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The Impact of E-government for Better Service of Performance of Government. An Extension of Delone & Mclean is Success Model with Social Influence

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Abstract

Governments across the global are in the search for better ways of operating and providing improved services to the public through the use e-government technologies and services. Recent reports showed that the actual impact of ICT on public organization in UAE is not matching with the importance of ICTs to UAE government vision. This study examined the relationships between system quality, information quality, service quality, social impact, actual use, and performance impact. The relationships between these variables have been examined together with the model fit of the updated framework based on the latest theory of Delon and Mclean for information systems. To achieve this objective and examine the model fit of updated version of Delone & Mclean information system success model, the author applied quantitative methods and distribution of questionnaires to a population involves public servant in the public sector organizations within Road and Transport Authority (RTA) in Dubai. The result shows system quality, information quality, service quality, and social influence have a multiple regression effect on actual use of e-government, while actual use of e-government mediates the multiple impact of system quality, information quality, service quality, and social influence on performance impact. This study contributes to the DeLone & Mclean (2003) Information Systems Success Model by examining and extending it in the context of the UAE public sector, specifically to enhance organizations' performance through the utilization of e- government services.

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Introduction

The Internet, an important aspect of technology, at present and in the future, seems to be the most useful technology for communication, business and obtaining information for individuals, organizations, and countries. As the Internet rapidly turn to be indispensable for the daily life of individuals and significantly impacted every facet of operations in organizations (Greengard, 2015).

Electronic government (e-government). is the use of technological communications devices, such as computers and the Internet to provide public services to citizens and other persons in a country or region. According to Jeong (2007) the term consists of the digital interactions between government and employees (G2E). E-government should enable anyone visiting a city website to communicate and interact with city employees via the Internet. The essence

of e- governance is the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees.

The United Arab Emirates (UAE) has an open economy with a high per capita income and a substantial annual trade surplus. The UAE has made substantial development on the promotion of ICT for development through a series of innovative programmes, funding opportunities and pioneering initiatives. There is an increasing demand for ICT products and services in UAE's public and private sectors has been considerably grown for the period 2011-2017. In the 2016 Survey, 29 countries, including the UAE, score "very high," with E-Government Development Index (EGDI) values in the range of 0.75 to 1.00, as compared to only 10 countries in 2003. The UAE is in eighth place globally, with Estonia, on the survey ahead of Japan, Sweden and Italy (Wam, 2017). The UAE also ranks third in Asia on the survey. The 2016 UN e- Government Survey provides new evidence that e-government has the potential to help support the implementation of the 2030 Agenda and its 17 sustainable development goals (Wam, 2017). Several theories and models have been developed to investigate and understand the characteristics affecting the technology usage of information systems (IS) where e-government is part of these studies. There are lots of eempirical efforts to reduced the ambiguity that related to technology usage and the related issues. The well-known theories and models that have been using to answer the questions that related to technology usage issues (Venkatesh, Morris, Davis, Davis, & Sam, 2003). Among these theories is the model developed by DeLone and McLean of information systems success (DMISM) (Delone & McLean, 2003) which is used in this study to investgate antecedent and outcomes of e-government usage among employees within public sector organizations in UAE.

1. The Aim of Study

This study applied the Delone and McLean IS Success Model as an underpinning theory with the extension of social influence as an independent variable to examine the antecedent and outcomes of e-government usage among employees within public sector organizations in UAE. To achieve this objective, the author has examined the multiple regression effect of system quality, information quality, service quality, and social influence on the actual use of e- government as well as evaluating the mediation role of actual use of e-government on the performance impact of the system.

2. Research Methodology

Research methodology is normally divided into various categories. The choice of appropriate research methodology is as important as defining the research questions (Mackey and Susan, 2015). Quantitative approach involves number calculations to test relationships between variables; it uses objective measurements and statistical analysis of data, which are collected from a predefined place of study. Quantitative research falls into either the experimental or the non- experimental category (Lushey and Munro, 2014). Therefore, this study used a quantitative methods based in an attempt to investigate the association, cause for, or the consequences of, differences between certain variables and a group of individuals. Population involves public servant in the public sector organizations within Road and Transport Authority (RTA) in Dubai. A self-administered questionnaire is used to collect the primary data from the respondents in, and then filled data in SPSS file before conducting the statistical analysis. The total number of valid questionnaires used

