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Impact of Internal Government Efficiency and Service Delivery Infrastructure on the Smart Government Effectiveness in UAE

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ABSTRACT: The benefits of incorporating information technology (IT) into public service delivery has been widely acknowledged. To reach Smart Government, we need to ensure that ICT and information transfer plays an integral role in all areas of public service operationalization through service delivery infrastructure and internal government efficiency. The main objective of this study is to improve the understanding of the antecedents of smart government effectiveness within the context of the UAE, and thus, offers useful and practical implications for government organizations. The evaluation of this model was done through a questionnaire survey that collected data from four hundred and two valid responses from employees of the Federal Authority for Government Human Resources in the United Arab Emirates. Partial Least Squares Structural Equation Modelling-Variance Based method was employed to assess the research model by utilising the software SmartPLS 3.0. to determine the relative importance levels of associations and interactions between the factors tested. The research achieved a goodness of fit of model to data, and explained 57% of the variance in smart government effectiveness in the UAE. The findings of the multivariate analysis revealed that Internal government efficiency and service delivery infrastructure are major predictors of effectiveness of the smart government. The results of this study has the potential to give further insights into smart government.

Keywords: Internal government efficiency; service delivery infrastructure; smart government effectiveness; UAE.

I. INTRODUCTION

The benefits of incorporating information technology (IT) into public service delivery has been widely acknowledged according to the World Bank Group (2015), the adoption of e-Government improve interactions between government and other parties such as businesses, industry, citizens and other departments or aspects of government in a more efficient and effective manner [1-8].

It is critical that all aspects of government are combined in a consistent effort towards common national agendas. An effective coherence effort is achieved through the sharing and exchange of information through business processes; this depicts an achieved level of interoperability. Researchers argue that there is an evolution towards interoperability and connectivity capabilities as the backbone of government smart service delivery. Interoperability has come to be facilitated only through the installation and upgrade of a-Government to Smart Government, ensuring that ICT and information transfer plays an integral role in all areas of public service operationalization through service delivery infrastructure and internal government efficiency [9,10].

One of the major drivers toward the smart government is the internal efficiency of the government. This driver faces many challenges to reach the its optimum. In the UAE, The country has experienced high political stability as well as social development for several decade. Therefore, the government has acquired a seemingly comfortable level of political trust as well as support from the public. Strong political support, as well as a clear vision, are both essential to the success of smart transformation. The UAE has the vision to make the country one of the smartest and

happiest places in the world to live and work in, and this entails strong leadership involvement. The government of the UAE is however aware of this as leadership showed strong involvement and support from the onset of smart initiatives.

Moreover, A shift to smart government is a mega transformative initiative and there are bound to be different agendas and competition in terms of resources among different stakeholders. Observing similar smart transformation projects in the past shows that resistance to change remains a key challenge as there may be concerns about losing power in today's era [11]. In order to address this challenge, smart transformation in the UAE takes on a highly collaborative approach as teams involve personnel from various governmental agencies. This is contrary to traditional developmental projects in the country where planning is done at the top level while implementation is outsourced to other entities.

Furthermore, The introduction of smart government means that trained and qualified personnel are required for implementation. Human capacity has been identified as one of the major challenges the UAE faces concerning smart government implementation. Since smart government makes use of ICT in all operations, there is the need for all government employees to be computer literate. With the high number of users of smart services in the country, it is essential that there is adequate human capital in order to allow easy implementation. Human resources, therefore, need to be trained expertly for their field of operation so as to achieve optimal efficiency.

The second major driver of the effectiveness of the smart government is the service delivery infrastructure, even though the UAE has experienced high levels of

technological development in recent years, there were still challenging areas in terms of the infrastructure that govern government data. These challenges are in terms of the steps taken to ensure that government data is open in order to enhance governance and development. The UAE faces challenges when it comes to streamlining the use of government data across the government and the public. One of the key factors contributing to these challenges is technological barriers. Though the government makes some efforts to generate datasets, they tend to be underutilized due to barriers linked to ICT infrastructure. Nonetheless, the government acknowledges challenges in this area and has made efforts to address them in order to breach such barriers in the near future.

