

AN EMPIRICAL INVESTIGATION OF THE SMS EXAM RESULT QUERY SYSTEM MODEL (SERQSM) IN MALAYSIA: THE CASE OF UNIVERSITI MALAYSIA SABAH

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ABSTRACT

The introduction of mobile phones has provided many benefits to business leaders, government agencies and to the public at large. Today, most of the universities in Malaysia are using mobile phones to help in communicating with their students. By using mobile phones, students are able to send and retrieve information in relation to their examination results, information on tuition fees and others university matters. This paper aims to explore the factors that influence university students to use "SMS Exam Result Query System" (SERQS). This study was conducted in one of the public Universities in Malaysia: Universiti Malaysia Sabah. In order to explore the factors, the current study will extend the applicability of "technology acceptance model" in the context of SERQS. This paper provides a workable direction for the University in offering many services using mobile phone communications for students.

Key words: technology communication, wireless technologies, undergraduate students, technology acceptance model (behavioural theory), Malaysia setting.

INTRODUCTION

The simplicity of short messaging service (SMS) has helped to promote its wide usage. Initially, the usage of SMS is to complement the functions of a standard mobile phone unit especially in transferring intricate data. Lately, many have started to commercialize the usage of the SMS, for instances, the use of SMS to retrieve examination results. Earlier studies on mobile phone usage have covered areas relating to the library (Karim, Darus, & Hussin, 2006), banking (Amin, 2007; Mattila, 2003) and chat services (Nysveen, Pedersen, & Thorbjornsen, 2005). This study acknowledges the scarcity of studies relating to SMS technology. The lack of studies in SMS technology and its usage for retrieval of examination results or SERQS has motivated the researchers to conduct this study.

This study aims to investigate the factors influencing students to use SERQS. This study used the Technology Acceptance Model (TAM) to explain the factors influencing students' usage of a mobile phone for information retrieval (examination results). Selecting TAM was based primarily on its parsimony and predictive power, which makes it easy to apply in different information system devices (Amin, Baba, & Muhammad, 2007; Guriting & Ndubisi, 2006; Kleijnen, Wetzels, & de Ruyter, 2004; Pikkarainen, Pikkarainen, Karjaluoto, & Pahnla, 2004). Furthermore, TAM provides a way of critically understanding the relationships between perceived usefulness, perceived ease of use and usage intentions. In addition, this study extends the traditional TAM with 3 new variables of "perceived enjoyment", "perceived service quality" and the "social norm".

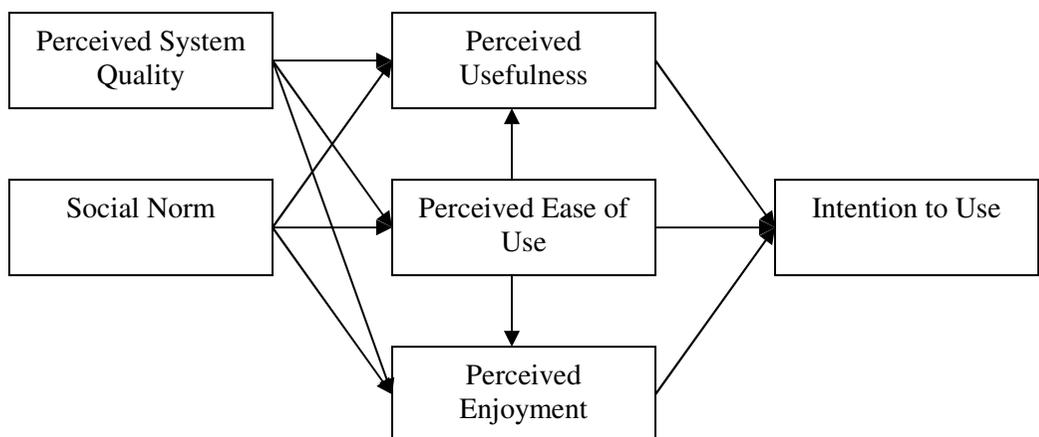
Objectively, this study set out 2 main reasons for the study of SERQS. Firstly, the output of this study will be of importance in explaining the causes leading to the student's adoption of SERQS. Secondly, despite the SERQS gaining acceptance in universities in Malaysia, the study on students' adoption of SERQS is still unexplored (Karim *et al.*, 2006).

