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Empirical Study of the UAE-based Smart Government's Characteristics and its Effect on Performance Quality

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ABSTRACT: Technological applications are increasingly becoming the driver of public sector organizations around the globe, and are considered as an economical method for encouraging transparency with an intention to curb corruption. The present research work uses structural equations modelling via SmartPLS to analyse the 398 valid questionnaires to evaluate the proposed model. The study focused on one of the UAE public organizations with the aim to evaluate the influence of smart government characteristics (integration, efficiency, effectiveness, citizen centerity, and innovation) on performance quality (reliability, quickness, responsiveness, and security). The study emphasizes on describing the relationship between the varied selected constructs. Our work has improved our insight in smart government applications. Results indicated that independent variable significantly predicted the service quality. The proposed model reportedly deduced that the performance quality variant explained 37.9% of the variance in performance quality.

Keywords: Smart government; performance quality; UAE.

I. INTRODUCTION

'e-Government' is an effective and planned model that is intended to aid in the governmental tasks in a more efficacy and economical manner. It looks forward to extend its support to public for better access to services provided by the government [1-3]. It has been highlighted that the 'e-government' policy improvises the governmental services along with their efficiency, thereby increasing its accountability and transparency. In UAE, the government has made high investments in enhancing its IT infrastructure for its effective service to its key stakeholders. All of this started after the Ministry of Finance introduced 'e-Dirham' in 2001 for collection of the governmental service fees [4]. It is clear that the UAE is trying to become a leading technology centre based on the innovation strategy of the 4th Industrial Revolution[5,6]. It further encourage to introduce more e-services to enhance the services and policies of the UAE government. Various global indicators have created a clear image that help in understanding the position of country level according to a set of measures that are recognized internationally [7-10].

UAE government has decided to formulate the e-service designs in a certain way that would increase the pace of the advancements in its technology and implementation. Hence, it has finalized to introduce and boost up new ideas for the e-transformation of governmental bodies for proper transmission of the e-services through appropriate mediums. Accordingly, 'e-Readiness' was proposed to advance the federal agencies' capabilities in case of ICT, structures, HR activities [1]. In most contemporary organizations, adopting technology is not only uses ICT to fill up some forms and records but rather it is also a tool that identifies, accumulates, analyses, measures, prepares, interprets as well as communicates the planned information [11,14]. It is used in evaluating and controlling within an organization and to assure appropriate use and accountability for their resources [13,14].

The Mobile Government Initiative (UAE's smart government) was initiated in the month of May, 2019 for successful implementation of 24/7 governmental services for the public. Moreover, the internet efficiently manages the governmental services in a more economical manner. The development of an advanced system for the estimation of governmental performance in a scientific manner in terms of the e-government services, will surely place an important part in enhancing the performance of the government administration. If not, then the 'e-government' policy will be become a failed one due to its expensiveness, low-efficient and poorly working equipment [31-33].

A. Smart Government Characteristics (SGC)

SG is resulted from the application of the new advancements in the IT field, including Cloud, Big Data, and etc. The governmental resources are considered as the basic resources that can aid in promoting the advancements in the economy of both the society and economy. The parameters like the management, exploitation and usage of the governmental resources decide upon the power and competitiveness of a government in an international platform, thereby resulting in the development of a smart city.

SG focuses on delivering the services to its denizens in both economic and social basis. Socially it denotes to the effectiveness of the services in accordance with the needs and desires of the stakeholders. Hence, the present study is concerned about the features of the service quality provided to the public and the resulting performance.

Therefore, H1: Smart government characteristics has a positive effect on performance quality

B. Performance Quality (PQ)

The level of performance shown by the governmental services is one of its crucial part. Prior researches

have focused on the factors related to technology, organizations, and environment act as the elements that affect the e-government's performance. They are also considered to be influenced by the e-governmental services. In previous studies, the researchers had implemented varied qualitative methods that aided in the theoretical re-establishment of the policies. However, they have overlooked its practical applications and implications. The current study is thus focused on exploring the effect of smart government on the performances of UAE government [15,16].

III. RESEARCH METHOD

A. Conceptual Framework

Smart government and governmental performance are two dimension into which the model of the current study has been proposed. A smart government comprises of efficiency, public-oriented work, innovations, and their amalgamation. These authentic and reliable features eventually entice the denizens of a country to visit it's e-government page. The level to which the citizens expect the services to be of is termed as the performance quality.

