Structural Relationship of Smart Government Service Quality with Users Satisfaction in UAE

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ABSTRACT

This research paper presents a study on developing a structural model of service quality for the smart government services in UAE. The model was developed based on the conceptual model consisted of six independent variables constructs and one dependent variable construct which is Citizen Satisfaction. Results from modelling found that all the measurement models achieved the fitness indexes. The structural model also achieved the fitness acceptable level. The results of path analysis indicate that all the relationships are significant as the p-values are below 0.05. With the R2 value of 0.78, it means that all the six exogenous constructs are collectively explained about 78% variation in Citizen Satisfaction construct. Therefore it can be concluded that the study has achieved all path's hypothesis as in the conceptual model. Hence with good strategic improvement mechanism of smart government service quality it fulfil users' satisfaction in UAE.

Keywords
Service value, Service quality, user's satisfaction

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1. Introduction

UAE government adopted the advantages of technology advancement in giving better services to its citizens through smart government approach. With smart government service, it introduces easy access to government information in alternative forms to attract people to participate and to increase citizen-oriented services. UAE Smart Government needs to seriously look on these matters for continuous future development future [1-3]. Smart government electronic services speed up the completion of transactions and giving convenient to customer. With providing services smartphone, customer does not need to go to the government department for the services. Smart government services can be defined as the implementation of a set of business processes and underlying information technology capabilities that enable information to flow seamlessly across government agencies and programs to become intuitive in providing high quality citizen services across all government programs and activity domains [4-6].

There are many criteria in determining the quality of electronic service such as website designs, reliability, delivery, ease of use, efficiency, fulfilment, privacy, responsiveness, compensation, contact, processing speed, security, communication, accessibility, credibility, understanding, availability, information, courtesy, customer service, performance, features, service ability, system integrity, trust, service differentiation, customization, web store police, reputation, assurance, empathy, response time, intuitiveness, flow, innovativeness, substitutability, interactivity, structure, content, linkage, incentive, convenience, competence, personalization, collaboration, product portfolio, entertainment, transaction capability, system availability, graphic style, order management, functionality and usability [7-9].

It is important to create quality services as it gives satisfaction to the customers. Continuously improvement by service providers had created fierce competition and this will benefit the customers in digital business industry, competition is more aggressive than other industries. There are many player in digital business it requires small capital to start a company as compared to traditional business. Since digital businesses can be conducted globally so the competition are bigger and wider as the trading can be done all over the world. Due to stiffer competition, digital organization is facing difficulties in keeping the customers and also attracting new customer segments markets [10-13].

Government and its citizens both benefit either through direct or indirect effects from the smart government services. Among citizen benefits from the services are by saving transaction costs, processing transactions speedily, high speed accessibility, no travelling, no queuing time and others. [14, 15]. A mature smart government services should be interactive in nature where the customers able to have respond from the services provider. These interactive businesses generally include personal taxes, licensing applications and updates, fines, birth / marriage / death declarations and others [17]. Fundamentally the customers need quality service from smart government services. Service quality include various types of services like interactive services, one stop services, rapid service, convenient service and others [16]. This service quality should come with system quality. System quality refers to operating characteristics of the government system whether it is reliability, flexibility, ease of use, response time and other [18]. With online service information system has become a point of contact for the services. Services quality of the e-government has became the first impression of the user. Then the information quality is also important to build citizen user confident of the services. Beside that the smart services are required to have other quality features like product quality, offline service perception and service value [19]. These overall quality of smart government services are judged by citizen/user satisfaction of the services. Hence this study develop a relationship between government service quality as the independent variables and citizen satisfaction as the sole dependent variable. This relationship is as described with figure 1

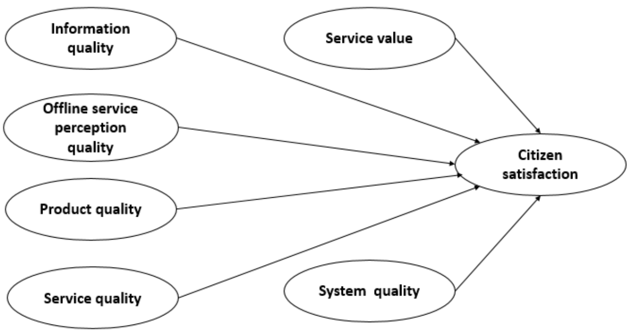

Figure 1 conceptual model

Based on the conceptual model as figure 1, the relationship of the constructs is casual where there are six independent variable construct and one dependent variable construct. This means the hypothesis is the cause and effect relationship where the independent constructs are having significant relationship with the dependent construct.