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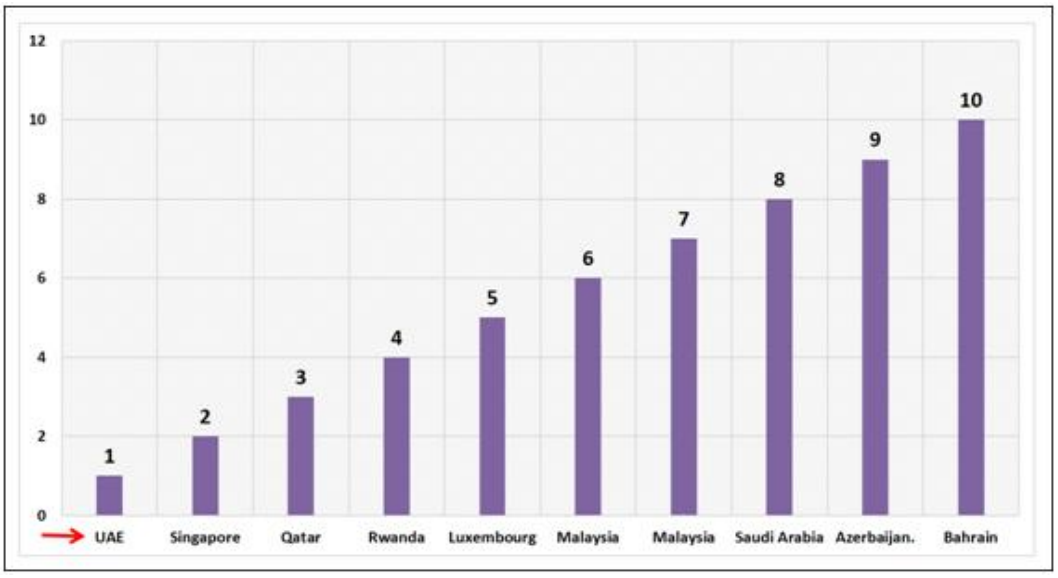
in the analysis equal 381.

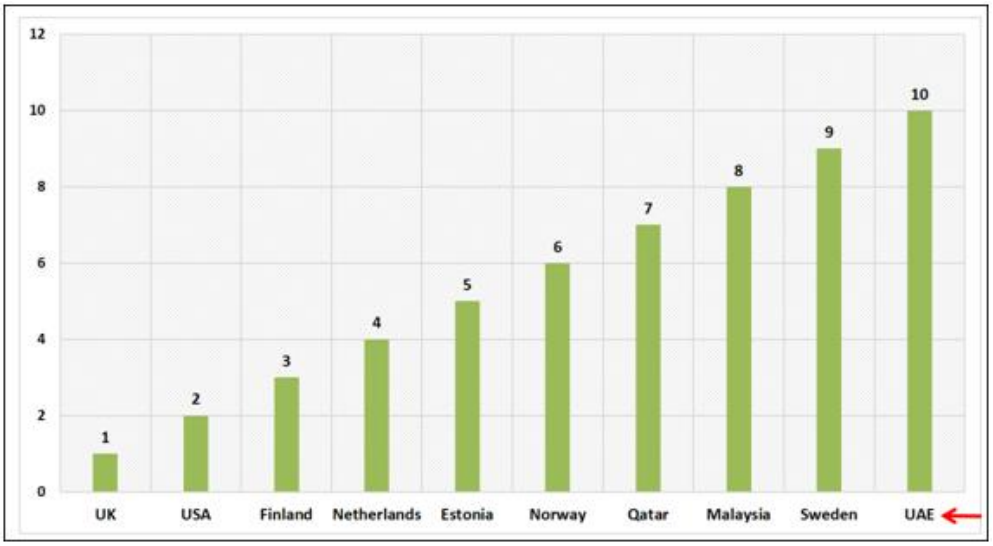
3. The Issues of e-government in UAE

Governments across the global are in the search for better ways of operating and providing improved services to the public through the use e-government technologies and services. Despite that many developing countries are crippling on utilization of e-government services (Anjoga et al., 2016). There is a gap between the indicator regarding the importance of information and communication technology (ICT) to government vision of the future which UAE ranked as number 1 in the world among 139 countries as shown in Figure-1 and the indicator of the impact of ICTs on organizational which UAE ranked as number 10 as shown in Figure-2. In order to fill this gap, this study addresses the link between knowledge management and smart government effectiveness considering the role of institutional challenges as a moderator variable within the public sector in UAE.