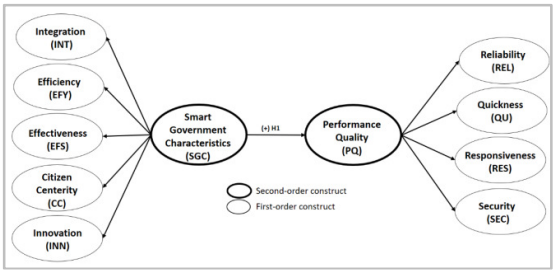


Fig. 1. The proposed conceptual framework.

B. Questionnaire preparation and Collection of Data

Based on the Likert Scale and the literature on knowledge economy, a 30-item questionnaire in Arabic language was formulated to conduct the present study [17]. The study duration started from September to October 2018 among the employees of the governmental institutions. Out of total 500 questionnaires, 398 were filtered out for further analysis. As per the prior studies, the sampling quantity was nearly 70%, which was considered as sufficient for the current analytical study [18].

IV. DATA ANALYSIS AND RESULTS

The research model of the current study was assessed by using PLS SEM-VB and SmartPLS 3.0 software [19]. The elaborative evaluation led to the implementation of a two-step of analytical methodology, i.e. structural (to test the relationship hypotheses) and measurement (to test the validity and reliability) models of assessment [20]. This two-step analysis model is superior in comparison to the one-step assessment methodology [21, 22]. The first model measures the parameters of the structural model, whereas the later one records each constructs measurement [21]. PLS technique is utilized in the current study for its analytical skills to deduce clear evaluations. On the other hand, SEM is implemented to conduct a coinciding strategical evaluation of the data for precise calculations.

A. Descriptive analysis

The mean and standard deviation (SD) values for each variable of the current study are presented in Table 1. The respondents shared their opinion about their idea on the online usage as per the Likert Scale. Citizen centerity score the highest with mean 3.824 out of 5.0, with a standard deviation of 0.954.

B. Measurement Model Assessment

The measurement model was examined by implementing the reliability and validity features of the constructs (convergent and discriminant validities). The reliability of each core variable in the measurement model (construct reliability) was evaluated by using the individual Cronbach's alpha coefficients.. The Cronbach's alpha coefficient values were recorded between 0.700 to 0.891 [23]. The composite reliability (CR) values were between 0.862 to 0.930, which exceeded 0.7 (Table 1).

The factor loadings aided in analyzing the Indicator Reliability. According to Hair *et al.* [22], values exceeding 0.50 indicate significant factor loadings (Table 1).

AVE was assess to analyze the Convergent Validity. It is reported that this validity shows a positive correlation with the alternate values of the same variables. The AVE values range within 0.573 to 0.672 that is more than 0.50. The convergent validity has been achieved by all the construct variables in this study (Table 1).

Table 1: Measurement model assessment.

Constructs	Item	Loading (> 0.7)	M	SD	α (> 0.7)	CR (> 0.7)	AVE (> 0.5)
Integration (INT)	INT1 INT2 INT3	0.869 0.885 0.770	3.766	0.843	0.794	0.880	0.711
Efficiency (EFY)	EFY 1 EFY 2 EFY 3 EFY 4 EFY 5	0.817 0.822 0.878 0.818 0.833	3.804	0.827	0.891	0.920	0.696
Effectiveness	EFS	0.804	3.7	0.78	0.80	0.87	0.62

(EFS)	1 EFS 2 EFS 3 EFS 4	0.787 0.830 0.749	00	4	3	1	9
Citizen Centerity (CC)	CC1 CC2	0.908 0.898	3.8 24	0.95 4	0.77 4	0.89 8	0.81 5
Innovation (INN)	INN1 INN2	0.874 0.880	3.5 72	0.84 0	0.70 0	0.87 0	0.76 9
Reliability (REL)	REL 1 REL 2 REL 3	0.848 0.807 0.821	3.5 84	0.82 4	0.76 8	0.86 5	0.68 2
Quickness (QU)	QU1 QU2 QU3	0.880 0.928 0.901	3.6 73	0.93 1	0.88 7	0.93 0	0.81 6
Responsivenes s (RES)	RES 1 RES 2 RES 3	0.816 0.837 0.813	3.4 97	0.89 7	0.76 1	0.86 2	0.67 6
Security (SEC)	SEC 1 SEC 2 SEC 3 SEC 4 SEC 5	0.795 0.810 0.868 0.849 0.799	3.6 89	0.86 8	0.88 2	0.91 4	0.68 0

Note: M=Mean; SD=Standard Deviation, α= Cronbach's alpha; CR = Composite Reliability, AVE = Average Variance Extracted.

