

A PRELIMINARY INVESTIGATION OF MEASURING USERS SATISFACTION & SUCCESS ON FINANCIAL & ACCOUNTING INFORMATION SYSTEM: BRUNEIAN PERSPECTIVE

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ABSTRACT: *The pilot study undertakes and validates the Delone & McLean's (2003) instrument to measure users' success of Financial and Accounting Information System (FAIS) developed for Brunei Government under its e-Government initiative. The model uses seven constructs such as system quality, information quality, service quality, system use, user's satisfaction, net benefits and system success. The results based on the path analysis have shown that success of the FAIS is measured by the net benefit which in turn is determined by users' satisfaction and system use. Majority (71%) of the respondents are satisfied from the system. The data analysis further shows significant path (beta coefficient- 0.42) from satisfaction to the benefits and 0.37 to success. However, 33% of the variance in success is explained by the net benefits. Based upon the analysis some suggestions and practical implications were discussed that would be helpful for the full study.*

KEYWORDS: Accounting Information System (AIS), e-Government, user satisfaction, information system success, Brunei Darussalam

INTRODUCTION

Information and Communication Technology (IT) in general and Information Systems (IS) in particular have matured by now. IS have become more critical and provided the competitive advantages to the organizations. Most of the previously developed systems have been converted to 24/7 Web-based systems. However, the success of any IS depends upon the users' satisfaction. Users' satisfaction remain one of the significant criteria in determining the success of IS within an organization. It is said that an organizational IS cannot produce any positive outcome unless the end-users accept, adopt and use the system (Akinawesi *et al.* 2013).

From the researchers' perceptive the users' satisfaction for various IS developed in public as well as private sector have been studied. However, the public sector IS has less been studied and long been criticized because of the poor project management such as over staffing, over budget and over the stipulated time and more significantly the lack of technical leadership. That is why, the ICT innovation in the forms of critical IS in public sector has been less successful when compared to the private sector (Kifle and Cheng, 2009). According to Stoltzfus, (2004) e-government projects not only present challenges in preparation stage but also difficult to execute successfully. Another study, Heeks (2003) has identified that only 15% of e-Government projects in developing countries are successful, 35% are total failure and 50% partially failed. The success rate for the government project is small. The implementation of many e-government projects however, seems to have failed to achieve its fullest potential due to complex nature of e-Government. It is therefore become imperative to understand the nature of the system before measuring the success of the information systems. The organizations are mainly using the IS to improve their individual and organizational performance (Van der

Heijden, 2004). Petter *et al.* (2006) has listed down a long list of organizational IS that has utilitarian (improving performance) in nature. These are decision support system, computer-aided, computer-mediated communications, e-Business and knowledge management systems (KMS).

To measure success of these various IS, organizations are now using different approaches rather than the traditional financial measures such as return on investment and other ratio analysis (Rubin, 2004). In fact, more and more organizations are now using measures like balance score cards (Kaplan & Norton, 1996) and bench marking (Seddon *at al.* 2002). Researchers such as Delone & McLean, (1992); Ballantine *et al.* (1996) and Seddon, (1997) have developed success models to provide better framework to understand the IS success. No doubt, the Delone & McLean (1992) was the most cited IS success model and has gone significance modifications ever since it was created and was updated in a improved version of Delone & McLean (2003).

In fact the major motivation of this study emerged because of the original motivation of DeLone and McLean's call for further development and validation of their model. In the past, many researchers have attempted to extend and respecify the original model, even ten years after the first model, Delone and McLean proposed an updated IS success model (Delone & McLean. 2003) that clearly indicate that the success model need to be tested across various IS across the globe to improve the parsimony of the updated model. Another motivation of this research is also influenced by another theoretical concern that is the contextual differences between developing countries and developed countries and their implications for IS success have been highlighted in numerous studies (Higgo, 2003; Heeks, 2002). Higgo (2003) states the information system is influenced by both the organizational context in terms of structures, policies politics and culture and an understanding of the context in which IS is embedded is important and due consideration should be given to these factors that influence the success and failure of IS (Kelegai, 2005). Therefore it is imperative to conduct the studies on the success of various IS in the developing world.

Motivated by these concerns, we thus use the Delone and McLean's model (2003) and determine how the model help explain the variation of end-user satisfaction and success towards adopting treasury and accounting financial information system in the context of Brunei Darussalam. From this assumption, the present study was conducted in June 2013 year with the following objectives:

- To test and validate the modified DeLone and McLean (2003) model and instrument to measure IS success.
- To find out the major factors that are significant in measuring the IS success with public sector organizations in Brunei Darussalam.

The research has been conducted in Brunei Darussalam and mainly chosen because it is part of the world not often reported in literature. The study was also undertaken with emerging economy and the Government of His Majesty's commitment to promote ICT at all levels of public as well private organizations, His Majesty's Government has taken initiatives to implement e-Government programs.

Negara Brunei Darussalam (henceforth referred to simply as Brunei), a small sultanate of 400,000 people, situated on the northwest coast of the Borneo Island which is located

geographically on the equator between Singapore and Malaysia. Its main economic activity is dominated by oil and gas sector. Brunei is presently the 14th largest oil producer in the world and 4th largest natural gas producer (www.goldpages.com.bn). Brunei is facing negative consequences from its single minded dependence on oil. Hence, Brunei needs to diversify its economic activities through its national IT plans.