For simplicity, we have divided this paper into 4 sections. In the first section, we present the research model, and in section two, we provide the discussion on literature and the development of related hypotheses. The discussion on research methodology is in section three, and the fourth section is on findings. This paper concludes by discussing the contributions, practical implications and limitations of the study.

RESEARCH MODEL

This study suggested the following model and its related extension:

Figure 1. The Research Model



The research model shown in Figure 1 is based on Davis' work (Davis, 1989) which we modified by extending the model with the inclusion of variables to reflect SERQS. The

model includes both the variables of perceived usefulness and perceived ease of use (Davis, 1989). For better interpretation of SERQS, this study extended the model by including 3 other variables of perceived enjoyment (Pikkarainen *et al.*, 2004), perceived system quality and social norm.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Perceived Usefulness (PU)

Essentially, TAM is considered as a powerful model in predicting information system (IS) usage acceptance (McKechnie, Winklhofer, & Ennew, 2006). According to the model, 2 distinct beliefs, which are perceptions of usefulness and ease of use of the technological system, are key determinants of technology acceptance behaviour (McKechnie *et al.*, 2006). In this study, perception of usefulness is termed as perceived usefulness (Ramayah & Suki, 2006). The variable of perceived usefulness was used in measuring user productivity. It measured the user belief that using a computer in the workplace would increase productivity, improve job performance, and enhance job effectiveness. As such, perceived usefulness can be defined as the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, Bagozzi, & Warshaw, 1989). Prior studies have suggested that there is a positive relationship between perceived usefulness and usage intention. In Malaysia, there are several studies that have investigated the relationship between perceived usefulness and usage intentions (Amin *et al.*, 2007; Ramayah *et al.*, 2006; Ndubisi, Jantan, & Richardson, 2001). Explained in more detail, Amin *et al.* (2007) examined mobile banking acceptance in East Malaysia and found that there is a significant relationship between perceived usefulness and mobile banking usage intentions. Ramayah and Suki (2006), similarly, found that there is a significant relationship between perceived usefulness and mobile personal computer usage among MBA students at Universiti Sains Malaysia. The results of these studies are also corroborated by the finding of Ndubisi *et al.* (2001). This study confirms the usefulness of information technology among entrepreneurs. In other countries, there are several studies that have investigated the relationship between perceived usefulness and usage intentions (Cheong & Park, 2005; Pikkarainen *et al.*, 2004; Wang, Wang, Lin, & Tang, 2003). Explained in more detail in Korea, Cheong and Park (2005) argued that perceived usefulness has a positive impact on intention to use Mobile (M)-Internet. This indicates that the perceived usefulness of M-Internet plays a critical role in developing the positive attitude toward M-Internet as well as intention to use. In Finland, Pikkarainen *et al.* (2004) found that perceived usefulness was positively correlated with online banking use. This result is also supported by the study conducted in Taiwan by Wang *et al.* (2003). Wang *et al.* (2003) found that perceived usefulness has a significant positive effect on behavioral intention for IS. Based on these findings, the following hypothesis is proposed:

H₁: Perceived usefulness is significantly related to usage intentions

Perceived Ease of Use (PEOU)

The second construct of the model is perceived ease of use (McKechnie *et al.*, 2006). Perceived ease of use refers to how clear and understandable interaction with the system is, ease of getting the system to do what is required, mental effort required to interact with the system, and ease of use of the system (Ndubisi *et al.*, 2003). Previous studies have documented the importance of perceived ease of use in explaining IS usage intentions (Amin, Baba, & Muhammad, 2007; McKechnie *et al.*, 2006; Ramayah & Suki, 2006; Guriting & Ndubisi, 2006). Further, Amin *et al.* (2007) found that there is a significant relationship between perceived ease of use and mobile banking usage intentions by Malaysians. On the Internet banking acceptance study, Guriting and Ndubisi (2006) and Ramayah, Jantan, Noor and Ling (2003) found that perceived ease of use has proven to have significant impact on intention to use Internet banking in the Malaysian banking environment. The significant impact between perceived ease of use and usage intentions is also found in Kleijnen *et al.* (2004) and Wang *et al.* (2003) in Netherlands and Taiwan respectively.

