, such as the use of the internet, content, database, search tools, knowledge portal, and email. The scale of administration management is measured by five items: regulations and policies, social environment, processes,

Table 1. Profile of participants (*N* = 163)		
Variables	**Category**	**Percentage**
Gender	Male	70.6
	Female	29.4
Age (in years)	30 or below	19.0
	31–40	28.8
	41–50	36.2
	5+1	16.0
Experience (In years)	1–5	22.7
	6–9	14.1
	10–14	27.6
	15+	35.6
Education level	Less than bachelor's	30.1
	Bachelor's	58.9
	Master's and above	11.0

organizational culture, and code of practices. The scale of knowledge management practices is measured by nine items: knowledge management, discovery, collection, refinement and verification, acquisition, storage, dissemination and exchange, transfer, and reuse. All scales of variables were adopted (Abu-Shanab & Shehabat, 2018).

3.3. Data analysis

Smart PLS is used in this current study and developed partial least squares structural equation modeling (PLS-SEM) for examining the data. The aim of selecting this method for data analysis is a feature of the sample/data. Further, this data analysis methodology has achieved much importance in the field of management and its associated studies. This method of data analysis is used in many disciplines and predictive research (Hair et al., 2020). Furthermore, PLS-SEM is regarded as the best method for predicting the effects of the dependent variable (Hair et al., 2016), as well as producing less-inconsistent results than regression analysis (Ramli et al., 2018). So, SEM is considered a second-generation multidimensional data analysis method that explores linear and additive causal relationships developed on the base of theory (Wong, 2013). Furthermore, SEM covers the internal and external model analysis, which explores the relationship between exogenous and endogenous variables. So, PLS emphasizes variance analysis, which can be conducted by using Smart PLS (Do Nascimento & da Silva Macedo, 2016). Based on the above discussion, this current study used PLS-SEM for data analysis. The aim of employing PLS-SEM is to verify reporting methodology for doing robust analysis in the domain of management science and for detecting the mediating effect of variables (Ramli et al., 2018). First, it assesses the reliability as well as the validity of the measurement model. Secondly, this study estimated the structural model to explore the fundamental relationship of the proposed model related to composed data.

4. Results

4.1. Assessment of measurement model

This study investigated Cronbach's alpha and composite reliability to measure the construct reliability. Table 2 shows Cronbach's Alpha; the coefficient of each build ranged from 0.889 to 0.963. These values are acceptable at a 0.70 threshold level. In terms of composite reliability, the values are from 0.918 to 0.967; these values are greater than the recommended threshold value of 0.70 (Hair et al., 2016). Therefore, the proposed model is acceptable. To measure convergent validity, the lowest average variance extracted (AVE) ought to be greater than 0.50 (Cunningham et al., 2001). As shown in Table 2, AVE ranges from 0.652 to 0.710, which is more than the minimum of 0.50 (Fornell & Larcker, 1981a). Further, this study assessed the Forenell

Larckera and heterotrait-monotrait (HTMT) ratio to examine the discriminant validity (Fornell & Larcker, 1981a). Table 3 shows the results of discriminant validity and explains that the variable has a significant and positive correlation. Further, this study used the heterotrait-monotrait (HTMT) ratio to criticize the criterion of discriminant validity measurement (Fornell & Larcker, 1981b). So, HTMT is associated with multicollinearity among the variable. The threshold level is 0.9 (Teo et al., 2008); a value of more than 0.9 specifies the factor of multicollinearity. The result of HTMT met the threshold and suggested no multicollinearity.

Some tests, such as multicollinearity variance inflation (VIF), coefficient of determination (R^2), predictive relevance (Q^2), effect size (F^2), and standardized root means square (SRMR), are

Table 2. Measurement model					
Latent variable	**Items**	**Loadings**	**CA**	**AVE**	**CR**
Administrative Management	AD1	0.830	0.889	0.693	0.918
	AD2	0.780			
	AD3	0.844			
	AD4	0.844			
	AD5	0.860			
E-government Success	EGS1	0.767	0.923	0.652	0.937
	EGS2	0.868			
	EGS3	0.817			
	EGS4	0.782			
	EGS5	0.746			
	EGS6	0.852			
	EGS7	0.802			
	EGS8	0.818			
Information Technology	IT1	0.892	0.963	0.710	0.967
	IT2	0.846			
	IT3	0.738			
	IT4	0.807			
	IT5	0.864			
	IT6	0.890			
	IT7	0.802			
	IT8	0.875			
	IT9	0.843			
	IT10	0.860			
	IT11	0.885			
	IT12	0.791			
Knowledge Management Practices	KMP1	0.765	0.936	0.662	0.946
	KMP2	0.784			
	KMP3	0.834			
	KMP4	0.794			
	KMP5	0.788			
	KMP6	0.805			
	KMP7	0.825			
	KMP8	0.861			
	KMP9	0.859			

Note(s): AVE = Average Variance Extracted, CR= Composite Reliability, CA = Cronbach's Alpha.