In Brunei, the e-Government initiative was started in 2000, when His Majesty Sultan Hassanal Bolikah in his speech expressed his wish to see the establishment of e-Brunei (www.gov.bn/en/Pages/E-Government-strategy-initiatives.aspx). Its aim is to have a paperless society, thus by guiding Bruneian into the mainstream of global information technology. His Majesty emphasized the implementation of e-Government and e-Businesses to develop Brunei's economy beyond oil and gas. The government seriousness in considering ICT has been seen where initially its allocation was B\$526 million in the 8th National Development Plan has been increased to nearly B\$1 billion (about US\$690 million) for the development and implementation of infrastructure for e-Government (Brunei Darussalam Public Sector Journey towards e-Government, 2003). The announcement to embark e-Government was made in 2000 but it was not until 2003 that the actual planning started. There was almost a three-year delay in starting e-Government despite a B\$1 billion budget allocated in 2001. The ministries were asked to prioritize their projects under their ICT based strategic plans (Kifle and Cheng, 2009).

The Prime Minister's Office highlights four key drivers for e-Government initiatives:

- To modernize the civil service to further develop the government machinery into an efficient, effective, innovative, competitive, productive and proactive as well as customer focused and friendly.
- To build a more transparent and accountable government, as it enables better participation from citizens and community.
- To meet challenges of globalization.
- To better prepare the citizens for future crises.

Existing E-Services

- Online Services
 - Transport Services under Land Transport System
 - Financial Services (internal to Government) under TAFIS (Treasury Accounting & Finance Information System)¹
 - Customs Services under e-Customs
- Mobile Services
 - Notification for Passport Applications via SMS
 - Notification of Exam Results via SMS

¹ In this study terms FAIS and TAFIS are used interchangeability and both have the same meaning; however TAFIS is known as Malaya equivalent of FAIS.

One of the flagship programs of the e-Government is to enable on online payments for Government services via internet or mobile devices, including the payment of utility bills.

Background of TAFIS

Treasury Accounting and Financial Information Systems project (TAFIS) is one of the initiatives of His Majesty's Government in implementing the e-Government strategy in Brunei's public sector administration. The TAFIS project is in line with His Majesty's aspiration to move the country towards an information technology-based nation. The project was started after his speech on July 15th, 2001 with the following message. *"In pursuit of Information Technology Communication development, Our Government has approved the implementation of the 'Integrated Computerized Electronic Government Accounting & Information Financial System' or TAFIS through the Ministry of Finance"*.

The TAFIS is an integrated, robust and user-friendly IT-based financial application solution for The Ministry of Finance designed and implemented by BAG Networks (www.bagnetworks.com/bn). TAFIS is one of the significant milestones of His Majesty's Government to implement the e-Government strategy and is aligned to His Majesty's directive to move the nation towards a knowledge-based economy. The project was kicked off soon after on the September 26th, 2001 and marked the start of new era towards a paperless government. The main objectives of the TAFIS project are to improve the efficiency of government financial transaction processes. It encompasses the following key application areas: General Ledger, Accounts Payable and Receivables, Budgeting/Commitment, Control and Reporting, Assets Management, Inventory Management and Purchasing. The features include: Online real-time capabilities including browser-based user interface with work flows embedded into business processes and real-time approval of transaction with adequate security, preventing fraud and loss of monetary assets. The system in three phases was implemented in March 2005.

REVIEW OF LITERATURE

Studies on IS Success Model: As said earlier, researchers have derived a number of models to explain the adoption of IS such as Davis's (1989) Technology Acceptance Model (TAM), that is based on Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) by Fishbein & Ajzen, 1975). The limitation of these models are that they have explained as to why some IS are more easily adopted by the users and focused more on the acceptance of system. The acceptance of IS may be regarded as pre-requisite to the success but these models do not measure success in concrete terms. As such, measuring success is a multi-dimensional phenomenon, therefore, DeLone and McLean (D and M model) developed a model in 1992, that measured six dimensions of IS success as system quality, information quality, use, user satisfaction, individual impact, and organizational impact. These six variables are not independent success measures but are interdependent variables. The model was examined and criticized heavily by Seddon & Kiew (1994). Similarly, it was suggested by the critics to add service quality as one of the other variables (Pitt *et al.* 1995 and Jiang *et al.* 2002). Another suggestion was to modify the model on the basis that an IS could affect levels other than individual and organizational levels. Thus, IS success affects workgroups, industries and even societies (Myers *et al.* 1997; Seddon *et al.* 1999). D&M therefore replaced the variables individual and organizational impact with net benefits. Finally D&M explained that to construct 'use' must precede 'users' satisfaction' as the positive experience with 'use' will lead

to greater 'users' satisfaction' in a causal manner (Delone & McLean, 2003). Thus summarizing DeLone and McLean proposed in their refined model that the variables, system quality and information quality had a causal effect on users' satisfaction and system use. For example, if the information quality of information is poor, the resultant effect would be a lack of system use and poor users' satisfaction. The revised model (Fig-1) has been found to be a useful framework for organizing IS success measurement. The updated dimensions of success include six constructs as shown in Table 1.