The main objective of the current study is to determine the factors influencing the effectiveness of the smart government in the UAE. To date, only few studies have been conducted in this matter. Accordingly, this study attempts to achieve the following objectives:

1. Evaluating the effect of internal government efficiency on the smart government effectiveness in the UAE.
2. Evaluating the service delivery infrastructure on the smart government effectiveness in the UAE..

II. LITERATURE REVIEW

In day to day life infertility is childlessness [39]. Infertility, defined as 1 year of attempted conception without success, is one of the most prevalent chronic health disorders involving young adults. Clinical evaluation of infertility is indicated if a pregnancy has not occurred after 1 year of regular unprotected intercourse, because by that time 85% of couples attempting conception will have been successful [31,32,38]. Male and female, both or individual, are responsible for infertility [6]. Fundamentally, there are two types of female infertility primary and secondary infertility. Primary Infertility refers to the condition in which a couple has never been able to conceive [11]. Secondary Infertility refers to those cases where a couple has been successful in conceiving at least once but has been unsuccessful after that [18,27]. The female reproductive system is made up of internal organs and external structures. Its function is to enable reproduction of the species.

A. Smart Government Effectiveness (SGE)

Affisco & Soliman (2006) defined smart government as the application of electronic commerce tools and techniques by governments to provide services to the general public. Smart Government represents an advanced environment where people and other members of the society can avail opportunities, participate and communicate in any location with the identifiable connected device.

The smart government presents the opportunity for citizen engagement in a user-centered manner. Gil-Garcia *et al* (2016) point out that smart government fundamentally aims at making services and operation citizen-centric since the involvement of users is key for the success of innovation. According to Gil-Garcia *et al* (2016), citizen-centricity of smart government simply means that it needs to pay more attention to public value. Thus, rather than focusing solely on efficiency, focusing is also directed towards generating value for citizens. The smart government, therefore, presents opportunities for engagement and

collective decision-making.

Moreover, another key objectives of smart government involves the enhancement of public sector services, networked government, efficiency, simpler procedures, higher citizen participation, as well as offering the public higher value through their services. These objectives all aim to provide enhanced accessibility of smart government services to its users. The government of UAE has taken these key objectives into account in its current smart government initiatives. Systems accountability, therefore, remains a key component of the UAE smart government Framework and this needs to be examined for efficiency [12].

Finally, Smart government is instrumental to the success of a knowledge economy and this remains a key part of UAE Vision 2021 [12]. As the UAE government aims to build a competitive knowledge economy, attention needs to be paid to the smart government and its potential to push the UAE government closer to the achievement of its vision. As mentioned by WAM (2015), a highly effective public sector knowledge management system will be key in achieving the goal of a highly competitive knowledge economy. This highlights the role of smart government in terms of knowledge management and the knowledge economy as a whole [11].

B. Internal Government Efficiency (IGE)

Efficiency is about doing more for less. It involves maximizing outputs such as the volume of services provided, minimizing inputs such as the amount of resources or capital required to produce those services and maintaining or improving quality. The public sector in UAE has seen many efforts to introduce managerial strategies that aim at improving efficiency. The world is increasingly becoming knowledge inclined; hence, the increased need for a shift to knowledge economies or knowledge societies. Prior to this, the majority of the attention was on results-based performance in the UAE, which mainly looked at observable work and the quality of output. Information technology and the introduction of computers, in general, are part of efforts to make the performance of public organizations more efficient and organized in the vision of the country. These efforts may be attributed to economic and cultural globalization, but more significantly the shift of the world towards a knowledge economy. Consequently, the following hypotheses are proposed:

H1: Internal government efficiency has a positive effect on smart government effectiveness

C. Service Delivery Infrastructure (SDI)

Service delivery infrastructure represents service management mechanisms directed at the delivery, structuring and utilization of services within and between organizations and clients [13]. They also include roles and responsibilities required for service delivery. Finally, they include the systems that help prepare culture and service delivery style in order to create an avenue for communication and sharing. Even though the development of service delivery infrastructure is fundamental to implementation, these areas are most frequently ignored [13].

