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## The Role of Smart Government Characteristics for Enhancing UAE's Public Service Quality

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**ABSTRACT:** This study employs structural equations modelling via Smart PLS to analyse the 398 valid questionnaires in order to assess the proposed model. The study focused in one of UAE public organizations, the prime motive of the study is to evaluate the influence of smart government characteristics (integration, efficiency, effectiveness, citizen centerity and innovation) on the quality of service which includes its navigation, structure, attractiveness and accessibility. The study will describe the relations that exist among different constructs. Our work has improved our insight in smart government applications. Results indicated that independent variable significantly predicted the service quality. The proposed model explained 35% of the variance in service quality. Theoretical and practical implications are also provided.

**Keywords:** Smart Government; Service Quality; UAE, Smart PLS, Smart Government Characteristics

### I. INTRODUCTION

The quality of service is determined by studying the customer's expectations and the actual performance [1]. With the emergence of private players, service quality gained much focus of the industries as compared to public sector [2-3]. The world economies have experienced this shift of service quality because of the innovative technologies and globalization [4-5]. In addition to these technological advancements, relevance of ICT might not be over emphasized [6]. In order to improve the service quality, the public sector has or has been adopting e-government system that aims at improving better connectivity among the public and the various government departments by proving the public with ease of access [7]. Studies have shown improved public sector services that has overcome the traditional barriers such as difficulty in part of the people to reach various government officials or departments [5]. Extensive use of e-governance has been adopted by majority of the developed economies and link them with communication field for easy access of the people [8]. This makes the whole process cost effective and less time consuming along with increased accountability and transparency [4, 5, 9]. Such a governance and development in communication sector leads to enhanced business opportunities and information sharing among various stakeholders [5]. This builds up trust within the government departments, the public, bureaucrats, and other key stakeholders [1-3].

### II. LITERATURE REVIEW

#### A. Smart Government Characteristics (SGC)

The smart government has proven to be the newbie of IT applications. It is the modern form of internet information implemented as Big Data, Things, Cloud Computing, and all the other technologies used in every forms of an urban lifestyle. The resources of government's information are strongly taken as vital national resources that have been created strategically in this era, and are considered as basic resources used for promoting the development of national society as well as economy.

The national power and international competitiveness of a country is depicted through the government's resources management, exploit and mode of utilization, hence it comes up as an index that a smart city's development is judged on. The quality of service that the government provides, is increased considerably by the ICT innovation [10]. A smart government is the trending innovative medium that is capable to make fluctuations in the services of the government. Evidently, UAE is putting its best to become a centre that leads in technology on the basis of strategized innovation of the 4th Industrial Revolution.

Smart government targets to improve the service they deliver to citizens both in terms of economic (bigger efficiency) and social (effectiveness addressing their stakeholders' needs and desires) [11]. 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 [12-15].

This study concerns on aspects related to service quality and performance of public service and to what extent smart government can achieve that? Governments targets of using smart government technologies particularly e-government to allow information to be accessed cross-organizational boundaries as a strategy for maximizing the value of information [16]. 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 performs the process of identification, accumulation, analysis, measurement, preparation, interpretation and communication of the information used by management to plan [17-20]. It is used in evaluating and controlling within an organization and to assure appropriate use and accountability for their resources [17-20]. Such information sharing will increase the quality of services and lead to perform faster as expected.

Consequently, the following hypotheses are proposed:

H1: Smart government characteristics has a positive effect on service quality.

### B. Service Quality (SQ)

Quality of service (QoS) is termed as the degree of 'goodness' of online services and its use. Quality comprises of timeliness, accessibility, accuracy and fairness. Similarly, Alawneh (2011) [21] stated that QoS can be determined by the quality of information that is obtained by the users from online sources, which is linked with their level of satisfaction. Özer, Argan, & Argan (2013) [22] talks about the experience gained by the customer with respect to quality of the service. However, the level of satisfaction is dependent upon the judgments of the client, which cannot be quantified. Online QS is also considered crucial in determining business success, as well as success of e-government [23]. At present, there are six key online SQ dimensions, such as reliability, accessibility, ease of using the service, attentiveness, security, and credibility [23].

Even in case of online business, QoS has a crucial role to play. The current study aims at developing an appropriate model in order to assess SQ of public sector that is available online, particularly in UAE [18, 19, 24].

### III. RESEARCH METHOD

#### A. Proposed Conceptual Framework

The proposed factors have been marked with dimensions, such as smart government and SQ as well as certain factors like efficiency of the public sector, people-centric, innovative, and integrative in nature. The information that is available online determines SQ, thus determining the authenticity and reliability of the provided information. SQ is determined with respect to structure of the website, navigational speed, ease to access, and attractiveness.