Table 1 showing explanation of the construct used in the model

Construct	Dimensions
System quality	The desirable characteristics of an IS, such as EOU, system flexibility, system reliability and response time.
Information quality	The desirable characteristics of the system output.
Service quality	The quality of support that a system user receives from the IS department and IT support personnel.
System use	The degree and manner in which staff and customers utilize the capabilities of an information system.
User satisfaction	Users' level of satisfaction with reports, Web sites and support services
Net benefits	The extent to which IS are contributing to the success of individual, groups, industries and nations.
System success	Overall final impact of system

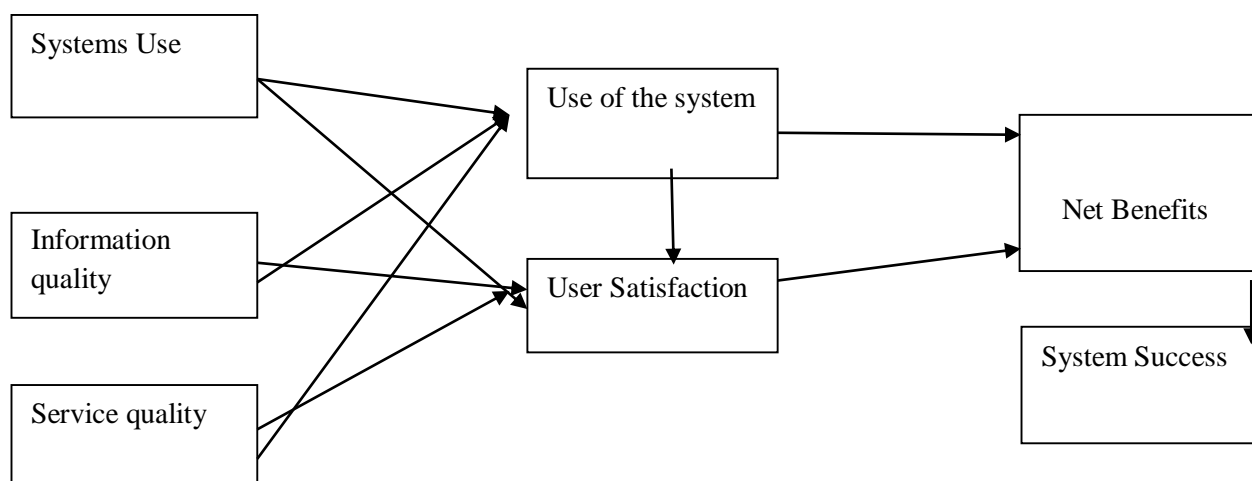


Figure 1 Research Model adapted after (Delone and McLean, 2003 Model of IS Success)

During the 1990's the Delone and McLean model became the common framework for researchers examining information systems success (Smart, 2009). A citation search carried by DeLone & McLean in 1992 found that 144 referred journal articles and 15 papers presented in international conferences on IS had made references to their model. Seddon and Kiew (1994), Goodhue and Thompson (1995) and Guimares and Igbaria (1997) undertook empirical testing of the explicit associations amongst the variables in D&M model. Smart (2009) pointed out that further studies had implicitly tested the causal relationships and variables of the model by investigating the multiple success dimensions and their interrelationships (Yuthas and Young 1998; Igbaria *et al.* 1997; Torkzadeh and Doll 1999). However, DeLone and McLean (2003)

found that the number of citations had risen to 285. Table 2 provides a list of exemplary collection of IS success studies.

Table 2 IS Success Studies

Type of IS	Publications
Data warehouse	Nelson <i>et al.</i> (2005), Wixom and Todd (2005), Shin (2003), Wixom and Watson (2001)
Decision support system	Bharati and Chaudhury (2004)
e-Commerce system	DeLone and McLean (2004), Molla and Licker (2001), Wang (2008)
e-Mail system	Mao and Ambroso (2004)
Enterprise system	Gable <i>et al.</i> (2003), Lin <i>et al.</i> (2007), Qian and Bock (2005), Sedera (2006), Sedera and Gable (2004 _a and _b)
Finance and accounting system	Iivari (2005)
Health information system	Yusof <i>et al.</i> (2006)
Intranet	Hussein <i>et al.</i> (2008), Masrek <i>et al.</i> (2007), Trkman and Trkman (2009)
Knowledge management system	Clay <i>et al.</i> (2005) Halawi <i>et al.</i> (2007), Jennex and Olfman (2003) Wu and Wang (2006) Kulkarni <i>et al.</i> (2007) Velasquez <i>et al.</i> (2009)
Learning system	Lin (2007)
Online communities	Lin & Lee (2006)
Portal	Urbach <i>et al.</i> (2009), Urbach <i>et al.</i> (2010), Yang <i>et al.</i> (2005)
Telemedicine system	Hu (2003)
Web-based system	Garrity <i>et al.</i> (2005)
Web sites	Schaupp <i>et al.</i> (2006)
Departmental accounting system	Seddon & Kiew (1994)
Information system implementation	Raija (2011)
Mobile broadband system	Wang & Yu (2011)

Studies on AIS success: Past research on Computerized Accounting Systems (CAS) or Accounting Information Systems (AIS) were confined to the measurement of end-user computing satisfaction (EUCS) or user satisfaction models (Bailey and Pearson, 1983; Seddon and Kiew, 1994). These researches used Doll and Torkzadeh model (1988) of measuring satisfaction of IS that led to the system success (Ilias *et al.* 2009). The Doll & Torkzadeh model used five constructs such as: content, accuracy, format, ease of use, and timeliness.