2. Methodology

The research approach is purely quantitative where the data was collected through questionnaire survey. The main content of the questionnaire is 54 factors which are clustered into seven groups namely Information quality; Offline services perception; Product quality; Service quality; Service value; System quality; Citizen satisfaction. Each of the factor is accompanied with 5-points Likert scale with scale 1 for strong disagreed and scale 5 for strong agreed. The population of this survey is the users of the smart government services which means the population is unknown. Since the population is unknown, the sample size was determined using a formula adopted by [23] and the sampling technique is simple random technique where all the population have equal chance to be the respondents. A total of 350 set of questionnaire were distributed among the targeted respondents however only 250 of the returned questionnaire were valid. The data from this survey was used to develop the structural equation model using AMOS-SEM software. Before the data was used for the modelling, it was screened several process like missing data, outlier, reliability test and normality test. The model was based on the conceptual model as figure 1 which is a casual relationship between the independent variable and dependent variable.

3. Measurement model assessment

Based on the conceptual model in figure 1, the analysis of the model is using covariance-based structural equation modelling (CB-SEM) technique using Analysis of Moment Structure (AMOS) software. The analysis followed the CB-SEM methodology prescribed in the number of multivariate literature [22]. The analysis begin with

- Specification of the model;
- Model identification;
- Estimation of parameters;
- Assessment of goodness-of-fit and
- Re-specification of the model until achieved fitness.

The analysis of the model is conducted in two stages, first stage at measurement level and the second stage at the structural level. At the measurement level, all the constructs in the model are assessed individually using Confirmatory Factor Analysis (CFA) technique of the software for every measurement model until the model achieved the fitness criteria. For this study the total measurement models are as in table 2. After all the measurement models had achieved the fitness value, then it need to assessed the overall measurement models using convergent and discriminant validity and also conduct multicollinearity checking.

Table 2 list of the measurement models

No.	Measurement model
1	Information quality
2	Offline services perception
3	Product quality
4	Service quality
5	Service value
6	System quality
7	Citizen satisfaction

The study had evaluated all the measurement models as in table 2. However for this paper, the evaluation of individual measurement model is excluded. This paper only presents the overall evaluation of the measurement models which are convergent validity, discriminant validity and multicollinearity as follow;

4.1.1 Convergent Validity

Convergent validity measures the degree to which the indicators correlate with the latent construct. Convergent validity is measured by assessing the standardized loadings of the indicators on the latent construct, average variance extracted and construct reliability [11]. Assessment criteria for convergent validity Bentler-Bonette coefficient (NFI). Value of NFI above 0.90 is an indication of convergent validity being achieved [11, 12]. Results of convergent validity for the overall measurement models are as in table 3

Table 3: Convergent validity measures of the overall measurement models

No	Construct	NFI Index
1	Information quality	0.909
2	Offline services perception	0.918
3	Product quality	0.926
4	Service quality	0.938
5	Service value	0.957
6	System quality	0.941
7	Citizen satisfaction	0.933

Table 3 shows the standardized regression weights (lowest and highest) and the NFI for the latent constructs use in the research. It indicates that all the residual items in the constructs are having factor loading of more than 0.6 as the minimum criteria for factor loading. NFI index also indicates that all are above 0.9 which is the minimum threshold value for convergent validity. Hence it can be concluded that the overall measurement models had achieved the convergent validity.