Source: (Global Information Technology Report, 2016)

Figure-1: Importance of ICTs to government vision of the future (Ranking among 139 country)



Source: (Global Information Technology Report, 2016)

Figure-2: Impact of ICTs on organization (Ranking among 139 country)

Reading the differences between the ranking in Figure-1 and Figure-2, it is evident that the actual impact of ICT on public organization in UAE is not matching with the importance of ICTs to UAE government vision. Thus there is a lack of understanding to the importance of system quality, information quality, service quality, and social impact on the actual use of e- government in UAE. Accordingly, this study addresses this gap and attempts to link between actual use of e-government and performance impact of these system among employees in the public sector.

4. Theories in Information System

Several theories and models have been developed to investigate and understand the factors affecting the technology usage, adoption, and information system success, which have reduced the ambiguity that related to technology usage and the related issues. This section reviews the most applied theories and models in ICT domain.

5. Technology Acceptance Model (TAM)

Davis (1989) developed technology acceptance model (TAM) which has been used widely in the technology usage and acceptance. TAM as shown in Figure-3 is tailored to IS contexts and was designed to predict information technology acceptance and usage on the job. The final conceptualization of TAM excludes the attitude construct in order to better explain intention parsimoniously.

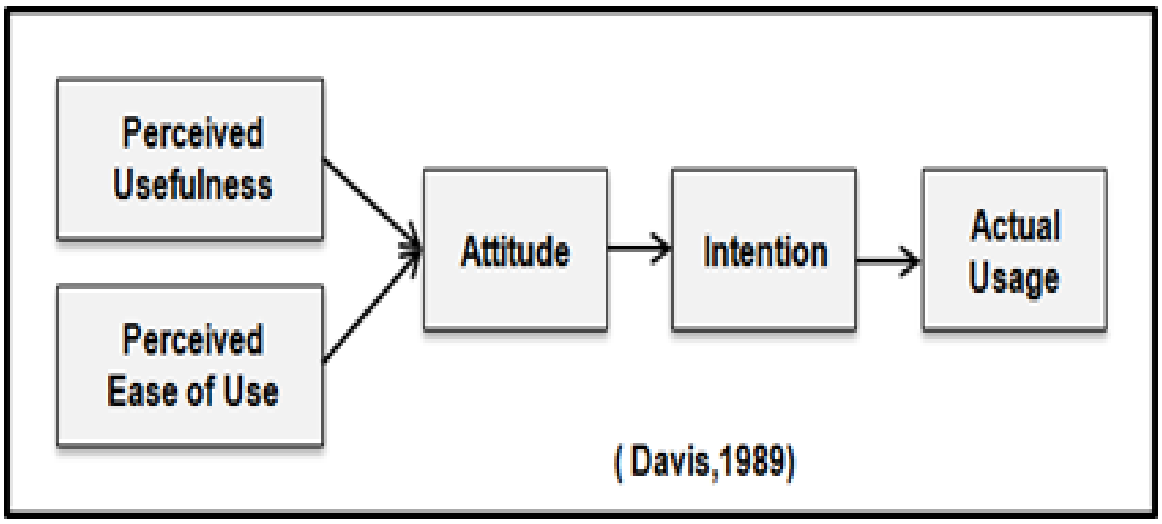


Figure-3: Model of Technology Acceptance Model (TAM)

6. Unified Theory Of Acceptance & Use Of Technology (UTAUT)

UTAUT is one of the robust theories in an information system which brings together a range of theoretical frameworks and ideas which unified eight theories and models. UTAUT core constructs are; performance expectancy (define as The degree to which an individual believes that using the system will help him or her to attain gains in job performance), effort expectancy (define as The degree of ease associated with the use of the system), social influence (define as the degree to which an individual perceives that important others believe he or she should use the new system) and facilitating conditions (defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.) as shwon in Figure-4