Governments all over the world strive to be effective in their delivery of public services. Biygautane & Al-Yahya (2010) mention a number of factors that can contribute to effective service delivery. They assert

that the adoption of knowledge management systems enables easy transfer and sharing of knowledge among employees. They continue that existing knowledge repertoires need to be developed and updated, or new ones can be created in order to safeguard the existing knowledge within the organization and make it easily accessible. Also, relying on knowledge for decision-making and policy-making can lead to more successful outcomes while making the decision-making process a transparent and coherent one. They finally assert that the responsiveness and partnerships with public sector organizations can ultimately result in improved service delivery. This is evident in the UAE as the DGEP successfully encouraged public organizations in Dubai to adopt best practices in efforts to improve service delivery [9]. Consequently, the following hypotheses are proposed:

H2: Service delivery infrastructure has a positive effect on smart government effectiveness.

III. RESEARCH METHOD

A. Overview of the Proposed Conceptual Framework

The final elements of the study are combined in the format as presented in Figure 2.1. Mainly, it is anticipated that internal government efficiency and service delivery infrastructure will lead to an effective smart government in the public sector. Among the main constructs presented in Figure 2.1, The factors of the current study were explored based on a careful synthesis of literature and with a keen interest in the context of UAE. Even though key literature support is provided in the literature review above, more structural support of literature is conducted to support the final models of the study.

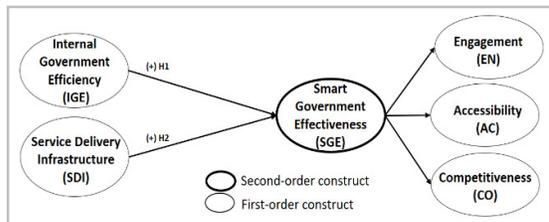


Fig.1. The proposed conceptual framework.

B. Development of Instrument and Data collection

Primary data was used for analysis in the present study. The study analysis commenced with an event of data collection with the help of a survey questionnaire. Variables were measured using a Likert Scale which recommended in the previous studies. The questionnaire was administered to the randomly selected respondents after the sampling frame was obtained from the Federal Authority for Government Human Resources. A period of four weeks was allocated to data collection. Data collected at the end of the fifth week was analysed and the results were reported.

The stratified proportional sampling technique is adapted for the present investigation with strict adherence to the sampling frame of UAE Federal Government knowledge workers who are of UAE nationality. Since the local population is at the center of UAE Smart Government processes. According to the Federal Authority for Government Human Resources, a total of 44,901 Federal employees of UAE Nationality were projected for the year 2013. Using

this figure, 83% were projected to be in Ministries and 17% were projected to be in Federal Authorities. The sample was selected in accordance with this sampling proportion of Ministries and Federal Authorities. The stratified proportional sampling technique was in an attempt to ensure representativeness of sample to the population of the study. Data was collected using Google Forms. Only 443 responses were received out of 650 questionnaire. The total response rate in this study was 68.15%, which was regarded as acceptable compared to the earlier studies in the literature. The data results that were assessed and analyzed 402 respondents from Ministries and Federal Authorities after removing missing data, outliers, and suspicious responses.

IV. DATA ANALYSIS AND RESULTS

PLS (Partial Least Squares) SEM-VB (Structural Equation Modelling-Variance Based) was employed to assess the research model by utilising the software SmartPLS 3.0 [15]. A two-phase analytical technique consisting of (i) measurement model analysis (reliability and validity) and (ii) structural model analysis (examining the conceptualised relationships) was employed after performing the descriptive assessment. This two-phase analytical technique consisting of a structural and a measurement model assessment is better than a single phase assessment [16, 17]. While the model of measurement explains each parameter's measurement, the structural model describes the correlation between the parameters in this model. Analysing Data through the second-generation multivariate data analysis technique which is SEM offers a simultaneous analysis which leads to more accurate estimates [17-19].

A. Descriptive analysis

Table 1 presents the mean and standard deviation of each variable in the current study. The respondents were asked to indicate their opinion in relation to transformational leadership and human capital based on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Internal government efficiency score the highest with mean 3.49 out of 5.0, with a standard deviation of 1.16.