Table 3. Discriminant validity				
	AD	**EGS**	**IT**	**KMP**
Administrative Management				
E-government Success	0.561			
Information Technology	0.184	0.433		
Knowledge Management Practices	0.332	0.570	0.300	

Note(s): AD = administrative management, EGS = e-government success, IT = information technology, KMP = knowledge management practices.

employed before analyzing the hypotheses. Table 4 shows that factors of inner VIF have less than the value (0.5) recommended by Hair et al. (2016) and Hair et al. (2020). It demonstrates no collinearity in the data and confirms the model's resilience. Further, Cho et al. (2020) indicated that SRMR values must be lower than 0.08 for a sample size of more than 100. Thus, this study found that this proposed model is a significant fit for the current study. In addition, the value of the determination of coefficient (R^2) must be greater than 0.1 (Chin, 1998). The R2 for KMP was 0.159 (Q2 = 0.100), and EGS was 0.475 (Q2 = 0.303), which indicates that their predictors can explain 15.9% and 47.5% of the variance in the respective constructs. Furthermore, the Q^2 value<0 specified sufficient predictive relevance of the model (shown in Table 4). The effect size of the variable construct varies from 0.02, 0.15, and 0.35, which indicates small, medium, and large, respectively (Henseler et al., 2009). Hair et al. (2020) also explain that the effect size from small to medium is also evidence of the model's robustness, which is also shown in Table 4.

4.2. Assessment of structural model
In this part of the analysis, this study tested the hypotheses of the study with the help of SmartPLS techniques such as bootstrapping. Bootstrapping is a very important technique in getting co-efficient path factor loading (Hair et al., 2020), so there is a requirement to employ bootstrapping with 5,000 subsamples to obtain significant values. Hence, this research has adopted the 5,000-subsample criterion. The current study has seven hypotheses: five direct hypotheses and two indirect effect hypotheses (see Table 5). It is shown that H1 is supported, which indicates that information technology has a significant relationship with e-government success at the value of $β$ = 0.248, t = 3.431, p < 0.001. H2 is supported and indicates that administrative management has a significant relationship with e-government success at the value of $β$ = 0.362, t = 4.935, p < 0.001. H3 is supported and indicates that information technology has a significant relationship with knowledge management practices at the value of $β$ = 0.256, t = 2.938, p < 0.003. Further, H4 is supported and indicates that administrative management has a significant relationship with knowledge management practices at the value of $β$ = 0.263, t = 3.417, p < 0.001. H5 is supported and indicates that knowledge management practices have a significant relationship with e-government success at the value of $β$ = 0.347, t = 3.566, p < 0.001. H6 and H7 indicate the knowledge management practices mediating role among information technology and administrative management with e-government success at values of $β$ = 0.089, 0.091 t = 2.086, 2.225 p < 0.037, 0.027, respectively. Although the beta values are low for H6 and H7, they met the threshold level of the p-value. Based on the p-value, the results show that knowledge management practice has a positive but weak mediating role for information technology and e-government success, as well as administrative management and e-government success.

5. Discussion
This study focuses on the Al-Jouf region of Saudi Arabia to examine the implementation of Saudi Vision 2030. This vision includes the use of technology in different sectors, especially in the public

Table 4. Multicollinearity variance inflation, effect size, coefficient of determination, predictive relevance, and standardized root means square

	VIF		F²		R²	Q²	SRMR
	Knowledge Management Practices	E-government Success	Knowledge Management Practices	E-government Success	Knowledge management practices and e-government success	Knowledge management practices and e-government success	
EGS					0.475	0.303	0.075
KMP		1.189		0.194	0.159	0.100	
IT	1.033	1.111	0.075	0.106			
AD	1.033	1.115	0.080	0.224			

Note(s): AD = administrative management, EGS = e-government success, IT = information technology, KMP = knowledge management practices.