These results corroborate with the findings by Ramayah *et al.* (2003), Ramayah, Dahlan, Mohamad and Ling (2002), Adams, Nelson and Todd (1992), and Davis *et al.* (1989), to name a few. Based on these studies, the researchers believe that perceived ease of use is also important in explaining the SERQS usage intentions among students. In line with this, we propose the following hypotheses:

- H₂: Perceived ease of use is significantly related to usage intentions
- H₃: Perceived ease of use is significantly related to perceived usefulness

Perceived Enjoyment (PE)

By definition, Davis, Bagozzi and Warshaw (1992) defined “perceived enjoyment” as an activity, where using a computer is perceived to be enjoyable. A number of studies on “perceived enjoyment” (Nysveen *et al.*, 2005; Pikkarainen *et al.*, 2004; Teo, Lim, & Lai, 1999; Igbaria, Livari, & Maragahh, 1995; Davis *et al.*, 1992) highlighted the importance of “perceived enjoyment”. Nysveen *et al.* (2005) and Teo *et al.* (1999) found that perceived enjoyment significantly affects intentions to use an electronic system. As an example, Nysveen *et al.* (2005) found that perceived enjoyment correlates positively with intention to use mobile chat, which is a stronger determinant for female users in comparison to the male users. Teo *et al.* (1999) noted that perceived enjoyment correlates positively with the frequency of internet usage, and believed that the internet usage offered fun, pleasant and excitement to the users. On the contrary, Pikkarainen *et al.* (2004) found that perceived enjoyment is merely a statistically significant variable. The argument is that perceived enjoyment does not statistically and significantly affect the use of Internet banking. Moreover, Igbaria *et al.* (1995) also found that perceived enjoyment does not significantly affect the acceptance of data processing systems. On this basis, we propose the following hypotheses:

- H₄: Perceived enjoyment is significantly related to usage intentions
- H₅: Perceived enjoyment is significantly related to perceived ease of use

Perceived System Quality (PSQ)

A reliable system quality is important within the context of SERQS. The failure to provide a good system quality such as frequent delay in response, frequent disconnection, lack of access and poor security will contribute to users becoming reluctant to use the particular system (Delone & Mclean, 1992; Seddon, 1997; Lee, 1999; Lin & Lu, 2000). Lin and Lu (2000) employed information quality, response time and system accessibility as IS qualities. They argued that these 3 variables are useful predictors of the perceived ease of use and perceived usefulness. From the gender perspective, studies conducted by Dabholkar and Bagozzi (2002), Nysveen *et al.* (2005) and Chiu, Lin and Tang (2005) have previously indicated the moderating effect of gender on intention to use new IT applications. Nevertheless, the studies have not included system quality within their studies. In fact, the construct of “system quality” has received little attention from researchers although many have argued the importance in the moderating effects of gender on behavioral intention. Taking account of previous studies on gender and IT, we assume that the system quality will influence the intention to use SERQS more strongly for male users than for female users. Essentially, this study will add to the limited knowledge presently available on TAM for SERQS. Therefore, we propose the following hypotheses to reflect these arguments:

- H₆: Perceived system quality is significantly related to perceived usefulness
- H₇: Perceived system quality is significantly related to perceived ease of use
- H₈: Perceived system quality is significantly related to perceived enjoyment

Social Norm (SN)

In this study, the construct ‘social norm’ is also added in explaining students’ intention to use SERQS. Social norm or normative pressure (Nysveen *et al.*, 2005) refers to the person’s perception that most people who are important to her or him should or should not perform the behavior in question (Fishbein & Ajzen, 1975). According to Nysveen *et al.* (2005), social norm or normative pressure is revealed to influence behavioral intention in numerous studies based on the theory of reasoned action. Previous studies have documented the importance of the relationship between social norm and usage intentions (Amin *et al.*, 2007; Nysveen *et al.*, 2005; Kleijnen *et al.*, 2004). Explained in more detail, Amin *et al.* (2007) found social norm to be an important construct that explains the mobile banking usage among bank customers in East Malaysia. On the mobile chatting context, Nysveen *et al.* (2005) found that social norm is an important construct that contributes to the success of the

system. Furthermore, the result demonstrated that users used the IS because the usage reflected their personal value and the influence of others on them. Similarly, in a study by Kleijnen *et al.* (2004) on wireless finance in the Netherlands, social norm is essential in the development of peoples' intention to use wireless finance. This result is also supported by Venkatesh and Morris (2000) who had conducted a study of technology usage in the workplace. Indeed, SERQS is perceived as an interactive social tool that makes the relationship between the university management and the students better. Based on the above arguments, the following hypotheses are presented:

- H₉: Social norm is significantly related to perceived usefulness
- H₁₀: Social norm is significantly related to perceived ease of use
- H₁₁: Social norm is significantly related to perceived enjoyment

Intention to Use (INTENT)

This refers to “the strength of one’s intention to perform a specified behaviour” (Nysveen *et al.*, 2005). Studies have supported the notion that behavioral intentions are found to have a positive effect on behavior (Hung, Ku, & Chang, 2003; Tung, 2004). To facilitate this study, we employed “usage intentions” as the criterion variable.

RESEARCH METHODOLOGY

Subjects

The survey used a convenience sampling method. Respondents for this study are university students who have mobile phones but yet to use the SERQS system. In order to ensure its credibility, we personally administered each questionnaire to the students. The researchers asked permission from lecturers in order to distribute questionnaires during lecture hours in various courses. Since SERQS is relatively new in Malaysia, this research focuses on the usage intention of students instead of actual use (Guriting & Ndubisi, 2006). The data collection period lasted almost 6 weeks of 5 working days each. In total, 259 students responded to the questionnaire and 7 were invalid due to being incomplete. The usable data of 252 respondents was analyzed using SPSS 13.0 and Analysis of Moment Structures (AMOS) version 7.0. Table 1 shows the demographic features of data collected.

Table 1. Demographic Profile

Demographic Items	Percentage
Gender:	
Male	31%
Female	69%
Age Group:	
Less than 20	39%
21 ~ 30	61%
Ethnicity:	
Sabahan (Aboriginal)	19%
Sarawakian (Aboriginal)	5%
Malay	25%
Chinese	41%
Indian	9%

The demographic distribution shows that 31.0 percent of the respondents were male and the remaining 69.0 percent of the respondents were female. Apparently, female respondents dominated the respondents in this study, as there existed a predominance of females in the student population at the university. At the national level, there is a large number of female students as compared to male students in the Malaysian universities. Based on the data provided by the Ministry of Higher Education (2008), the national student population was 749,157 in 2007. Of these, the national student population for females was 56.3 percent or 421,513 students as compared to 327,644 male students or 43.7 percent. The national student data in 2007 was derived from both public and private universities. With respect to age, most of the respondents were from 21 to 30 years (61 percent). With regard to ethnicity, 19 percent were Sabahans, 5 percent were Sarawakians, 25 percent were Malays, 41 percent were Chinese and 9 percent were Indians. Based on the data provided by Utusan Online (2008), the enrolment for public universities was 39,616 students in 2007. Of these, the student number for bumiputera (i.e. Malays, Sabahans and Sarawakians) amounted to 24,924 students, while Chinese and Indian students were 12,245 and 2,447 respectively, thus providing an indication of the ethnic mix of the national student population in Malaysia. The sample is therefore not representative with regard to gender and ethnicity and so conclusions cannot necessarily be generalized to the population of students.

Measurement

The questionnaire was adapted from prior studies (Venkatesh & Davis, 2000; Pikkarainen *et al.*, 2004; Cheong & Park, 2005; Nysveen *et al.*, 2005; Shimp & Kavas, 1984). One advantage of using the TAM to examine SERQS was that it has already been well validated (Ramayah *et al.*, 2003; Wang *et al.*, 2003). Both the measurement for “perceived usefulness” and “perceived ease of use” were adapted from the study by Venkatesh and Davis (2000). The measurements of “perceived enjoyment” and “perceived system quality” were adopted from Pikkarainen *et al.* (2004), and Cheong and Park (2005), respectively, and

the social norm measurement scale was adopted from Nysveen *et al.* (2005). As for the “behavioral intention” measurement, we adopted Shimp and Kavas (1984). A 5-point Likert-type scale, anchored by “1 = strongly disagree” to “5 = strongly agree” was used for all questions.