B. Measurement Model Assessment

Construct reliability as well as validity (comprising discriminant and convergent validity) were used to examine the measurement model. The particular alpha coefficients of Cronbach were tested to determine the reliability of every core parameter in the measurement model (construct reliability). The quantities of all the unique alpha coefficients of Cronbach in this research ranged from 0.879 to 0.952, which went beyond the proposed value of 0.7 [20]. Moreover, for inspecting construct reliability, all the CR (composite reliability) values ranged from 0.925 to 0.965, which went beyond 0.7 [21-23]. Thus, as Table 1 shows, construct reliability has been fulfilled as Cronbach's CR and alpha were rather error-free for all the parameters.

Analysis of *indicator reliability* was conducted by utilising factor loadings. When the related indicators are very similar, this is reflected in the construct and signified by the construct's high loadings [17]. As per Hair et al. [18], the exceeding of values beyond 0.70 suggests substantial factor loadings. Table 1 displays that all articles in this research had factor loadings

greater than the suggested value of 0.7 with the exception of the item SDI1 which was removed from the scale because of low loading.

AVE (average variance extracted) was employed in this study to analyse *convergent validity*, which

represents the degree to which a measure is correlated positively with the same construct's other measures. All the AVE values ranged from 0.805 and 0.880, which went beyond the proposed value of 0.50 [18]. Thus, all constructs have complied with the convergent validity acceptably, as shown in Table 1.

Table 1: Mean, standard deviation, loading, Cronbach's Alpha, CR and AVE.

	Item	Loading (> 0.7)	M	SD	α (> 0.7)	CR (> 0.7)	AVE (> 0.5)
Internal Government Efficiency (IGE)	IGE1	0.934	3.49	1.16	0.952	0.965	0.874
	IGE2	0.942					
	IGE3	0.949					
	IGE4	0.914					
Service Delivery Infrastructure (SDI)	SDI1	Deleted	3.15	1.19	0.929	0.955	0.875
	SDI2	0.943					
	SDI3	0.929					
	SDI4	0.934					
Engagement (EN)	EN1	0.947	3.37	1.31	0.932	0.957	0.880
	EN2	0.944					
	EN3	0.923					
Accessibility (AC)	AC1	0.914	3.37	1.20	0.899	0.937	0.832
	AC2	0.917					
	AC3	0.906					
Competitiveness (CO)	CO1	0.871	3.43	1.15	0.879	0.925	0.805
	CO2	0.913					
	CO3	0.907					

The degree to which the articles distinguish among concepts or measure different constructs is demonstrated by discriminant validity. Cross-loadings as well as Fornell-Larcker were employed to analyse the measurement model's discriminant validity. Generally, cross-loadings are employed as the initial

step in examining discriminant validity of the markers [17]. In this research, the markers' outer loadings on a parameter went beyond all the cross-loadings with other parameters, and thus the cross-loading condition had met the requirements (Table 2).

Table 2: Results of discriminant validity by the cross loading.

	IGE	SDI	EN	AC	CO
IGE1	0.934	0.606	0.567	0.576	0.578
IGE2	0.942	0.625	0.556	0.589	0.613
IGE3	0.949	0.636	0.596	0.626	0.620
IGE4	0.914	0.600	0.551	0.607	0.600
SDI2	0.639	0.943	0.573	0.635	0.617
SDI3	0.618	0.929	0.503	0.611	0.578
SDI4	0.594	0.934	0.520	0.598	0.562
EN1	0.574	0.537	0.947	0.675	0.684
EN2	0.568	0.534	0.944	0.674	0.674
EN3	0.568	0.532	0.923	0.647	0.649
AC1	0.581	0.606	0.656	0.914	0.734
AC2	0.583	0.576	0.640	0.917	0.750
AC3	0.592	0.618	0.645	0.906	0.737
CO1	0.595	0.590	0.697	0.778	0.871
CO2	0.575	0.560	0.611	0.706	0.913
CO3	0.565	0.533	0.607	0.696	0.907

Key: IGE: internal government efficiency, SDI: service delivery infrastructure, EN: engagement, AC: accessibility, CO: competitiveness.