Table 5. Direct and indirect hypotheses results

Hypothesis	Relationship	Beta	T-value	P-value	Decision
H1	IT → EGS	0.248	3.431	0.001	Supported
H2	AD → EGS	0.362	4.935	0.001	Supported
H3	IT → KMP	0.256	2.938	0.003	Supported
H4	AD → KMP	0.263	3.417	0.001	Supported
H5	KMP → EGS	0.347	3.566	0.001	Supported
H6	IT→ KMP → EGS	0.089	2.086	0.037	Supported
H7	AD → KMP → EGS	0.091	2.225	0.027	Supported

Note(s): AD = administrative management, EGS = e-government success, IT = information technology, KMP = knowledge management practices.

sector, for the digitalization of the system. Therefore, this study investigated the relationship between information technology and administrative management on e-government success, where knowledge management practices are used as a mediator between information technology and administrative management with e-government success. This study used socio-technical systems theory and Fayol's administrative management theory to bring a strong theoretical foundation to the study.

The finding showed a positive relationship between information technology and e-government success. One of the most important goals of Vision 2030 and the digital transformation program was for Saudi Arabia's government to become paperless. Nowadays, all public sectors in Saudi Arabia are making efforts to follow up and implement Vision 2030 and transform their systems from traditional to digital, especially to give the people e-government (Alharbi et al., 2021). As information technology has permeated all aspects of life, e-government functions proficiently to manage citizens' requirements (Sulistiawaty et al., 2021). The manipulators of digital technology get related assistance from government electronic applications, such as mobile assistance, websites, apps, etc. (Almaiah & Nasereddin, 2020). Nevertheless, countries' understanding about e-government is not free from technical or strategic challenges. So, the result of this study showed that using information technology is helpful for the public sector to provide citizens with quick service according to requirements. The results of the analysis align with those findings (Chohan & Hu, 2022; Ciesielska et al., 2022).

The finding clarified that administrative management and e-government success have a significant association because administrative management is important for e-government, and strong management can make the best policy that tackles a government's small and massive challenges. Therefore, e-government success is contingent on an administration that manages the entire setup of the country; otherwise, e-government could fail (Shen, 2019; Sulistiawaty et al., 2021; Twizeyimana & Andersson, 2019). Many studies support the current result because, in the era of technology, electronic data management is insufficient to enhance e-government success, and there is a great need to practice strong administrative management to implement e-government in any region (Ambira et al., 2019).

The finding concludes that information technology positively correlates with knowledge management practices. Paghaleh et al. (2011)'s research explained that information technology gives a major boost to knowledge management practices, such as the ability to generate and the swift association between knowledge-sharing resources and the ability to disclose knowledge. The expansion of technological implications increases the capabilities of the public sector and develops immense information to enhance the success rate of an organization. The result of the current analysis aligns with (Antunes & Pinheiro, 2020; Ode & Ayavoo, 2020; Schniederjans et al., 2020) and (Hadeeba & Yusoff, 2022).

Further findings of the investigation explained that administrative management is significantly connected with knowledge management practices. In reality, administrative management is the manipulation and management of the whole structure of the organization (Chawla et al., 2021). Administrative management creates a well-organized government structure and raises suitable management, determining an organization's priorities and responsibilities. The administrative managers concentrate on the knowledge stream within the organization so that all resources are used competently for enhanced service, and knowledge management is kept in place by knowledge sharing. The results of this hypothesis align with those (Gharama et al., 2020; Ibrahim & Padilla-Valdez, 2021) but contradict (Sulistiawaty et al., 2021).

Regarding knowledge management practices and e-government success, it is empirically found that these variables positively relate to each other. As in any country, executive institutions have inflexible structures and take a long time to respond to transformation (Toshkov et al., 2022). This kind of management makes the acceptance of new technologies sluggish and more challenging. When digitizing developments, a complete understanding is essential for computerized services offered to people online. Such procedures demand that public staff share their awareness and knowledge, and knowledge management practices help achieve goals for e-government projects. Knowledge management practices in public establishments open opportunities for e-government success (Abu-Shanab & Shehabat, 2018; Al Sayegh et al., 2022).