MinChoe (1996) studied the relationships among performance of AIS, influencing factors and evolution level of information systems. Users' satisfaction and system use were considered surrogate measures for the performance of AIS. He used 10-item measure for users' satisfaction and system use was measured by considering both the frequency and willingness of use. The influence factors used were; top management support, technical capability of IS personnel, users' involvement, users' training, role of steering committee, location of IS department, formalization of system development and the organizational size.

Chin and Lee (2000) added two other dimensions like 'system speed' and 'system reliability' to improve relationship between the overall measures of satisfaction in the basic model of Doll & Torkzadeh. Unfortunately, Ilias *et al.* (2009) in their Malaysian-based study could not support the inclusion of two dimensions of Chin & Lee (*ibid*) and their results showed the relevancy of Doll & Torkzadeh in measuring system satisfaction.

Markovic & Wood (2004) studied the users' satisfaction among students and support staff with a computer lab in a university. The results showed that satisfaction with software and hardware performance followed by the quality of support staff led to users' satisfaction.

Ashari (2008) in his Indonesian-based study on factors affecting AIS success implementation measured the IS success with different construct. He determined the IS success as a function of user-related, management-related, environmental-related and support of external expertise. He concluded that external expertise factor and management-related factor had significant impact on AIS success, whereas, user-related and environmental-related remained insignificant.

Hamdan, (2012) identified the impact of Accounting Information System Development Cycle (SDC) on its effectiveness. He summed up the critical factors for the various stages of SDC. He used the balanced scorecard approach to evaluate the AIS effectiveness. The study result indicated that the AIS effectiveness should be based on satisfaction and usage measures.

Ifinedo and Nahr (2006) studied the success of ERP system among the Finish SMEs by using modified D & M (1992) model and Gable (2003). They used multi-dimensional constructs to measure system success such as information quality, individual impact, workgroup impact and organizational impact. The model explains about 17% of the variance in ERP system success.

In Brunei to our knowledge not much has been studied in measuring the IS success especially in public sector. In fact, two studies were conducted measuring the satisfaction of Internet banking (Seyal & Rahim, 2011) and ERP system success among SMEs (Seyal *et al.* 2013). The former used the model of Doll and Torkzadeh and later one used the instrument by Ifinedo (2008).

In fact, the main reason of selecting D&M model for this study measuring IS success is due to the fact that D&M model was most extensively used this IS success model that has been tested and validated (Seddin & Kiew, 1994, Petter *et al.* 2008). Table 2 further elaborates the significance of the D&M model across various information systems. The model was not only well tested and validated but was flexible and simple enough (Petter *et al.* 2008).

In summarizing the review of literature on IS system success and on the AIS success, it is evident that studies result remained inconsistent. So, there is potential of carrying out extensive studies, both in public as well as private sector organizations. In addition, majority of the studies mentioned in Table 2 were conducted in developed world, whereas scant information is available within the Asian context, especially in South-east Asia that has rather increased the knowledge gap. Therefore, this study will fill in the gap in term of research contribution and will add to the existing knowledge especially in measuring the IS success in the public sector organizations in Southeast Asian context.

METHODOLOGY

Design of instrument

From the review of the literature and on the basis of the model developed that have fulfilled the research objectives, the questionnaire was modified and edited. The questionnaire was pre- and post tested for assessing the reliability and validity. On the basis of face and content validity, it was revised and refined before administrating the survey. The multidimensional instrument was developed in three parts to capture the information. Part 1 contained demographic and organizational data, consisting of questions pertaining to data with nominal and ordinal measurements. Part 2 captured the information measuring the six dimensions of IS success with thirty-three items multi-dimensional constructs using 5-point Likert scale (1-strongly disagree to 5 for strongly agree). The instrument was adapted from DeLone & McLean (2003). Table 3 provides details of the sources of constructs and the number of items used in this study

Sampling & Data collection

As such, the nature of this pioneering study is exploratory in nature and we were uncertain of the validity of the instrument so the study design was focused on the collection of pilot data. On the basis of the pilot study, the instrument's reliability and validity will be accessed prior to conduct a full study. In order to achieve this convenience sampling method techniques was conducted with the selection of two government offices close to the authors' workplace. The questionnaire was distributed to sixty employees currently using FAIS and fifty were received that was found sufficient as per nature of the study. The sampling frame included only public sector organizations equipped with the FAIS. Whereas, the unit of analysis for this study was on the user-level so the key personnel such as clerks, verifiers and supervisors especially in accounts and administration department were approached to fillin the questionnaire. The study was conducted in late 2013. The basic statistics and reliability coefficient are provided in the Table 3.

Limitation of the Study

The study is not free from its weaknesses. The small sample size used for this pilot study is subject of standard error. Secondly, all data measuring the system success for this study came from self-report survey conducted in two government offices close to each other at a single point in time. It is possible that common method variance influence the results and those data collected on different time or through different methodologies could produce different results. In addition, some studies have focused on the success and failure of various IS in the developing countries due to cultural underpinning (Bhatnagar, 2002 and Basu, 2004). However, the present study does not undertake any success or failure factor to compare due to various cultures. Finally, any attempt to generalize the results based upon small sample size of this pilot study is not advisable at this stage.