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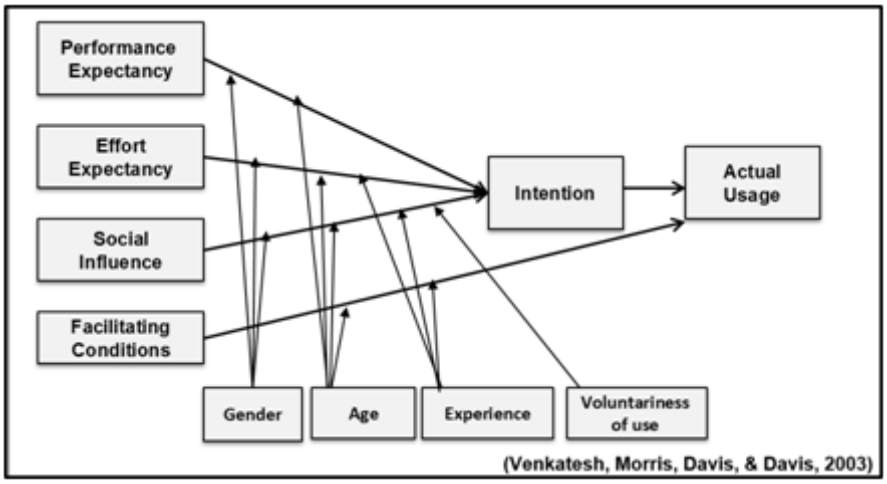
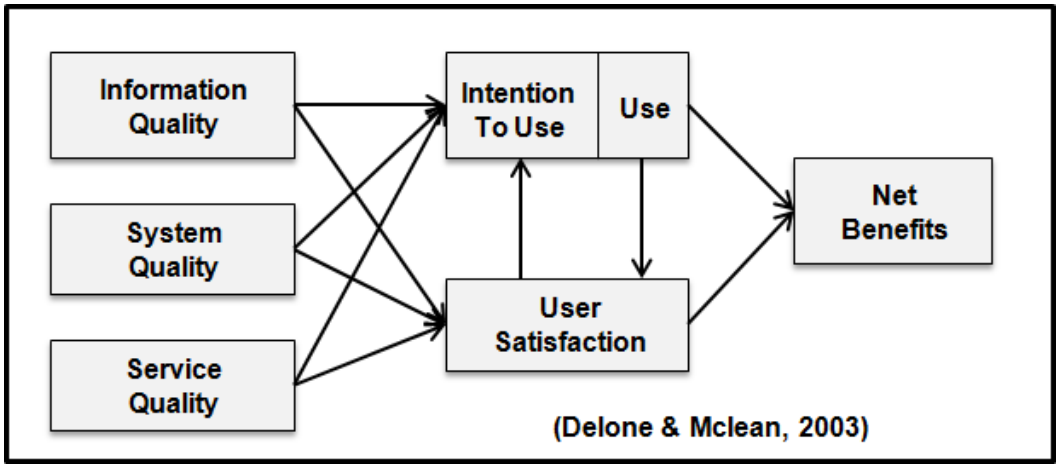


Figure-4: Model of Unified Theory of Acceptance and Use of Technology (UTAUT)

7. Delone & Mclane Information System Success Model (DMISM)

Delone & Mclean (1992) developed the information system success model which known as DMISM as shown in Figure-5, the model comprehensively reviewed IS success measures and concluded with a model of interrelationships between six IS success variable categories: (1) system quality, (2) information quality, (3) IS use, (4) user satisfaction, (5) individual impact, and (6) organization impact. This model makes two important contributions to the understanding of IS success. First, it provides a scheme for categorizing the multitude of IS success measures which have been used in the research literature. Second, it suggests a model of temporal and causal interdependencies between the categories (Wang & Liao, 2008).

Delone & Mclean (2003) propose an updated model of IS success by adding a service quality measure as a new dimension of the IS success model, and by grouping all the impact measures into a single impact or benefit category called net benefit, to avoid complicating the model with more success measures. Many empirical studies within different context and various technology application have been used the DMISM as underpinning theory and validate and test the core constructs of the theory, which shows the robust and effectiveness of this model. In this study this model is updated for e-government applications in UAE context as shown in Figure 2-6.



Figur-5: Updated Delone & Mclean model (2003)

8. The updated DMISM Model

The finding of the study by Wang and Liao (2008) on e-government supports previous research of DMISM which System quality, information quality, and service quality have positive effect on usage and user satisfaction, and performance impact influenced by the constructs usage and user satisfaction. In addition, Jennex, Olfman, Panthawi, and Park (1998) and Chong, Cates, and Rauniar (2010) confirmed the results that showed by DMISM.