4.1.2 Discriminant Validity

Root square of AVE or Fornell-Larcker criterion is the second approach to assess discriminant validity. It is examining the correlations between the constructs. According to Fornell-Larcker criteria, the square root of AVE of each construct should be higher than its highest correlation with any other construct [22].

Table 4: Discriminant validity

	Information quality	Offline services perception	Product quality	Service quality	Service value	System quality	Citizen satisfaction
Information quality	**0.829**						
Offline services perception	0.048	**0.707**					
Product quality	0.078	0.101	**0.738**				

Service quality	0.086	0.663	0.680	**0.722**			
Service value	0.124	0.134	0.728	0.673	**0.738**		
System quality	0.163	0.196	0.672	0.715	0.710	**0.720**	
Citizen satisfaction	0.124	0.134	0.728	0.673	0.638	0.680	**0.745**

Table 4 demonstrates the latent variables correlations and it is shown that the root square of AVE at the diagonal matrix for each variable is higher than the non-diagonal values which indicated in boldfaced.

4.1.3 Multicollinearity checking

Checking for multicollinearity is an important requirement when evaluating structural equation models. Multicollinearity test is to view the presence of a strong correlation between predictor variables. It is a threat to the validity of multivariate analysis which could led to potential error in hypotheses testing. It is recommended that correlations between constructs should not be greater than 0.90 [10, 11]. The values of the correlation in the multicollinearity check are as in table 5.

Table 5: Correlation matrix of research constructs

	Information quality	Offline services perception	Product quality	Service quality	Service value	System quality	Citizen satisfaction
Information quality							
Offline services perception	**0.048**						
Product quality	0.078	0.101					
Service quality	0.086	0.663	0.680				
Service value	0.124	0.134	**0.728**	0.673			
System quality	0.163	0.196	0.672	0.715	0.710		
Citizen satisfaction	0.153	0.213	0.453	0.563	0.567	0.613	

Table 5 shows that the correlations values among the constructs are all below 0.90. It is shown that the highest correlation occurred is between Service quality and Product quality with a Pearson's Product Moment correlation coefficient (r) of **0.728** while the lowest correlation is between Offline services perception and Information quality with r = **0.048**. This suggests that there is absence of excessive multicollinearity.

4. Analysis for Structural Equation Modelling

After all the measurement models achieved the acceptable level of fitness, the models are tied up to form the structural model according to the formation of the conceptual model as figure 1. Then the analysis of the structural model was conducted until it achieved the fitness level. After that the model was evaluated using path analysis of the AMOS software to determine the achievement of the hypotheses that had been defined earlier [22]. However for this paper it only show the structural model at the initial stage of the analysis as figure 2 and the final stage of the analysis as figure 3.

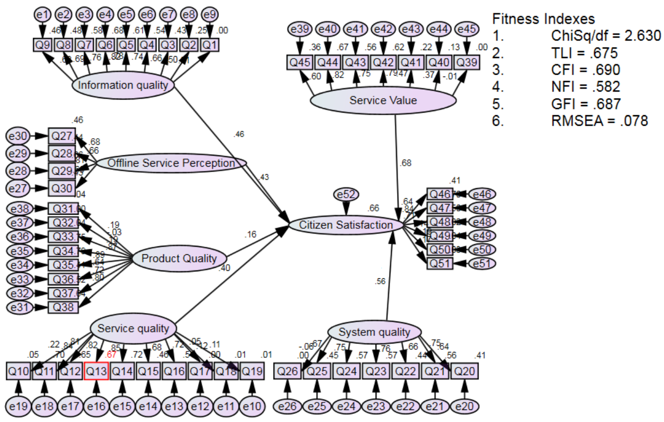

Figure 2- Initial structural measurement model

Figure 2 shows the first-round output of the initial structural model. It shows that not all the fitness indexes were achieved to meet the acceptable level. For that reason series of re-specification were conducted until the model achieved all the fitness indexes. The final model as figure 3 indicates that all the fitness indexes has been achieved.