Table 3 shows the outcomes for discriminant validity by employing the Fornell-Larcker condition. It was discovered that the AVEs' square root on the diagonals (displayed in bold) is bigger than the correlations among constructs (corresponding row as well as column values), suggesting a strong association between the concepts and their respective

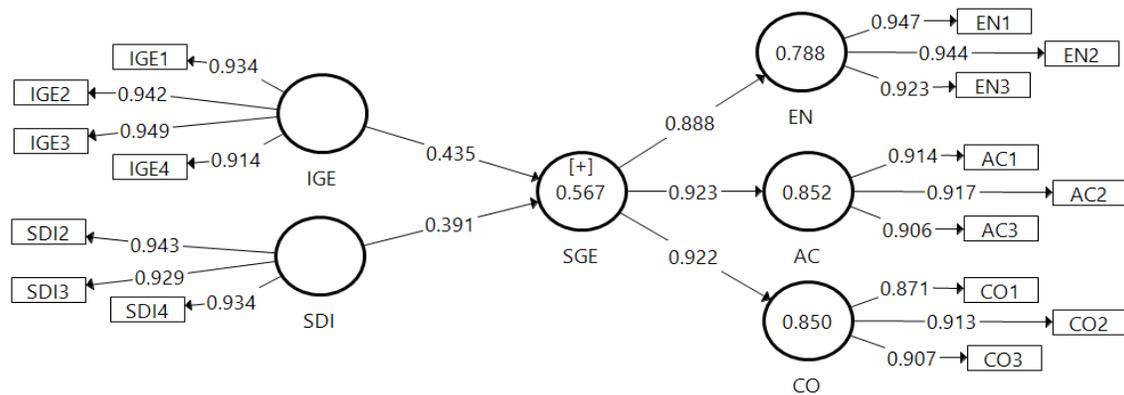
markers in comparison to the other concepts in the model [24, 25]. According to Hair et al. [17], this indicates good discriminant validity. Furthermore, the exogenous constructs have a correlation of less than 0.85 [26]. Therefore, all constructs had their discriminant validity fulfilled satisfactorily.

Table 3: Results of discriminant validity by Fornell-Larcker criterion

	Factors	1	2	3	4	5
		AC	CO	EN	IGE	SDI
1	AC	0.912				
2	CO	0.812	0.897			
3	EN	0.709	0.713	0.938		
4	IGE	0.642	0.645	0.608	0.935	
5	SDI	0.657	0.627	0.570	0.660	0.936

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations.

Key: IGE: internal government efficiency, SDI: service delivery infrastructure, EN: engagement, AC: accessibility, CO: competitiveness.



Key: IGE: internal government efficiency, SDI: service delivery infrastructure, SGE: smart government effectiveness, EN: engagement, AC: accessibility, CO: competitiveness

Fig. 2. PLS algorithm results.

C. Structural Model Assessment

The structural model can be tested by computing beta (β), R^2 , and the corresponding t-values via a bootstrapping procedure with a resample of 5,000 [17].

Hypotheses Tests

Figure 2 and Table 4 depict the structural model assessment, showing the results of the hypothesis tests, with 2 out of the 2 hypotheses are supported. Internal government efficiency and service delivery infrastructure positively influence smart government

effectiveness. Hence, H1 and H2 are accepted with ($\beta = 0.435, t= 11.653, p <0.001$) and ($\beta = 0.391, t= 10.761, p <0.05$) respectively.

The strength of the relationship between exogenous and endogenous constructs are measured by the standardised path coefficients, which in this case show that the direct effects of internal government efficiency on smart government effectiveness is stronger than the influence of service delivery infrastructure on smart government effectiveness [27].

Table 4: Structural path analysis result.

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision	R ²
H1	IGE→SGE	0.435	0.037	11.653	0.000	Supported	0.57
H2	SDI→SGE	0.391	0.036	10.761	0.000	Supported	

Key: IGE: internal government efficiency, SDI: service delivery infrastructure, SGE: smart government effectiveness

Table 5: IPMA for smart government effectiveness.