Response bias: is a type of cognitive bias which can affect the results of statistical survey especially in the case when respondents answer the question in the way not reflecting their true beliefs. This may happen when the respondents wish to please the questioner by answering what: appears to be the "morally right" answer. This occurs often in the wording of the questionnaire (Lee, 2001). This was dealt by improving the face validity of the questionnaire by having the expert opinion on all the items of questionnaire and by physically examining the questionnaire by our survey team at the time of data collection.

Validity and Reliability

In order to assess the validity and reliability, tests were performed in this study. To get the reliability of the questionnaire, the coefficient of Cronbach's alpha (1951) was taken into account. Minimum Cronbach's alpha value of above 0.70 indicates reliability of the instrument (Nunnally, 1978). During the initial screening of conducting reliability tests, the items were dropped because of low corrected-item total correlation which was less than .40, the cut-off value suggested (Hair *et al.* 1998). The remaining items were applied where the factor analysis was subjected to principal component analysis using Varimax rotation. In addition, we applied the criteria of Kaiser-Normalization as techniques of rotation to examine both the individual items and the relationship among them (Hair *et al.* 1998). All the items that were loaded on which had more than one factor at cut-off value of .40 were eliminated from the constructs (See the Appendix-A). In addition, two types of validity were assessed to validate: convergent and discriminant validities. Churchill, (1979) has suggested that convergent and discriminant validities should be examined for construct validity. Therefore, we assessed convergent validity by examining composite reliability (CR) and average variance extracted (AVE) from the seven constructs (Hair *et al.* 1998).

CR is calculated by squaring the sum of loadings, and then dividing it by the sum of squared loadings, plus the sun of the measurement error whereas, the AVE is measured with the variance captured by the indicators relative to measurement error. Table 3 provides the quality control; statistics with internal consistency and CR values. The CR values of all six constructs were between the suggested minimum of 0.70 (Hair *et al.*, 1998). Table 3 also shows the inter-constructs correlation and also Table 3 represents the variance. The average variance extracted above 0.50 suggests a further evidence of convergent validity (Fornell and Larcker, 1981) These AVE values could also be used to assess discriminant validity which occurs when the AVE exceed the square pair wise correlation between the construct (Espinoza, 1999).

Table 3 Quality Control Statistics

Constructs	No of original items	No of items retained*	Alpha value (.60 and above)	Mean	Variance explained <.50	CR	Source
System quality	7	3	.77	4.28	.52	.69	DeLone & McLean (1992)
Information quality	6	4	.86	4.09	.55	.89	
Service quality	5	4	.70	3.48	.50	.77	
Use of the system	3	2	.70	4.03	.50	.60	
User satisfaction	3	3	.87	4.01	.60	.87	
Net benefits	10	6	.89	4.49	.56	.92	
Success	2	2	.78	4.20	.60	.80	
Total	36	24					

*- items that have corrected-item total correlation are less than .40 and were eliminated from the constructs

Data Analysis

Data obtained from the survey were analyzed using descriptive statistics, factor analysis as well as correlation analysis by using SPSS version 17, a well-known statistical package.

Background profile

The background data of users as well as their organizational profile is summarized in Table 4. The Table describes the characteristics of respondents. Majority of the users is relatively young female (77%) within age group of 18 -30 years (32%). Majority of the users has been using the system for the last six years. It is strange to notice that 36% of the users never had any formal training on system operation. They had learnt to use the system by their own initiatives.

Table 4 Demographical data

Variable	Description	Percentage
Category of users	Store Department	14%
	Admin Department	36%
	Finance Department	50%
Gender	Male	23%
	Female	77%
Age	Between 18-30	32%
	Between 31-40	41%
	Between 41-50	18%
	Above 51	9%
Employees	Division 3 & below	82%
Ranking	Division 2	14%
	Division 1	4%
Use of TAFIS	Less than one year	9%
	1-3 years	32%
	4-5 years	18%
	6 or more years	41%
Received Training	No training received	36%
	Once	32%
	twice	14%
	three or more times	18%
Job Category	Clerks	45%
	Verifiers	32%
	Supervisors	9%
	Others	14%
Overall system performance	Very good	73%
	Below average	27%
Overall system success	Very successful	71%
	Below average	29%

Correlation Analysis

Prior to the testing for the path analysis, we conducted a zero order correlation between the various independent variables as shown in Table 5. The correlation provides directional support

for the predicted relationship and shows that co-linearity among the independent variables are within the acceptable range (Hair *et al.* 1998).

Table 5 Inter- Constructs Correlation Matrix

Constructs	SYSQ	IQ	SERQ	USE	US	NB	SU
System quality (SYSQ)	1.00						
Information quality (IQ)	.517**	1.00					
Service quality (SERQ)	.464*	.480**	1.00				
Use (USE)	.413	.385	.408	1.00			
User satisfaction (US)	.419	.497**	.339	.502**	1.00		
Net benefits (NB)	.253	.242	.166	.312	.471*	1.00	

** Significant ($P < 0.05$)

Analysis of the model with SPSS-AMOS (path analysis)

AMOS 20 was used to test the hypotheses and to carry out additional exploratory analysis of the data. First the hypothesized model was tested along with the paths and path-coefficients. Then the model was examined by using Falk & Miller (1992) criteria which suggests that loadings on path between latent variables and manifests variables should be 0.55 where as Igbaria *et al.* (1995) indicated that the structural equation model can detect effects that are so small as to be significant only in a statistical sense. Therefore a more conservative position-path coefficient of 0.10 and above is preferable (Compeau & Higgins, 1995). For simplicity, we have considered the associated p-value for the acceptance of path analysis.