Another important finding was that system quality and information quality have an influence on user satisfaction and perceived usefulness (Hussein, Karim, & Selamat, 2007). System quality and information quality effect perceived benefits and satisfaction (Wu & Wang, 2006). Moreover, whereas Wang (2008) found that perceived value influenced by the constructs system quality, information quality, and service quality. The five variables of the updated DMISM model in this study are described in the following.

System Quality

System quality is considered highly imperative as far as technology usage and user satisfaction are concerned (Cheng, Liu, Qian, & Song, 2013) (Shah & Attiq, 2016). A few studies have proven that system quality influence usage, user satisfaction and task-technology fit. For example, in a quantitative study, (Wang & Lai, 2014) in the context of knowledge management systems which surveyed over 295 employee's users.

Information Quality

Wu and Wang (2006) defined the information quality as; how good the system is in terms of its output content quality. Whereas Fan and Fang (2006) defined it as: user perception of measuring system's output in its reliability accuracy, completeness, and consistency. Moreover, Mohammadi (2015) defined as the degree to which the system users convinced that the internet information are up-to-date, accuracy, relevant, comprehensive, and organized.

Service Quality

According to Wang and Liao (2008), service quality construct one of the most important factors in the context of technology usage and satisfaction. A business with high service quality will meet or exceed customer expectations whilst remaining economically competitive (Jukka, 2010). Evidence from empirical studies suggests that improved service quality increases profitability and long term economic competitiveness. Improvements to service quality may be achieved by improving operational processes; identifying problems quickly and systematically; establishing valid and reliable service performance measures and measuring customer satisfaction and other performance outcomes (Parasuraman, 2005).

Social Influence

A few studies have conducted on the influence of social influnce construct on actual usage. For instance, Ogara et al. (2014) in a survey study among 239 students in the context of mobile instant messaging found that social presence and social influence predict user satisfaction. In addition, Cheung et al. (2000) in the context of Internet and world wide web which used questionnaire method found that there is a relationship between social factor and IS usage.

Actual Usage

Actual Usage is defined as the usage frequency of the technology and usage times (Kim et al., 2007). And according to McFarland and Hamilton (2006) Two self-reported system usage items: frequency of use and duration of use. In addition, Fan & Fang (2006) defined it as the measure of the frequency of using systems. Moreover, Lee et al. (2014) in the

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context of mobile commerce task characteristics, technology characteristics, individual characteristics and task- technology fit predict usage (utilization), and Usage positively influence performance impact.

Performance Impact

Performance impact defined as the degree to which the system usage effects the job process,
knowledge acquisition, communication quality and decision quality (Princely, 2014; Khayun & Ractham, 2011). Whereas, Norzaidi et al. (2009) defined the performance impact as the degree to which the system usage helps to accomplish the task quickly, improve the quality of work, improve job performance, control over work, eliminate errors, enhance effectiveness on the job.

According to findings of previous studies on the constructs of latest version of DMISM. This study extending the updated Delone & Mclean information system success model (DeLone & Mclean, 2003) with an updated model constructed from six variables namely: system quality, information quality, service quality, and social impact, actual use and performance impact. The application of this model in e-government application as shown in Figure-6.