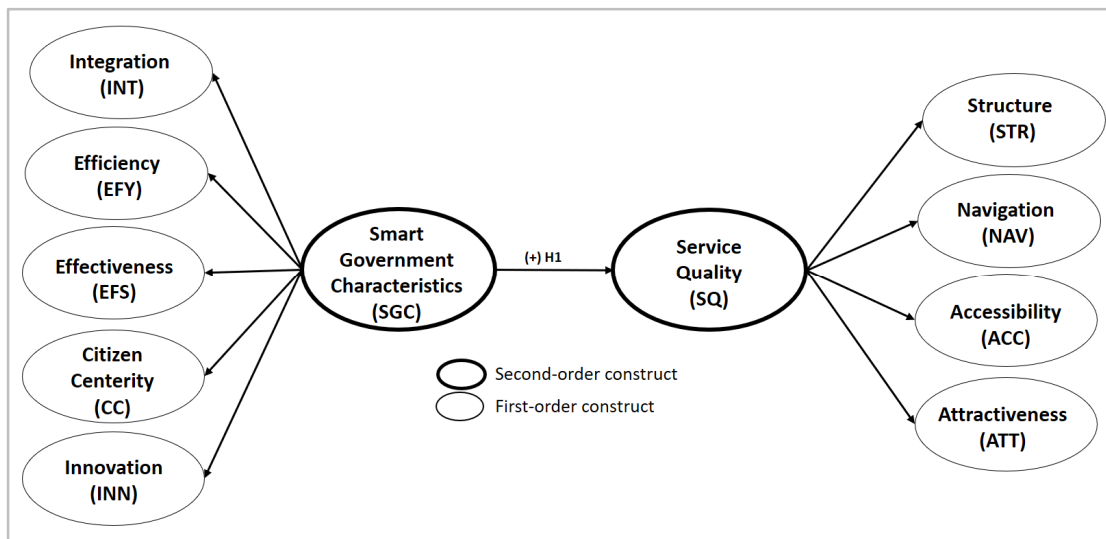


Fig. 1. The proposed conceptual framework.

#### B. Development of Instrument and Data collection

The questionnaire used for the study included 33 questions which was analysed based on the multi-item Likert scale [25]. The information was gathered by delivering a self-managed questionnaire 'in-person' between September 2018 and October 2018 to employees of the governmental organisations. Five hundred questionnaires were distributed of which 398 responses were collected for further study. According to Tabachnick & Fidell (2012) [26] and Krejcie & Morgan (1970) [27], the sample size was considered optimum.

### IV. ANALYSIS OF DATA

PLS and SEM-VB methods were implemented in order to assess the research model using the SmartPLS 3.0 software [28]. A two-phase analytical technique [29, 30] 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 [31, 32]. While the model of measurement explains each parameter's measurement, the structural model describes the correlation between the parameters in this model [30].

#### A. Descriptive analysis

Table 1 presents mean and SD values for all study parameters. The participants revealed their opinion regarding human capital and transformational leadership that was evaluated on a 5-point Likert scale. The accessibility score showed high results with a mean of 3.899 and 0.995 SD.

#### B. Measurement Model Assessment

Construct reliability and validity were used to examine the measurement model. The alpha coefficients of Cronbach were tested to determine the reliability of every core parameter (construct reliability). The quantities of all the unique alpha coefficients of Cronbach in this research ranged from 0.700 to 0.907, which went beyond the proposed value of 0.7 [32]. Moreover, for inspecting construct reliability, all the CR (composite reality) values ranged from 0.939 to 0.959, which went beyond 0.7. Table 1 states that construct reliability has been fulfilled as Cronbach's CR and alpha [33-35].

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 [30]. As per according, 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 except for items STR4 and ATT7, because of the low loading the items were omitted.

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 0.629 and 0.843, which went beyond the proposed value of 0.50 [36]. Thus, all constructs have complied with the convergent validity acceptably, as shown in Table 1.