To assess the model parsimony various measures are used for assessing the goodness-of-fit ratio of χ^2 value to the degree of freedom, goodness of fit indices (GFI), root mean square residual (RMSR) and Bentler and Bonett, (1980) normal index-BBNL. Chi-square (χ^2) is a likelihood ratio test statistics that tests the fit between restricted hypothesized model and unrestricted sample data. Normally χ^2/df ratio of less than 3.0 (Hayduk, 1987) or less than 2.0 in more restricted sense is found to represent a good fit. GFI is a measure of the relative amount of variance and covariance jointly accounted for by the model. Generally a GFI close to 0.90 is strong evidence that the overall model being tested fits the data very well (Gatian, 1994). BBI was developed as an alternative of χ^2/df ratio. It is an indication of the practical significance of the model in explaining the data. In practice, GFI values greater than 0.8 and RMSR low value close to 0.5 are considered as an indicator of good-fit. Our model fit criteria shows $p > 0.00$ (.683), GFI of .911 and AGFI close to 0.9 shows the good-fit of the model with good parsimony.

In addition, model's predictive power was assessed by measured R^2 value for the endogenous variables (Fornall and Larcker 1981). The model was evaluated and shown in Figure 2. As a result, the endogenous constructs such as system use, satisfaction, net benefits and success are all having significant standardized regression weight. All exogenous variables system quality, information quality and service quality also have significant paths. The explanatory power of model shows that 33% of the total variance towards success of FAIS is explained by the net benefits showing the moderate parsimony of the model.

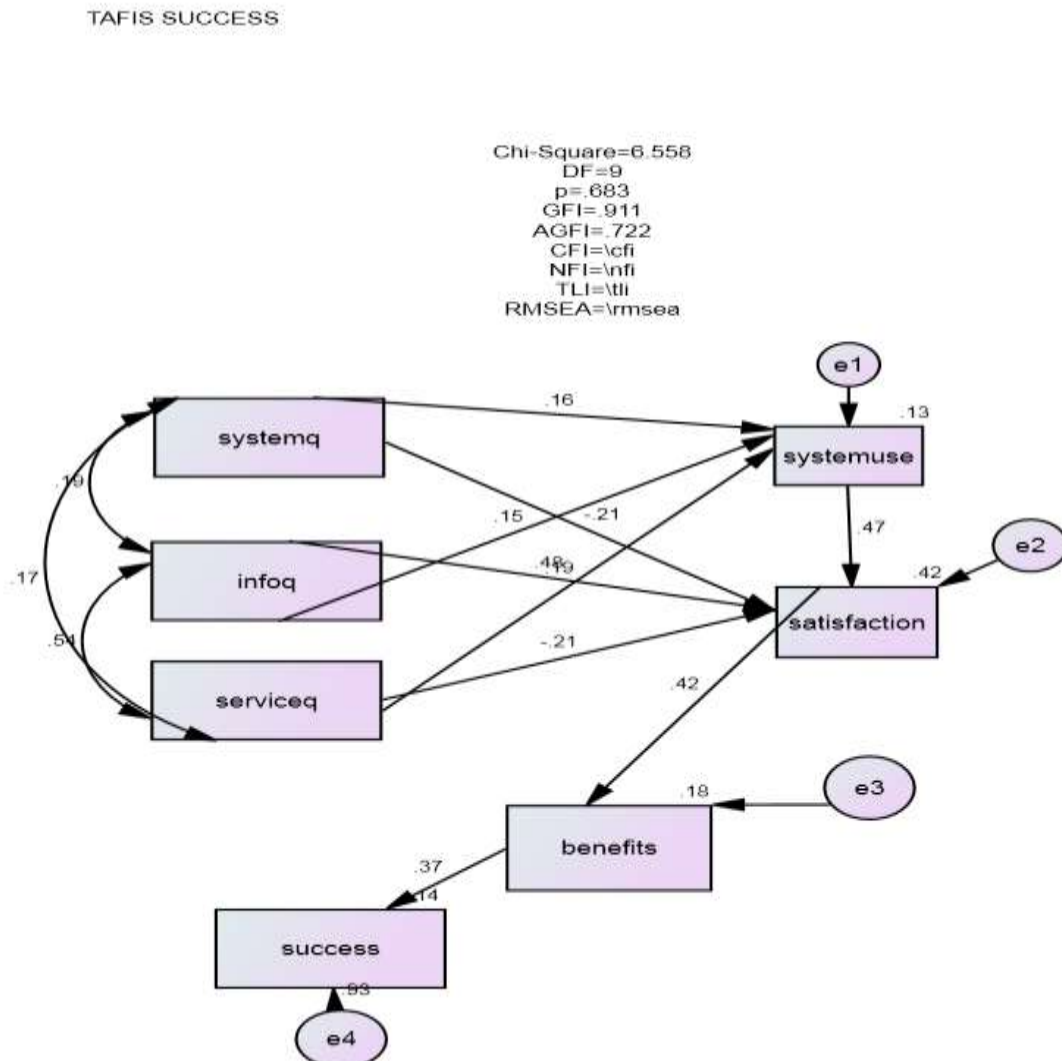


Figure 2 Model's Predictive Power

Table 6 Final Statistics of Structural Model (AMOS)