Based on the results of the analysis, knowledge management practices mediate the relationship between information technology and e-government success, as knowledge management practices play an important role in information technology and its implementation in any sector (Muzafar & Jhanjhi, 2020). The finding explains that information technology gives the government strength in providing quality service to its citizens (Sofyani et al., 2020). Therefore, technologies, along with knowledge management practices, enhance efficiency; new developments in service of the government make the best case for e-government and detail the capabilities and mindfulness of employees with the assistance of information technology (Alqudah & Muradkhanli, 2021; Ariana et al., 2020). Knowledge management practices connect the technological factors with the government by designing, sharing, and obtaining knowledge (Alvarenga et al., 2020). Information technology is considered the main factor in converting government activities from traditional to advanced to bring ease of use to citizens. Information technology has motivated the government to endorse internet usage and services related to e-commerce (Almaiah & Nasereddin, 2020). However, the beta value shows a positive and significant but weak mediating role in the knowledge management practices relationship between information technology and e-government success. There will be some reasons for a weak relationship between information technology and e-government if knowledge management practices are not implemented effectively. For example, if government agencies do not have the proper infrastructure or training to effectively manage and share knowledge, their ability to deliver effective e-government services may be limited (Bwalya, 2009; Chohan & Hu, 2022). In this situation, Fayol's administrative theory provides the idea of resource management, planning, and decision-making power (Hatchuel & Segrestin, 2019; Oluwalogbon & Adedeji, 2018). At the same time, socio-technical systems theory enhances the capability of knowledge management practices to act as a mediator and understand the complication of the e-government system and share experiences and norms to make e-government successful (Gao et al., 2021). As such, the implications of both theories increase the deep concern and appropriate government planning; therefore, these factors make e-government successful.

Furthermore, it is found that knowledge management practices mediate the relationship between administrative management and e-government success. The adoption of new technologies is slow-moving in the public sector (Toshkov et al., 2022). So, in the complex and deliberate structure of the government system, swift administration that understands and automates the public service online is required. If knowledge management practices can establish the stimuli in administration management regarding the implementation of e-government, then administrative management becomes the cause of e-government success (Shen, 2019; Sulistiawaty et al., 2021;

Twizeyimana & Andersson, 2019), and knowledge management practices play a role as a mediator and lead the administrative management to make e-government successful by sharing the experience, skills and collaboration with subsectors of government (Alqudah, 2021; Toshkov et al., 2022). But the beta value shows that the significant but weak mediating of knowledge management practices with administrative management and e-government can be improved by a range of factors, including the availability of adequate infrastructure, training and support for staff, and the availability of accurate and up-to-date information to support decision-making and service delivery (Aljazzaf et al., 2020).

6. Conclusion

In Saudi Arabia, Vision 2030 brought novelty to the production sector and also compelled the service sectors to convert from traditional to digital. Hence, e-government implications have become a strategic enabler for public management restructuring and expansion of the local economy. Many researchers agree that the e-government implementation projects have failed to attain their aims and deliver anticipated benefits. However, some factors can make e-government successful. Therefore, this study focuses on the influence of administrative management and information technology on e-government success with the mediation role of knowledge management practices in the public sectors of the Al-Jouf region of Saudi Arabia. Moreover, this research aimed to analyze the elements that influence e-government success in terms of knowledge management practices. Seven hypotheses were supported by the data. The findings disclosed that information technology and administrative management benefit e-government success and knowledge management practices. Furthermore, the findings of this study revealed that knowledge management practices play a vital mediating role between information technology and administrative management and e-government success to make it more successful and reduce the rate of risk. Therefore, this study strengthens the theoretical and practical implications of e-government by developing a link between socio-technical systems theory and Fayol's administrative management theory. E-government can be utilized as a tool for implementing Fayol's principles in practice, for example, by providing citizens with easy access to government services, increasing transparency and accountability, and enhancing the efficiency and effectiveness of government operations.

6.1. Theoretical implications

This current study has empirical and theoretical implications. Reviews of current studies enhance the ability to develop the theoretical framework that gives the foundation for the current study. Further, this study followed socio-technical systems theory and broadened the view by hypothesizing that e-government depends on the execution of information technology in the country. Insufficient studies explain the role of knowledge management practices in enhancing the accomplishment of e-government (Almukhlifi et al., 2019). So, this study used knowledge management practices as a mediator between information technology and administrative management to provide the theoretical importance of these variables in making e-government successful. Furthermore, this study has explained the theoretical foundation of the Al-Jouf region in Saudi Arabia. It provides the best concept to policymakers, researchers, and administrative bodies for the implication of Vision 2030. The current study expands the understanding of knowledge management practices, administrative management, and informational technology to make e-government successful. The importance of Fayol's administrative management theory gives strength to the current findings because this theory helps to specify the planning, organizing, commanding, coordinating, and controlling factors of e-government and gives the proper perception to administration to advance services and provision of maximum facilities to the citizens.

6.2. Practical implications

The Saudi Arabia Vision 2030 is not only a vision for the economic development of the country but emphasizes giving citizens quick and secure services via advanced technologies and the conversion of traditional government services to e-government services (Alabdan, 2019). The current study focuses on the Al-Jouf region of Saudi Arabia and helps management and society to understand

how using technology meets users' needs and provides them with interactive and fast services that have become an imperative factor of e-government success and implementation of Vision 2030.