**Table 1: Measurement model assessmen.**

Constructs	Item	Loading (> 0.7)	M	SD	$\alpha$ (> 0.7)	CR (> 0.7)	AVE (> 0.5)
Integration (INT)	INT1	0.869	3.766	0.843	0.794	0.880	0.711
	INT2	0.885					
	INT3	0.770					
Efficiency (EFY)	EFY1	0.817	3.804	0.827	0.891	0.920	0.696
	EFY2	0.822					
	EFY3	0.879					
	EFY4	0.819					
	EFY5	0.833					
Effectiveness (EFS)	EFS1	0.804	3.700	0.784	0.803	0.871	0.629
	EFS2	0.787					
	EFS3	0.830					
	EFS4	0.749					
Citizen Centerity (CC)	CC1	0.908	3.824	0.954	0.774	0.898	0.815
	CC2	0.898					
Innovation (INN)	INN1	0.875	3.572	0.840	0.700	0.870	0.769
	INN2	0.880					
Structure (STR)	STR1	0.850	3.467	0.840	0.781	0.872	0.696
	STR2	0.895					
	STR3	0.752					
	STR4	Deleted					
Navigation (NAV)	NAV1	0.830	3.622	0.907	0.877	0.916	0.731
	NAV2	0.885					
	NAV3	0.881					
	NAV4	0.821					
Accessibility (ACC)	ACC1	0.911	3.899	0.995	0.814	0.915	0.843
	ACC2	0.925					
Attractiveness (ATT)	ATT1	0.828	3.690	0.821	0.907	0.928	0.682
	ATT2	0.849					
	ATT3	0.828					
	ATT4	0.829					
	ATT5	0.839					
	ATT6	0.783					
	ATT7	Deleted					

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

The degree to which the articles distinguish among concepts or measure different constructs is demonstrated by discriminant validity. Fornell-Larcker method analysed discriminant validity of the model as shown in Table 2. AVEs' square root on the diagonals

(displayed in bold) was found to be of larger values as compared to constructs, suggesting a strong link within the concepts and their respective markers [37-39]. It shows good discriminant validity [30, 40].

**Table 2: Fornell-Larcker criterion.**

	ACC	ATT	CC	EFS	EFY	INN	INT	NAV	STR
ACC	<b>0.918</b>								
ATT	0.660	<b>0.826</b>							
CC	0.450	0.457	<b>0.903</b>						
EFS	0.400	0.406	0.631	<b>0.793</b>					

EFY	0.431	0.421	0.340	0.468	<b>0.834</b>				
INN	0.298	0.342	0.547	0.475	0.397	<b>0.877</b>			
INT	0.308	0.395	0.529	0.536	0.361	0.510	<b>0.843</b>		
NAV	0.660	0.591	0.405	0.445	0.350	0.292	0.355	<b>0.855</b>	
STR	0.496	0.542	0.345	0.368	0.284	0.278	0.338	0.516	<b>0.834</b>

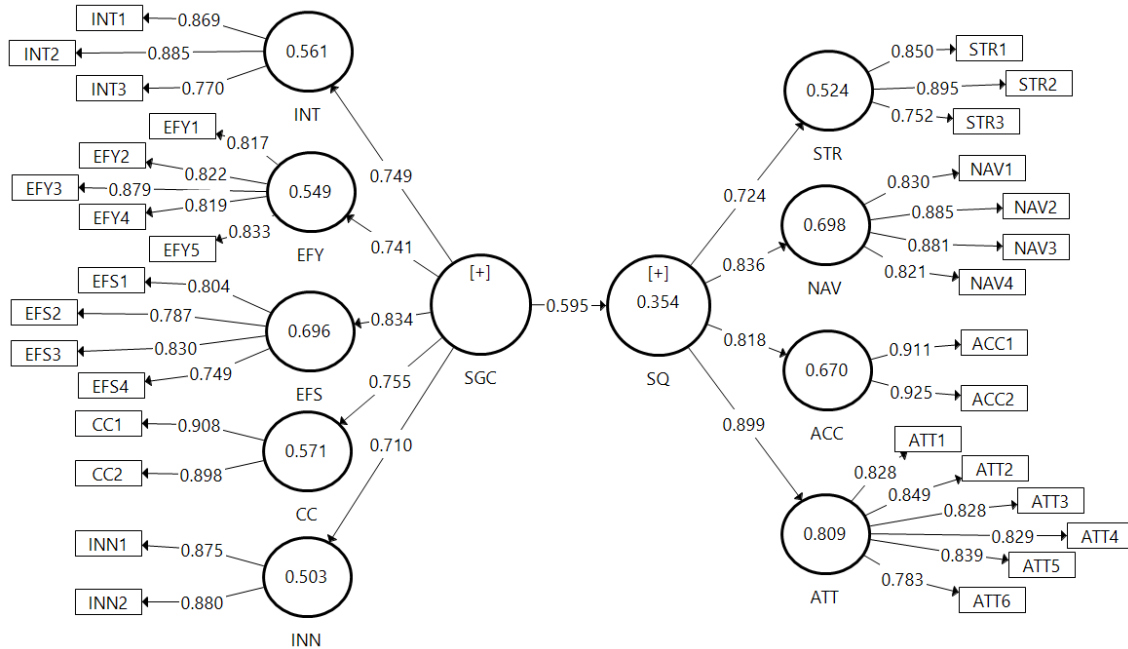
Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations.