RESULTS AND DISCUSSION

Factor analysis, regression analysis and Structural Equation Modeling were used during the data analysis stage. Explained in more detail, factor analysis was conducted in order to confirm that the construct validity of the scales could be performed adequately by using principal component analysis. The minimum factor loading of 0.6 on its hypothesized constructs was proposed (Nunnally, 1978). An eigenvalue of more than 1.0 was used as a determinant criterion for each factor in the factor analysis. Factor loading values were obtained using varimax rotation. Table 2 presents the results of the factor analysis. As a result, most of the factor loading for each instrument exceeded 0.6, meeting the essentially significant level of convergent validity. Further, the research instrument was tested for reliability using Cronbach’s coefficient alpha estimate as reported in Table 2. The Cronbach’s alpha values for all dimensions ranged from 0.697 to 0.911, exceeding the minimum alpha of 0.6 (Hair, Anderson, Tatham, & Black, 1998). The constructs measures are thus deemed reliable.

With respect to regression analysis, the dependent variable (behavioral intention) was aggregated. The aggregation was used in order to compute the overall mean for 2 variables under “intention to use” marked as INTENT1 and INTENT2 in the analysis. As noted earlier, this dependent variable was measured using the Likert 5-point scales ranging from “strongly agree” (5) to “strongly disagree” (1) in the questionnaire. In this study, the 4 regression models not only support the research model but also the proposed hypotheses. This approach has been used by previous studies such as by Ramayah and Suki (2006) and Wang *et al.* (2003) and was found to be valid in many survey researches. A similar approach was also applied to the independent variables (i.e. PU, PEOU and PE) and to the external variables (i.e. SN and PSQ). These variables were also measured using Likert 5-point scales ranging from “strongly agree” (5) to “strongly disagree” (1) in the questionnaire in order to compute the overall mean prior to performing regression analyses. In order to test the 11 hypotheses, the study used linear regression to find out the value of different factors affecting the usage intentions. This approach is similar to what was used by Pikkarainen *et al.* (2004) where the data was aggregated first in order to obtain the overall mean (within 5-point scales) prior to analyse the linear regression using SPSS.

Table 2. Factor Analysis

Research Construct	Research Item	Factor Loading	Item to Total Correlation	Cronbach's α
				.911
Perceived Usefulness	Using the system in my job increases my productivity.	.912	.837	
	I find the system to be useful in my job.	.902	.818	
	Using the system enhances my effectiveness in my job.	.871	.770	
	Using the system improves my performance in my job.	.871	.770	
				.820
Perceived Ease of Use	Interacting with the system does not require a lot of my mental effort.	.882	.716	
	My interaction with the system is clear and understandable.	.851	.663	
	I find the system to be easy to use.	.839	.643	
				.761
Perceived Enjoyment	Using "SMS Exam Result Query System (SERQS)" is wise.	.899	.615	
	Using "SMS Exam Result Query System (SERQS)" is pleasant.	.899	.615	
	Using "SMS Exam Result Query System (SERQS)" is fun*	DELETED [Loading is less than 0.6]		
				.697
Intention to Use	Assuming I have access to the system, I intend to use it.	.876	.535	
	Given that I have access to the system, I predict that I would use it.	.876	.535	
				.830
Social Norm	People who are important to me think that I should use the "SMS Exam Result Query System (SERQS)".	.925	.710	
	People who are important to me are favourable to my usage of "SMS Exam Result Query System (SERQS)".	.925	.710	
	People who influence my behaviour think that I should use the "SMS Exam Result Query System (SERQS)"*	DELETED [Loading is less than 0.6]		
				.824
Perceived System Quality	I think that the speed of "SMS Exam Result Query System (SERQS)" is fast.	.889	.729	
	I think that "SMS Exam Result Query System (SERQS)" is secure to use.	.859	.673	
	I think that the "SMS Exam Result Query System (SERQS)" provides very reliable service.	.836	.641	

Note: * Denotes insignificant.

As indicated by Table 3 on regression analysis, there was a significant relationship between perceived usefulness and usage intentions. The results confirmed the opinion that "when the SERQS is useful, students have a stronger intention to use it". Thus, Hypothesis 1 (H_1) was supported. The results of the regression analysis produced consistency with the findings of previous studies by Davis *et al.* (1989), Kleijnen *et al.* (2004) and Wang *et al.* (2003). In addition, the result in Table 3 also showed the significant relationship between perceived ease of use and usage intentions. This also indicated that "when SERQS is easy to use, students have a higher tendency of using the system". Hence, Hypothesis 2 (H_2) was supported. Again, this study produced a similarity with those of Davis *et al.* (1989), Kleijnen *et al.* (2004) and Wang *et al.* (2003). Table 3 also presents the significant relationship between perceived ease of use and perceived usefulness, and provided support