PATH		Std. Regression weight	R ²
System quality	System use	.16	13%
Information quality	System Use	-.21	
Service quality	System use	.19	
System quality	Satisfaction	.15	42%
Information quality	Satisfaction	.42	
Service quality	Satisfaction	-.21	
System use	Satisfaction	.47	42%
Satisfaction	Net benefits	.42	18%
Net benefits	Success	.37	33%

Model fit criteria Chi-square 6.55 DF = 18, P=.683

GFI = .911 and AGFI = .722

DISCUSSION

This pioneering study explored the success of FAIS-a government online accounting and financial system and highlights the factors that contributed to its success. In addition, this study tries to validate the existing instrument of DeLone & McLean (2003) that measures the system success on 33 items. The revised and parsimonious instruments measure only 22 items on all six constructs with sufficient reliability and validity as indicated in Table 3. That is a shorter version of the original instrument applicable to Bruneian context and might be suitable for full study in future.

Study results revealed that strong relationship exists between information quality and user satisfaction. That in turn further supports the previous literature (Iivari, 2005; Wu and Wang, 2006). Studies have shown a consistent relationship between information quality and user satisfaction at the individual unit of analysis (Seddon and Yip, 1992; Seddon and Kiew, 1994; Almutairi and Subramanian, 2005, Halawi *et al.* 2007). Kim *et al.* (2002) had found significant relationship between information quality aspect of Web sites and user satisfaction. However, Marble (2003) didn't find any significance between information quality and user satisfaction. Wang and Chen, (2011) had found a significant relationship between information quality and satisfaction. Their study's results support Doll and Torkzadeh model (1988) of end-users' satisfaction. Further, in their meta-analysis Petter *et al.* (2008) found strong support as fifteen out of sixteen papers found a strong support in these two variables whereas, 9 out of 10 showed a moderate relationship and 3 out of 6 showed mixed relationships.

Within Bruneian context, the study results emphasized on information quality which is the key factor of end-user satisfaction. This further explains that any user considers this measure is more important as it delivers what the user wants from the FAIS more frequently than measuring system quality that is considered equivalent to perceived ease of use component of Technology Acceptance Model (Davis, 1989) and service quality that provides the vendors' role in implementing the information systems.

Thirdly, this study has found a significant relationship between users' satisfaction and net benefits. There are several methods to measure net benefits at both individual and organizational level. Petter *et al.* (2008) pointed out that perceived usefulness and job impact is the two most common measures at the individual level. Similarly, at the organizational level, a variety of measures are employed but profitability and reducing cost seem to be preferred. Our study has also found a strong relationship between the users' satisfaction and net benefits that was measured on ten-item net benefits including both individual and organizational benefits. Empirical results have shown a strong relationship between users' satisfaction and system benefits (Iivari, 2005). User satisfaction has found to have a positive impact on a user's job (Torkzadeh and Doll, 1991) to improve performance (McGill *et al.* 2003) and to increase productivity and effectiveness (Igbaria & Tan, 1997; Halawi *et al.* 2007). Petter *et al.* (2008) in his meta-analysis has further found a strong support with 14/14 studies showing positive results. Looking at the table data for regression analysis especially Table 6, 8 and 9, it is evident that information quality has the highest beta coefficient of .681 followed by .479 in user satisfaction and .456 in net benefits. This trend in the regression equation further highlights the importance of these variables. Since our result found a strong relationship between net benefits and overall success, we therefore accept the DeLone and McLean's (2003) views partially that "if the information system or service is to be continued it is assumed that the net benefit from the perspective of the owner of the system are positive thus influencing and reinforcing

subsequent use and user satisfaction". So in our case, it only reinforces the user satisfaction and not the subsequent use.

Unfortunately, our results in Table 8 could not find any relationship between the uses of the system with the net benefits. Our results are in contrast with Halawi *et al.* 2007; Kositanurit *et al.* 2006; Torkzadeh & Doll, 1999 but in line with Iivari, (2005) and Wu and Wang, (2001). The non-significance of use construct in this study shed some light as the success dimension 'use' in DeLone and McLean model that represents the degree and manner in which an information system is utilized by its users. As a result of different measuring methods, this variable might be treated as misleading use such as frequency of use, actual use, daily use and nature of use. In this study, out of three items, only two items measured the 'actual use' and 'frequency of use'. Due to difficulties in interpreting the dimension, DeLone and McLean suggests 'intentions to use' as an alternative measure to 'use'. Nevertheless, Urbach and Muller (2012) pointed out that in case of voluntary use the actual use of an IS may be an appropriate success measure however, in our case, the use of IS is not voluntary but compulsory by the end-users in preparing financial statements so actual use might not be an appropriate success measure. Previous studies showed small to moderate support between system use and net benefits at the individual level. Our results are in line with previous studies that found no relationship between use and net benefits (Iivari, 2005; Wu and Wang, 2006; McGill *et al.* 2003).