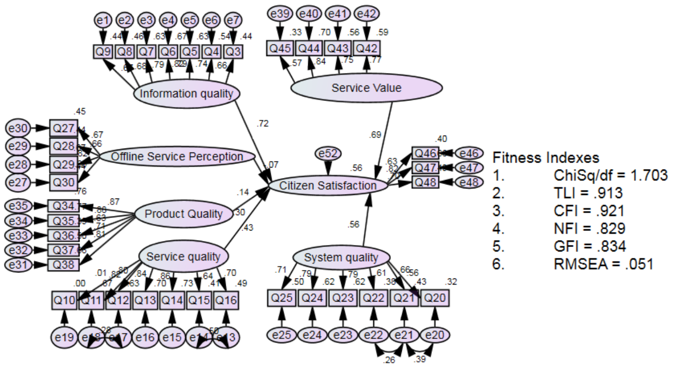

Figure 3- The final structural model

Figure 3 shows the final structural model. The model achieved the fitness indexes after a reiterative process of re-specification based on the examination of the standardized factor loading, SMCs, and other relevant fitness indices. Fourteen items were deleted for poor loading. Similarly, six covariations were introduced in the model where 12 error terms were co-varied based on the modification index result. Hence the final model fitness was accepted. The observed fitness indexes extracted from the final structural model are summarised in table 6.

Table 6. Fitness indexes for structural models

Category	**Parsimonious fit**	**Absolute fit**	**Incremental fit**	**Incremental fit**	**Absolute fit**	**Comment**
Fitness Indexes	Chisq /df	GFI	CFI	NFI	RMSEA	
Acceptance Threshold	Chisq /df ≤ 30	GFI ≥0.90	CFI ≥ 0.90	NFI ≥ 0.90	RMSEA≤0.08	
Initial Structural Model	4.787	0.697	0.642	0.589	0.097	Fitness level not achieved; model not accepted
Final Structural Model	1.225	0.907	0.980	0.902	0.027	Fitness level achieved; model accepted

The results from table 6 indicate that the fitness indexes obtained from the initial and final structural model. Thus, it can be concluded that the final model satisfied all the necessary requirements for model fitness acceptance.

Testing of research hypotheses

Evaluation of direct relationship is the assessment of the relationship between the exogenous and endogenous constructs. In this case the exogenous are the six constructs of the service quality and the endogenous construct which is Citizen Satisfaction. The results of structural path for the relations between the exogenous and endogenous constructs are presented in Table 7.

Table 7: path relationship

Exogenous	**Endogenous**	**P-value [significant level]**	**R^2**
1. Information quality	Citizen satisfaction	0.017	0.78
2. Offline Services perception		0.023	
3. Product quality		***	
4. Service quality		***	

Exogenous	Endogenous	P-value [significant level]	R^2
5. Service value		0.045	
6. System quality		***	

***indicates significance at p<0.05

Table 7 shows the results of direct relationships between all the constructs which are independent/exogenous and dependent/endogenous. The results in the table indicate that all the relationships are significant as the p-values are below 0.05. With the R^2 value of 0.78, it means that all the six exogenous constructs are collectively explained about 78% variation in Citizen Satisfaction construct. Therefore it can be concluded that the study has achieved all path's hypothesis as in the conceptual model. Hence with good strategic improvement mechanism of smart government service quality it fulfil users' satisfaction in UAE.

5. Conclusion

This research paper presents a study on developing a structural model of service quality for the smart government services in UAE. The model was developed based on the conceptual model consisted of six independent variables constructs and one dependent variable construct which is Citizen Satisfaction. Results from modelling found that all the measurement models achieved the fitness indexes. The structural model also achieved the fitness acceptable level. The results of path analysis indicate that all the relationships are significant as the p-values are below 0.05. With the R^2 value of 0.78, it means that all the six exogenous constructs are collectively explained about 78% variation in Citizen Satisfaction construct. Therefore it can be concluded that the study has achieved all path's hypothesis as in the conceptual model. Hence with good strategic improvement mechanism of smart government service quality it fulfil users' satisfaction in UAE.