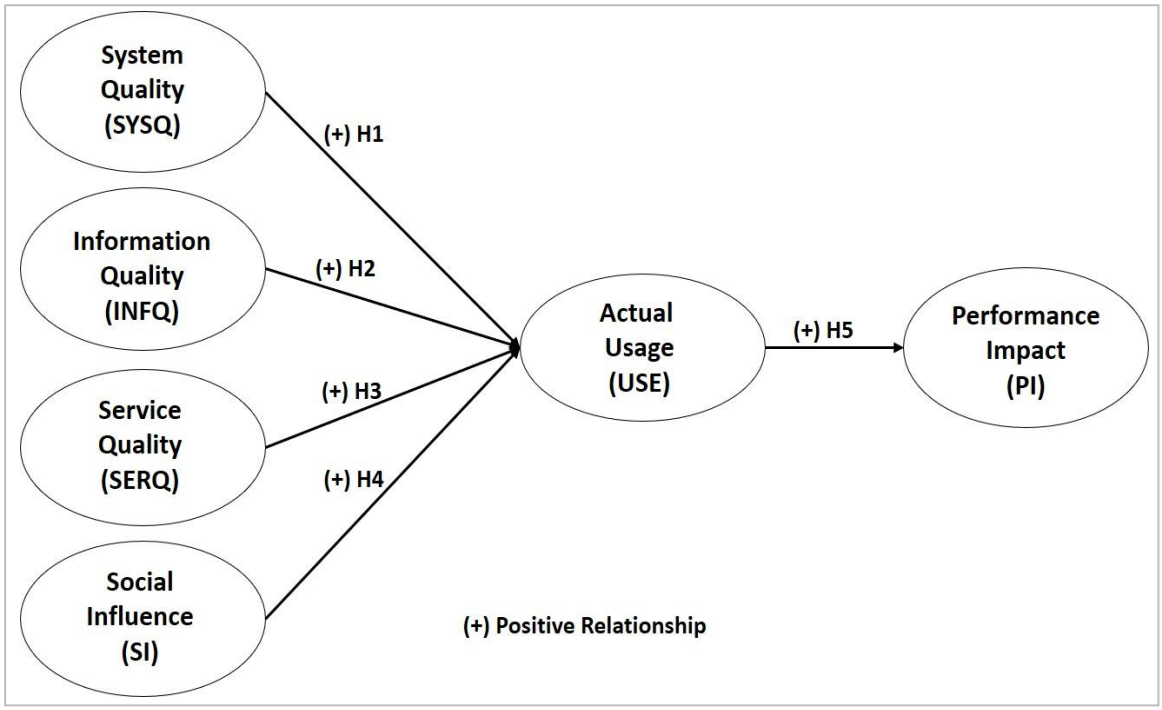

Figure-6: Updated version of Delone & Mclean information system success model (DeLone & Mclean, 2003)

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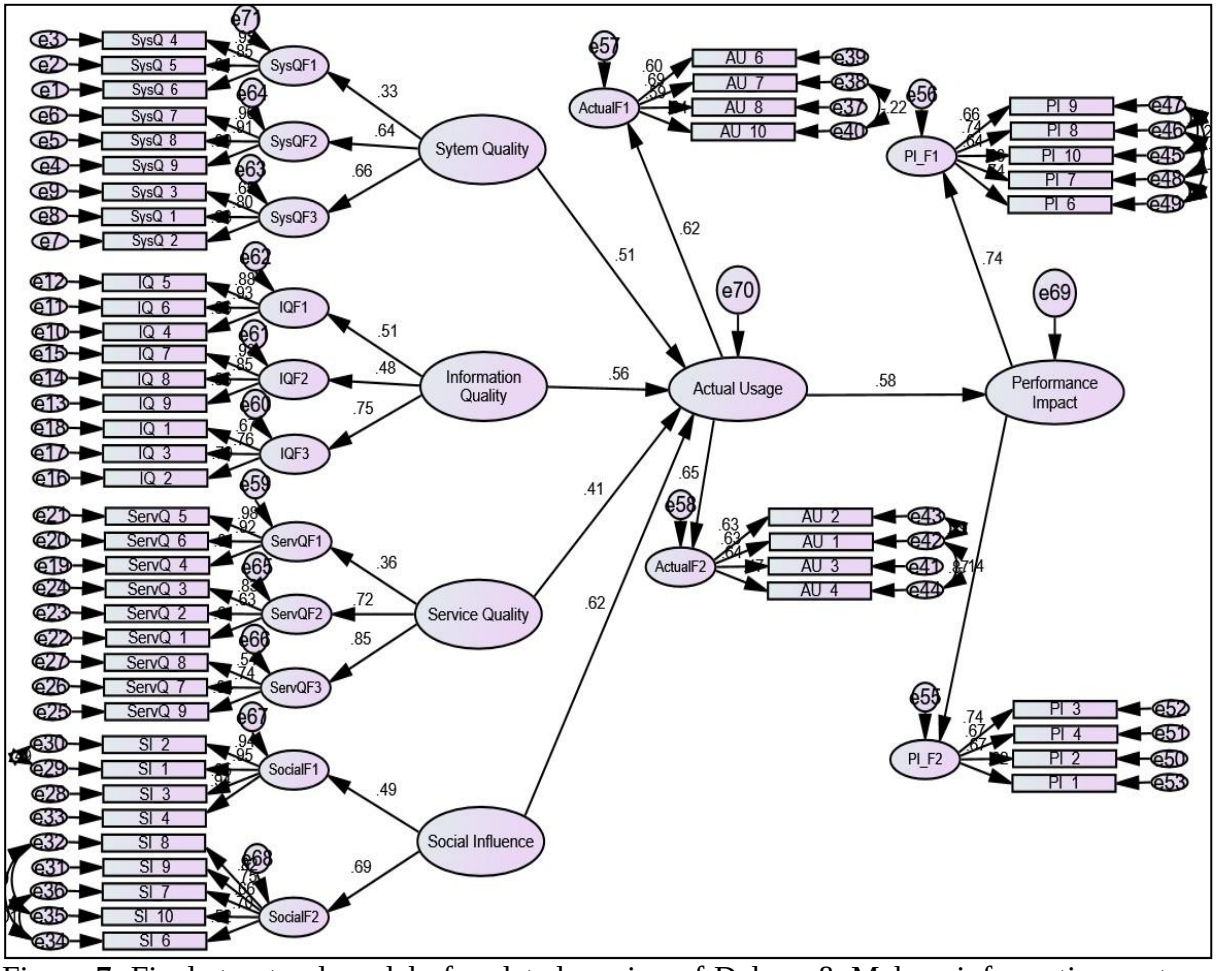
9. Results and Discussions