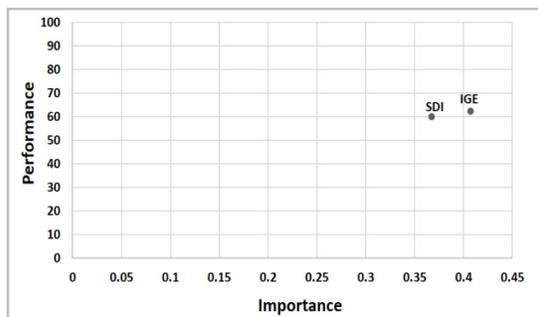
Latent constructs	Total effect of the construct smart government effectiveness (Importance)	Index values (Performance)
Internal Government Efficiency (IGE)	0.407	62.32
Service Delivery Infrastructure (SDI)	0.367	60.11

Importance-Performance Map Analysis (IPMA)

Importance-performance matrix analysis (IPMA) was employed as a post-hoc PLS procedure in this study,

with the smart government effectiveness used as the outcome construct. According to Hair et al. (2017), the IPMA provides an estimation of the total effects corresponding to the importance of predecessor constructs in affecting the target construct (smart government effectiveness); the average latent variable scores correspond to their performance, whereas the index values' (performance scores) calculation was achieved by rescaling the scores of the latent constructs to within a range from 0 (lowest performance) to 100 (highest performance). IPMA enhances the results of PLS analysis [28] because it gives attention to the latent constructs' average value as well as their indicators (the performance dimension) in addition to performing the path coefficients analysis (the importance dimension). The results for total effects (importance) and index values (performance) of the IPMA of the outcome construct smart government effectiveness is displayed in Tables 5.

The scores for total effects and index values were plotted on a priority map (refer to Figure 3). It can be observed that internal government efficiency is a very important factor in determining the smart government effectiveness due to its relatively higher importance value compared to service delivery infrastructure. In sum, in order to improve the smart government effectiveness, the managerial activities should focus on enhancing the performance of internal government efficiency.



Key: IGE: internal government efficiency, SDI: service delivery infrastructure

Fig.3. IPMA (Priority Map) for smart government effectiveness.

V. DISCUSSION

The first objective of the present study was to determine the influence of internal government efficiency on smart government effectiveness among employees of the Federal Authority for Government Human Resources in the UAE. This objective was achieved through testing H1 and the results shows that internal government efficiency was found to positively affect smart government effectiveness among employees of the Federal Authority with ($\beta = 0.435$, $t = 11.653$, $p < 0.001$), this is supported by previous studies [29]. It is explained by the fact that the more institutions seek advice from external consultancy on knowledge, prioritize the achievement of efficiency in all activities, focuses on productivity of services to the people, and on how services can be delivered well. The more, organization becoming able to promote transparency as part of social development efforts, enhance its resilience in the light of growing

sense of uncertainty, build on e-commerce and e-business market to achieve the government's aim of a smart government, successfully add to the enhancement of the lives of citizens, and cooperate with other government institutions in a very efficient manner.

Secondly, the second objective of this study is to determine the influence of Service Delivery Infrastructure on smart government effectiveness among employees of the Federal Authority for Government Human Resources in the United Arab Emirates via the hypothesis: Service Delivery Infrastructure significantly influence smart government effectiveness. This study has found that Service Delivery Infrastructure positively affect smart government effectiveness among employees of the Federal Authority for Government Human Resources in the United Arab Emirates, thus, H2 was supported with ($\beta = 0.391$, $t = 10.761$, $p < 0.05$), this is supported by previous studies [11]. It is explained by the fact that the more the institutions facilitate knowledge management with the necessary hardware and software, infrastructural systems that identify knowledge needs automatically (e.g. ERPs, automated decision systems etc.), provide knowledge portals like internet and mobile apps to provide services better, and ensure that people get anything they want online without or with very little human resource help. The more government organizations becoming able to promote transparency as part of social development efforts, enhance its resilience in the light of growing sense of uncertainty, build on e-commerce and e-business market to achieve the government's aim of a smart government, successfully add to the enhancement of the lives of citizens, and cooperate with other government institutions in a very efficient manner.

In sum, H1, and H2 were supported, thus in order for the Federal Authority for Government Human Resources to enhance smart government effectiveness, leadership has to focus on its internal government efficiency and service delivery infrastructure.