The bold variables in the table denote the square root value of the AVE that is more than the corresponding values, indicating a strong correlation between the variables and their respective indicators (Table 2). The exogenous constructs showed a correlation value <0.85, and thus the better discriminatory validity is satisfied [20,24].

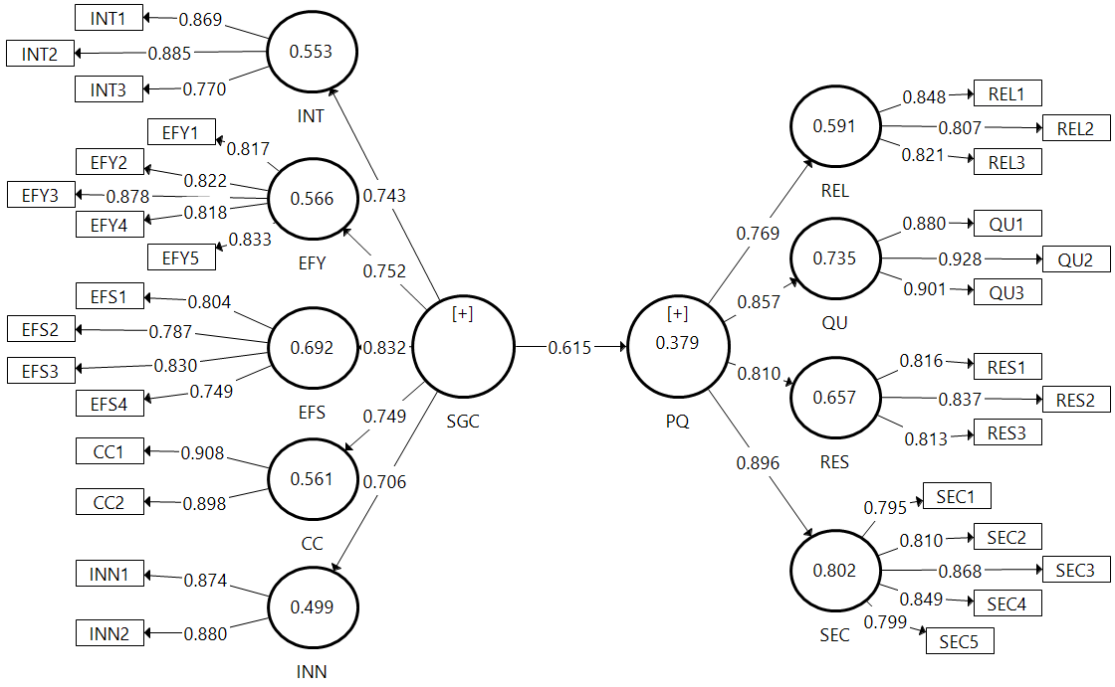
Table 2: Fornell-Larcker criterion.

	CC	*EFS*	*EFY*	*INN*	*INT*	*QU*	*REL*	*RES*	*SEC*
CC	**0.903**								
EFS	0.631	**0.793**							
EFY	0.340	0.468	**0.834**						
INN	0.547	0.475	0.397	**0.877**					
INT	0.529	0.536	0.361	0.510	**0.843**				
QU	0.298	0.443	0.560	0.301	0.331	**0.903**			
REL	0.310	0.373	0.350	0.209	0.278	0.564	**0.826**		
RES	0.334	0.443	0.465	0.291	0.302	0.638	0.545	**0.822**	
SEC	0.360	0.442	0.643	0.294	0.306	0.661	0.580	0.614	**0.825**

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

C. Structural Model Assessment

Beta (β), R^2, and the corresponding t-values were implemented through the bootstrapping mechanism of 5000 resamples to evaluate the structural mode



Key: SGC: smart government characteristics, INT: integration, EFY: efficiency, EFS: effectiveness, CC: citizen centerity, INN: innovation, PQ: performance quality, REL: reliability, QU: quickness, RES: responsiveness, SEC: security

Fig. 2. PLS algorithm results.