In addition, our results could not find any support between service quality to use and further support Halawi *et al.* (2007) and Kositanurit *et al.* (2006). Similarly, our study could not find any significant relationship between system qualities to use. Petter *et al.* (2008) reported a mixed support in their meta-analysis as 43% of the studies found positive relationship. Again, our study could not establish any relationship between 'information qualities' to 'use of the system'. Literature review shows a mixed support with 50% of the studies found positive relationship and 50% otherwise (Petter *et al.* 2008). Our results are in line with Halawi *et al.* (2007); Kositanurit *et al.* 2006 and Iivari, (2005) who could not establish any relationship.

Finally, the non-significance of system quality and service quality to users' satisfaction exist in our study. Several studies have examined the relationship between the system and service quality to user satisfaction and mixed results were reported in the literature. These are the main reasons that researchers around the globe have measured these constructs using multiple methods that have provided the inconsistent findings (Petter *et al.* 2008). Studies have found strong support between system quality and users' satisfaction at the individual level (Iivari, 2005). Whereas, Petter *et al.* (2008) have shown a strong support of system quality with the users' satisfaction with all 21/21 studies have shown a positive relationship. Our results do not support the previous studies and those might be due to the two reasons: 1) FAIS is online system and so it has inherited problems of Internet connection, so the bandwidth users would experience a delay in its processing time which might be treated as a negative feature especially when the users are young clerks who are short-tempered. 2) The small sample size for this pilot study might be an obstacle in finding a support from the literature and the full study results might change these findings. In addition, system quality variable typically focus on the usability aspect and performance characteristics of the system due to 'ease of use' feature of the system. The overall computer literacy coupled with the basic training, the ease of use component is not of much constraint. Similarly, service quality variable that represent the quality of the support that the user receive from IS department or IT support personal and helps

them to their performance is not significant because of the fact that system was designed by outside consultant and presumably they have trained the trainer to help the end-users.

CONCLUSION

This pilot study has shown that out of seven constructs used to test the DeLone and McLean (2003) model only information quality leads to the user satisfaction which in turn leads to the net benefits which measures the success of FAIS. The focus of the study was to examine the constructs both individuals and organizational benefits especially measuring the net benefits. Initially, the original model measured the 36 items on seven constructs than it was reduced to 24-item scale that was found reliable and valid measure in order to measure the success of the FAIS. The revised instrument could further be used to measure the IS success with the context of e-Government initiative of Brunei Darussalam. In conclusion, D&M IS success model (2003) is a useful framework for understanding the key success dimensions and their interrelationship as reported in literature.

RECOMMENDATIONS

We strongly recommend that extra caution should be taken when generalizing the results of this pilot study because of its small sample size. The forthcoming study based upon reasonable larger sample size could therefore bring new dimensions to the theory as well as implications for the practice.

PRACTICAL IMPLICATIONS

Results of this study provides an interesting implications for the practitioners and senior management in public office responsible for making the IS implementation process successful. By identifying factors that plays a dominant role in measuring the success such as information quality to user satisfaction to the net benefits that determine the overall success of FAIS. The study results also confirm that contextual variables system quality, service quality and use remained insignificant. This can be due to the number of inter-organizational factors so the top management may make their own grid based on the study results and should focus on the significant factors such as in bringing improvement in information quality to increase the user satisfaction towards using the system and to focus on the net benefits that the new IS brings this will enhance the satisfaction among the end-users to make the IS investment more successful. However, at this preliminary investigation stage we cannot suggest for theoretical implications. As such this is pilot study based on small sample size and results might changes after the full study.

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APPENDIX-A**(Measuring FAIS Success -Result of Factor Analysis)**

Items	No of factors with factor loadings						
	1	2	3	4	5	6	7
System quality:							
The TAFIS provides high availability.	.58						
The TAFIS is easy to use.	.85						
The TAFIS is user-friendly.	.66						
Information quality:							
The TAFIS provides information that is exactly what we need.		.69					
The TAFIS provides sufficient information.		.59					
The TAFIS provides information that is easy to understand.		.52					
The TAFIS provides up-to-date information.		.72					
Service quality:							
The TAFIS provides a proper level of on-line assistance and explanation.				.88			
The TAFIS designer team interacts regularly with users during the system development.				.90			
The Information system/Information technology (IS/IT) department staff provides high availability for consultation.				.61			
The IS/IT department responds in a cooperative manner to your suggestions for future enhancements of TAFIS.				.53			
System Use							
I use TAFIS quite often				.56			
I use TAFIS quite often				.55			
My job depends on TAFIS a lot							
My job depends on TAFIS a lot							
User satisfaction							
Most of the users bring a positive attitude or evaluations towards the TAFIS.					.84		
You think that perceived utility about the TAFIS is high.					.67		
You are satisfied with TAFIS.					.78		
Net benefits							
The TAFIS helps you think through problems.						.73	
The TAFIS helps the organization provide better products or services to customers						.90	
The TAFIS helps the organization save cost.						.82	
The TAFIS helps the organization to speed up transactions or shorten product cycles.						.84	
The TAFIS helps the organization increase return on investment.						.81	

The TAFIS helps the organization to achieve its goal.	.86
<i>System Success:</i>	
As a whole, the performance of TAFIS is good.	.78
As a whole, the TAFIS is successful.	.75