VI. IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTIONS

The findings of this study will have definite and beneficial implications for the smart government effectiveness, and also for government-related authorities who need to be aware of the relatively important elements that should be borne in mind when formulating strategies to deliver effective smart government services.

Academic contribution of the study is that even though e-government has gained popularity in the region and other global areas, Smart Government or Smart Governance lacked enough representation in literature. The present study therefore sought to first identify key areas present in literature, government reports, government white papers on the application of smart government in countries globally, and other relevant papers to that effect. Looking at the formulation of a smart government model for UAE instead of resorting to any other e-government framework was in an attempt to create a model that represents an idealistic smart government model for

the UAE. This would imply that the UAE can look forward to the alignment of the national strategy with this model in order to migrate from the current e-government systems that are principally responsible for information service delivery to more advanced systems that can manage and synthesize public information to generate knowledge and insight to public officials.

On the other hand, challenges can be detrimental to the goals and objectives of smart government. As the UAE Government has identified some of the challenges it faces in terms of the implementation of smart government, it is essential that effective internal government processes and well established infrastructure of service delivery are implemented in order to eliminate these challenges towards the achievement of set goals and objectives. The challenges uncovered in the present investigation may be considered as low in the Federal institutions under investigation; however, they must not be taken lightly as they may pose serious threat to the government and its smart government agenda, even though they are quite low in the UAE.

Ultimately, as future work, It is recommended that future researchers pay further attention to the area of knowledge management and smart government in order to further build on the present study. Future researchers should revise the conceptual framework of the present study to make additions that can help provide more insight into the area of study by adding to the research gap. The area of smart government in particular is still young and should attract empirical

assessments in this area as different from e-government. Moreover, future researchers can adopt a different methodology to the present study in order to further cement the study's credibility. These methodologies may differ based on the items used to measure and validate the assertions made in the present investigation. It may be observed whether or not other factors have equal significance in the model.

VII. CONCLUSION

The current research attempted to expand the knowledge on the smart government effectiveness and the factors influencing it in the UAE. The findings have shed encouraging lights on some new variables that influence the effectiveness of smart government among employees of the Federal Authority for Government Human Resources in the United Arab Emirates. Internal government efficiency and service delivery infrastructure both have a great impact on the smart government effectiveness. This study added valuable knowledge to the area of public sector as well as academic research. It is concluded that internal government efficiency and service delivery infrastructure improves the implementation of smart government effectiveness and contributes to its successful implementation. Both independent variables of the study are positive predictors of smart government effectiveness. The variance explained in this article is 57% which is considered high comparing to the studies in the literature reviewed.

Appendix A Instrument for variables

Variable	Measure	Source
Internal Government Efficiency (IGE)	IGE1: My institution finds external consultancy to advice on knowledge management. IGE2: In my institution, we prioritize the achievement of efficiency in all activities. IGE3: My institution focuses on the productivity of services to the people. IGE4: We focus on how services can be delivered well.	Biygautane & Al-Yahya (2010)
Service Delivery Infrastructure (SDI)	SDI1: Both hardware and software are needed and implemented for knowledge management in my institution. SDI2: We have installed infrastructural systems that identify knowledge needs automatically (e.g. ERPs, automated decision systems etc.). SDI3: My institution provides knowledge portals like internet and mobile apps to provide services better. SDI4: My institution ensures that people get anything they want online without or with very little human resource help.	Käpylä (2012)
Engagement (EN)	EN1: My institution can engage all its people and stakeholders successfully. EN2: My institution is able to promote transparency as part of social development efforts. EN3: My institution is resilient in light of the growing sense of uncertainty.	Gil-Garcia <i>et al</i> (2016), Rabaiah & Vandijck (2009), UAE Government (2010)
Accessibility (AC)	AC1: My institution is able to promote increased citizen participation in all of its services and operations. AC2: My institution builds on e-commerce and e-business market to achieve the government's aim of a smart government. AC3: My institution successfully adds to the enhancement of the lives of citizens.	
Competitiveness (CO)	CO1: My institution is able to build trust and confidence in all stakeholders. CO2: The electronic government system used by my institution is competitive globally. CO3: My institution co-operates with other government institutions in a very efficient manner.	

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