Furthermore, this study used knowledge management practice as a mediator because knowledge management practices connect the physical things and support collaboration with the socio component (Toshkov et al., 2022), while administration management plays an essential role in enhancing the performance of the e-government (Ambira et al., 2019). So, information technology and administration management, along with knowledge management practices, enable the government to establish the advanced setup to provide e-government service. Knowledge management practice positively impacts e-government initiatives by providing decision-makers with better information, improving efficiency and effectiveness, and promoting innovation. E-government initiatives that prioritize knowledge management practices can reap significant benefits and achieve better outcomes (Gao et al., 2021; Hatchuel & Segrestin, 2019).

Knowledge management practices also help promote innovation in e-government by encouraging knowledge sharing and collaboration. E-government initiatives can create knowledge sharing platforms and networks that allow employees and stakeholders to share ideas and best practices and to identify opportunities for improvement and innovation (Abu-Shanab & Shehabat, 2018).

Further, this study assists the government of Saudi Arabia in enhancing the provision of public service by launching e-government, as users of e-government are increasing day by day. The country's citizens want a safe, secure, and technological society, and the government makes this possible with the help of digital technology. E-government provides likeable, efficient, and friendly interfaces between the government and its constituents.

Based on the empirical consequences of current research, it will be a great tool for the executive department to focus on providing specific government services with the help of advanced technology (Deng et al., 2018; Hooda et al., 2022). E-government connects all government agencies together for collaboration (Sheikh et al., 2018), and this step is important to ensure the success of e-government. Moreover, practical implementation of the results of this study will improve the effectiveness and efficiency of the overall service of the public sector to satisfy citizens and can be good initiatives for open data portals, mobile government, and e-procurement. In society, the taxpayer and the consumer have the right to get the best facilities from the government (Mayasari et al., 2017). Therefore, the results of the current study not only benefit the Saudi Arabian administration but can be implemented in any country to enhance the performance of its government. Furthermore, this study's findings give administrative management a roadmap to rethink the planning, utilization of resources, and use of technologies for best performance.

Incorporating results from this study will enable the e-government to make citizens' lives better in different ways as e-government. For example, citizens can access government services online, such as applying for permits, paying taxes, and renewing licenses. This saves time and reduces the need for citizens to visit government offices in person, especially for those living far from government offices (Li, 2021).

It will be helpful for transparency and accountability, such as e-government providing citizens with access to government information and data and enabling them to hold their government accountable. For example, citizens can access public records, government budgets, and other information related to government operations. E-government can facilitate citizen participation in the democratic process (Mayasari et al., 2017). For example, citizens can use online tools to participate in public conversations, provide feedback on policy proposals, and engage in online voting.

Therefore, this study will enhance the vision of policymakers and executive departments to obtain citizens' feedback with the help of technology and provide them with quick, equitable service. Furthermore, the practical implementation of this study not only develops the public sector but can be used for the private sector because the framework is perfect for enhancing the capabilities of different sectors.

7. Limitations and future research

Despite its great importance, this study does have some limitations, such as being restricted to the Al-Jouf region of Saudi Arabia, and that data was collected only from the public sector. Future research can be conducted in different countries, and data can be collected from public as well as private institutions. Further, this study selected the health, education, and civil defense departments from Sakaka, Tabarjal, and Qurayyat, cities in the Al-Jouf region, as representatives of the whole area. But future research can be conducted in different cities to validate the current model. Future research can use knowledge management practices as a moderator or other dimension of knowledge management for the success of e-government. Further, the research can be conducted on meta-analysis to explore the communal and comprehensive association of conceptual relationships among different variables, such as knowledge management process, digitalization, opportunity recognition, authentic leadership, etc. Further studies can also investigate the significant relationship between organizations and individuals.

The data analysis in this study showed a weak relationship between administration management as well as information technology with e-government of the mediator role knowledge management practices in the case of the Saudi public sector; future studies can verify the mediating impact of knowledge management practices in different countries as well as in different sectors. Current studies explained two theories, Fayol's administrative management theory and socio-technical systems theory; further research can explore more theories, such as contrarian theory, gatekeeping theory, inter-organizational theory, stakeholder, motivational theory, etc.

Author details
Abdullah Fahad AlMulhim[1]
E-mail: Afalmulhim@ju.edu.sa
ORCID ID: http://orcid.org/0000-0002-1864-1880
[1] Department of Business Administration, College of Business, Jouf University, Sakaka, Saudi Arabia.

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