In this section, the study specifies how the latent variables in the structural model (system quality, information quality, service quality, social impact, actual use, and performance impact) are related to each another (e.g., direct or indirect effects, no relationship, and strong relationship). The exact nature of the relationships is specified in the structural model. The aim of this study is to test the model fit of the final structural model (framework).

Therefore, the researcher has achieved several steps in order to improve the model fit on the initial structural model. These steps include and not limited to modification indices, deleting weak factor loading indicators if detected (Garson, 2007; Kenny, 1999; Kline, 2005). Accomplishing all necessary steps has led to increase the magnitudes of all fit indices so that the measurement model now becomes statistically acceptable and satisfactory according to the standards of SEM. The final structural model is shown in Figure-7 which illustrates the factor loadings each variable.



Figur**e-7**: Final structural model of updated version of Delone & Mclean information system success model (DeLone & Mclean, 2003)

The fit indices indicates that Normed ration CMIN/DF = 2.904. If CMIN/DF ≤ 3.000 (Marsh and Hocevar, 1985) then the default structural model representing adequate fit by reaching the minimum discrepancy (Byrne, 1989, p55). In other words, the default structural model is consistent with the observed data collected from the survey. The default structural model exceeded the minimum level of divergence with the observed data. Therefore, the result of SEM indicates an acceptable fit between

the hypothetical model and the sample data associated with system quality, information quality, service quality, social influence, actual use, and performance impact (Carmines and McIver, 1981, p.80; Carmines and McIver, 1981).

Moreover, the value of CFA associated with the final default model indicates a good comparative fit index, a CFI value > 0.0 or close to 1 indicate a good fit (CFI; Bentler, 1990). Another important fit indicator is RMSEA; a value ≤ 0.08 for the RMSEA would indicate a reasonable error of approximation. In other words, if RMSEA scored less than 0.08 then no penalty incorporates for model complexity (Browne and Cudeck, 1993). The value of RMSEA of the final default structural model = 0.072 indicates a close fit of the model in relation to the degrees of freedom.

10. The Contribution of Study

This study contributes to the DeLone & Mclean (2003) Information Systems Success Model by examining and extending it in the context of the UAE public sector, specifically to enhance organizations' performance through the utilization of e-government services. A new updated version of Delone & Mclean information system success model (2003) has been evaluated and approved to fit for e-government applications in UAE context. The new version of DMISM Model can be applied in all kinds of organizations.

11. Conclusions

This study examined the relationships between system quality, information quality, service quality, social influence, actual use, and performance impact. The relationships between these variables have been examined together with the model fit of the conceptual framework. The result shows there are statistically significant correlations between the independent and dependent variables. In other words, system quality, information quality, service quality, and social influence have a multiple regression effect on actual use of e-government, while actual use mediates the multiple impact of system quality, information quality, service quality, and social influence on performance impact. Moreover, the outcome of this study highlighted the factors that increase employee performance, and should be very useful at both the individual and organizational level for emphasizing the importance of the effect of e-government services on the speed and quality of work. As e-government services efficiently disseminate and facilitate information to citizens, better service delivery; and empowerment of the people through access to information and participation in public and policy decision-making.

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