Key: INT: integration, EFY: efficiency, EFS: effectiveness, CC: citizen centerity, INN: innovation, STR: structure, NAV: navigation, ACC: accessibility, ATT: attractiveness.

### C. Structural Model Assessment

The structural model can be tested by computing beta ( $\beta$ ),  $R^2$ , and the corresponding t-values via a

bootstrapping procedure with a resample of 5,000 [30].



**Key:** SGC: smart government characteristics, INT: integration, EFY: efficiency, EFS: effectiveness, CC: citizen centerity, INN: innovation, SQ: service quality, STR: structure, NAV: navigation, ACC: accessibility, ATT: attractiveness

**Fig. 2.** PLS algorithm results.

Figure 2 and Table 3 presents the hypothesis tests. The features of smart government have a positive positively influence service quality. Hence, H1 is accepted with ( $\beta = 0.595$ ,  $t = 11.115$ ,  $p < 0.001$ ). Thirty-five percent of the

variance in service quality is explained by smart government characteristics. The values of  $R^2$  have an acceptable level of explanatory power, indicating a substantial model [38, 39, 41].

**Table 3: Structural path analysis result.**

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision	$R^2$
H1	SGC $\rightarrow$ SQ	0.595	0.053	11.115	0.000	Supported	0.35

Key: SGC: smart government characteristics, SQ: service quality.

## V. DISCUSSION

The research aims at studying about the e-government features and the SQ in UAE taking into consideration the efficiency of the government, its effectiveness, people-centric nature, and innovation.

A positive impact of e-government system was marked on the SQ which was in line with previous literature studies [42, 43]. It is explained by the fact that The more the smart government facilitates integration among governmental services, provides one-entry for citizens even though services takes place in several

departments, reduces governmental staff needed, collect information efficiently, provides evidence-based decision making, makes governmental services effective, makes e-government services citizen-centric, simplifies for citizens to reach information and services provided by government instantly, makes e-government services intelligent, and makes applying government policies easy and instant. The more it is easy to use smart government services, understand the position of the screen I am currently browsing in the navigation layout, provides effective links, reached at anytime from anywhere, become more visually attractive, uses good

images, informative and well-designed icons, well-designed animation, beautiful and attractive colors, good fonts and acceptable font size, and homepage is not overcrowded.

## VI. IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTIONS

As per the study findings of previous literature [5, 10] there is a need for improvement in the recent smart government system.

The research by Aguilera, OscarPeña, Belmonte, & López-de-Ipiña (2017) [11] stated the importance of e-government in improving SQ of the public sector [16]. The current is the first ever study that focuses on e-government and its impact on SQ in UAE.

The current research is based on public's viewpoints as per their experience. Because of the self-reporting issue, it might lead to bias of responses. Further research

needs to be done taking into purview other countries or locations, citizen's categories and various time frames. One of the other limitations was cross-sectional nature of data collection. Future research should be conducted to investigate the relationship between variables by conducting cross-cultural studies as recommended by previous studies.

## VII. CONCLUSION

The proposed model provides a better understanding of characteristics of Dubai smart government such as (integration, efficiency, effectiveness, citizen centerity, and innovation) on service quality in term of (Structure, navigation, accessibility, and attractiveness). The results from the descriptive analysis showed a positive impact of e-smart government on SQ. UAE government needs to pay more attention to the smart government characteristics to improve the quality of its services.

## APPENDIX

Appendix A  
Instrument for variables

Variable	Measure	Source
Integration (INT)	INT1: smart government facilitates integration among governmental services.	[11]
	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.	
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.	
Structure (STR)	STR1: I can easily use the Smart government services.	[44]
	STR2: Smart government is displayed in a harmonious way.	
	STR3: Smart government is not displayed lots of Ads.	
	STR4: Smart government is displayed noisy Ads.	
Navigation (NAV)	NAV1: I can clearly understand the position of the screen I am currently browsing in the navigation layout.	
	NAV2: The design of the homepage of Smart government can help me to easily find the location of the required information.	
	NAV3: Smart government page provides effective links.	
	NAV4: I can easily return to the screens previously browsed.	
Accessibility (ACC)	ACC1: Smart government can be reached at anytime from anywhere.	
	ACC2: Smart government services are easy to use.	
Attractiveness (ATT)	ATT1: Smart government services are visually attractive.	
	ATT2: Smart government generally uses good images.	
	ATT3: Smart government generally uses informative and well-designed icons.	
	ATT4: Smart government use well-designed animation.	
	ATT5: Smart government use beautiful and attractive colors.	
	ATT6: Smart government uses good fonts and acceptable font size.	
	ATT7: Smart government homepage is not overcrowded.	

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