The structural model in the current research supports all the three proposed hypotheses (Figure 2 and Table 3).Hence, H1is accepted with ($\beta = 0.615$, t= 14.527, p <0.001). Thirty-eight percent of the variance in performance quality is explained by smart government characteristics. The values of R^2 have an acceptable level of explanatory power, indicating a substantial model [25,26]

Table 3: Structural path analysis result.

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision	R^2
H1	SGC → PQ	0.615	0.042	14.527	0.000	Supported	0.38

Key: SGC: smart government characteristics, PQ: performance quality

V. DISCUSSION

The main objective of the current study is to address the impact of Dubai smart government characteristics on the quality of performance. Based on the proposed model, this study improves the understanding of the role played by the characteristics of smart government in terms of integration, efficiency, effectiveness, citizen centerity, and innovation among employees in public organizations in UAE, and highlights relevant implications. The discussions are further detailed in the following.

The study found that smart government characteristics positively affect performance quality among employees in public organizations in UAE, this is supported by previous studies[9,27]. It is explained by the fact that the smart government provides the governmental services more with the increases and permits for the entry of only one citizen irrespective of the services location. It is also highlighted that the more is the governmental services, the more its stability among the denizens of the country. It also supports in dearth of staffs, effective accumulation of data, decision making ability, public-oriented services, easily accessible by the residents. The more smart government site is stable, system errors are minimal, provides on-time and quick services, provides prompt responses and delivery service, provides trustworthy services, personalized services, secure and trusted services, and Online services with high reputation.

VI. IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTIONS

The study outcomes discusses about the role of the smart government in UAE, which is in accordance with the study findings of [28]. Moreover, all the factors of a smart government exhibit significant and positive impact on the performance quality of the

governmental institutions.
The methodology adopted in the present study failed to explore the time-specific services of a smart governments, which can be considered as one of the limitations of the present study. A future research work in this direction can yield in a innovative finding.

VII. CONCLUSION

Key conclusions are offered in the scope of the objectives of the study. The main objective sought to investigate smart government characteristic impact on the performance of public organizations in UAE. The proposed model provides a better understanding of characteristics of Dubai smart government such as (integration, efficiency, effectiveness, citizen centerity, and innovation) on performance quality in term of (reliability, quickness, responsiveness, and security). The results from the descriptive analysis showed that there is a positive direct impact of the smart government on performance quality. UAE government needs to pay more attention to the smart government characteristics to improve the quality of its public organization performance. The results revealed that the proposed hypothesis is significant. The independent variable significantly explains 37.9% of performance quality. The implications of this study have been deliberated; some directions for future research have been suggested.

Appendix

Appendix A
Instrument for variables.

Variable	*Measure*	*Source*
Integration (INT)	INT1: smart government facilitates integration among governmental services. INT2: Smart government simplifies information flow among government department. INT3: Smart government provides one-entry for citizens even though services takes place in several departments.	
Efficiency (EFY)	EFY1: smart government reduces governmental staff required to run government agencies. EFY2: smart government increases efficient change management. EFY3: Smart government makes e-government services efficient. EFY4: Smart government will make collecting information efficient. EFY5: Smart government will make delivering information efficient.	[28,29]
Effectiveness (EFS)	EFS1: Smart government is an effective solution for governmental services. EFS2: Smart government makes governmental services effective. EFS3: Smart government provides evidence-based decision making. EFS4: Smart government makes services and information effectively.	
Citizen Centerity (CC)	CC1: Smart government makes e-government services citizen-centric. CC2: Smart government greatly simplifies for citizens to reach information and services provided by government instantly.	
Innovation (INN)	INN1: Smart government makes e-government services intelligent. INN2: Smart government makes applying government policies easy and instant.	
Reliability (REL)	REL1: The site of smart government is stable. REL2: Error seldom occurs to the smart government services. REL3: The site of smart government services is instantly reacting to my input data.	
Quickness (QU)	QU1: Smart government provide on-time Services. QU2: Smart government processes quickly the required Services. QU3: Smart government services provided do not take much time.	[28,30]
Responsiveness (RES)	RES1: Smart government provides prompt responses. RES2: Smart government provides prompt chat in Online. RES3: Smart government provides prompt delivery service.	
Security (SEC)	SEC1: Smart government provides is trustworthy services. SEC2: Smart government provides personalized services. SEC3: Smart government provides secure and trusted services. SEC4: Smart government provides secured services. SEC5: Smart government provides Online services with high reputation.	

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