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References

[1] Elsherif, H. M., Alomari,K.M., & Alkatheri, A.S.A.A.O. (2016). Mobile Government Services Satisfaction and Usage Analysis: UAE Government Smart Services Case Study. International Journal of Computer Science and Mobile Computing, 5 (3) pp. 291-303.

[2] Adetunji, O., & Yadavalli, V.S. (2013). "Assessment of the quality of service provided by a national regulatory institution". South African Journal of Industrial Engineering.

[3] Harsh, A., Ichalkaranje, N. (2015)."Transforming e-Government to Smart Government: A South Australian Perspective". Intelligent Computing, Communication and Devices, Advances in Intelligent Systems and Computing, 308, PP. 9-16.

[4] Jain, P. &Aggarwal, V. (2015)."Service quality models". BVIMSR's Journal of Management Research, PP. 125-136.

[5] Alanezi, M.A., Kamil, and A. (2010) "A proposed instrument dimensions for measuring e-government service quality". International Journal of u- and e- Service, Science and Technology, 2010, Vol. 3, No. 4, PP.1-18.

[6] Smart Dubai, (2015). White Paper: A collaborative approach to smart city transformation

[7] Woodruff, S. L., & Cashman, J. F. (1993). Task, domain, and general efficacy: A reexamination of the Self-efficacy Scale. Psychological Reports, 72(2), pp.423–432.

[8] Yarimoglu, E. (2014). "A Review on Dimensions of Service Quality Models". Journal of Marketing Management.

[9] Alanezi, M.A., Kamil, and A. (2010) "A proposed instrument dimensions for measuring e-government service quality". International Journal of u- and e- Service,

Science and Technology,2010, Vol. 3, No. 4, PP.1-18

[10] Shehri, AM, Al-Haqwi AI & Al-Sultan M. (2008). Quality Issues in Continuing Medical Education in Saudi Council Arabia. Annals of Saudi Medicine; 28(5) pp.378-381

[11] Zhao, Q. (2010). E-government evaluation of delivering public services among cities in Yangtze River Delta. The International Information & Library Review, Volume 42, Issue 3, September 2010, Pages 208-211.

[12] Rorissa, A., & Demissie, D. (2010). An Analysis of Africane-Givernment Service Websites, Government Information Quarterly, 27 (2),pp. 161-169

[13] Kaisara, G., & Pather, S. (2011). The e-Government Evaluation Challenge: A South African Batho Pele-aligned Service Quality Approach, Government Information Quarterly, 28 (2).pp211-221

[14] Wong, M., Hideki, N. (2011). "The Use of Importance-Performance Analysis (IPA) in Evaluating Japan's E-government Services". Journal of Theoretical and Applied Electronic Commerce Research.

[15] Scholl, H. J., Scholl, M. (2014). "Smart Governance: A Roadmap for Research and Practice". p. 163–176.

[16] Pho, H.T. & Tambo, T. (2014). Integrated Management systems and Workflow-Based Electronic Document Management: An Empirical Study. Journal of Industrial Engineering and Management, 7 (1) pp. 194-217

[17] Layne, K., & Lee, J. (2001). Developing Fully Functional E-Government: A Four Stage Model, Government information Quarterly, 18 (2), pp 122-136.

[18] Delone, W.H. & McLean, E.R. (2003). The DeLone and McLean model of information systems success: a ten-year update. Journal of Management Information Systems, 19(4), pp.9-30.

[19] Rai, A., Lang, S.S., & Welker,R.B. (2002). Assessing the Validity of IS Success Models: An Empirical Test and Theoretical Analysis, Information Systems Research, 13 (1)

[20] Awang, Z. (2014). A handbook on structural equation modeling. MPWS Rich Resources.

[21] Awang, Z. (2015). Analyzing The Mediating Variable In A Model, in A Handbook of SEM, University Sultan Zainal Abidin Publicationb

[22] Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing theory and Practice, 19(2), 139-152.

[23] Rahman, I.A., & Al-Emad, N. (2018). Structural relationship of leadership qualities with worker’s issues for Saudi Arabia's construction industry. In MATEC Web of Conferences (Vol. 250, p. 05002). EDP Sciences.