to Hypothesis 3 (H_3) in this study. Hypothesis 4 (H_4) was not supported as there was no relationship between perceived enjoyment and usage intentions. Nevertheless, this study found a significant relationship between perceived enjoyment and perceived ease of use, thus supporting Hypothesis 5 (H_5). As for the perceived system quality, the result indicated that a significant relationship existed, hence, supporting H_6 , H_7 and H_8 . With regard to social norm, Hypothesis 9 (H_9) was not significantly related to usage intentions. However, based on Table 3, via regression analysis, 2 hypotheses were also confirmed, namely Hypotheses 10 and 11 (H_{10} and H_{11}).

Table 3. Regression Analysis

Dependent Factors	Model 1 PU (β)	Model 2 PEOU (β)	Model 3 PE (β)	Model 4 INTENT (β)
Independent factors				
PU	--	--	--	.371*
PEOU	.542*	--	--	.328*
PSQ	.208*	.376*	.256*	--
SN	-.082	.250*	.275*	--
PE	--	.247*	--	-.001
<i>F</i> -value	58.429	71.233	60.377	54.161
<i>p</i> -value	.000	.000	.000	.000
R	.644	.680	.649	.629
R Square	.514	.563	.531	.496

Note: * $p < .01$, ** $p < .05$, *** $p < .1$.

Table 3 also portrays the goodness of fit measures via *F*-value, *p*-value, R and R Square. For Model 1 (regression 1), the R Square was .514 indicating that 51.4 percent of the variation in perceived usefulness could be explained by 3 variables (perceived ease of use (PEOU), perceived system quality (PSQ) and social norm (SN)) and the *F*-value of 58.429 was significant at the .000 level. For Model 2 (regression 2), the R Square was .563 indicating that 56.3 percent of the variation in perceived ease of use could be explained by 3 variables (perceived system quality (PSQ), social norm (SN) and perceived enjoyment (PE)) and the *F*-value of 71.233 was significant at the .000 level. For Model 3 (regression 3), the R Square was .531 indicating that 53.1 percent of the variation in perceived enjoyment could be explained by 2 variables (perceived system quality (PSQ) and social norm (SN)) and the *F*-value of 60.377 was significant at the 0.000 level. For Model 4 (regression 4), the R Square was .491 indicating that 49.1 percent of the variation in intention to use could be explained by 3 independent variables (perceived usefulness (PU), perceived ease of use (PEOU) and perceived enjoyment (PE)) and the *F*-value of 54.161 was significant at the .000 level.

Needless to say, this study also used Kaiser-Meyer-Olkin Measure of Sampling (KMO) in order to measure the sampling adequacy. KMO measure of sampling adequacy was .910 indicating sufficient intercorrelations. Kaiser and Rice (1974) as quoted in Taib, Ramayah and Razak (2008) suggest that if a KMO measures 0.90+, then sample adequacy is

considered marvellous. The Barlett’s Test of Sphericity for this study was significant (approximate chi-square = 3376.54, p -value=.000).

Figure 2 presents the graphic for the structural equation model in this study. The model was suggested by modifying the models from the previous studies, for example, Ramayah and Suki (2006); Nysveen *et al.* (2005); Cheong and Park (2005); Chiu *et al.* (2005); Pikkarainen *et al.* (2004); and Ramayah *et al.* (2003) in order to better reflect SERQSM. Consequently, the modified model may be helpful in explaining the students’ acceptance on SERQS.

Further, the model was analysed using AMOS version 7.0 in order to measure goodness-of-fit of the model. With respect to the used variables, the intention to use SERQS was categorised as “dependent variable” while perceived usefulness, perceived ease of use and perceived enjoyment were categorised as independent variables. Perceived system quality and social norm were considered as external variables. In this study, it was highly predictable that perceived system quality and social norm had impacts on perceived usefulness, perceived ease of use and perceived enjoyment, in turn, affecting the intention to use. Previous studies had examined the impact of perceived usefulness, perceived ease of use and perceived enjoyment on usage intentions (Ramayah & Suki, 2006; Nysveen *et al.*, 2005). As such, the need to study it from SERQS viewpoint was relevant.

Figure 2. The Graphic for the Structural Equation Model

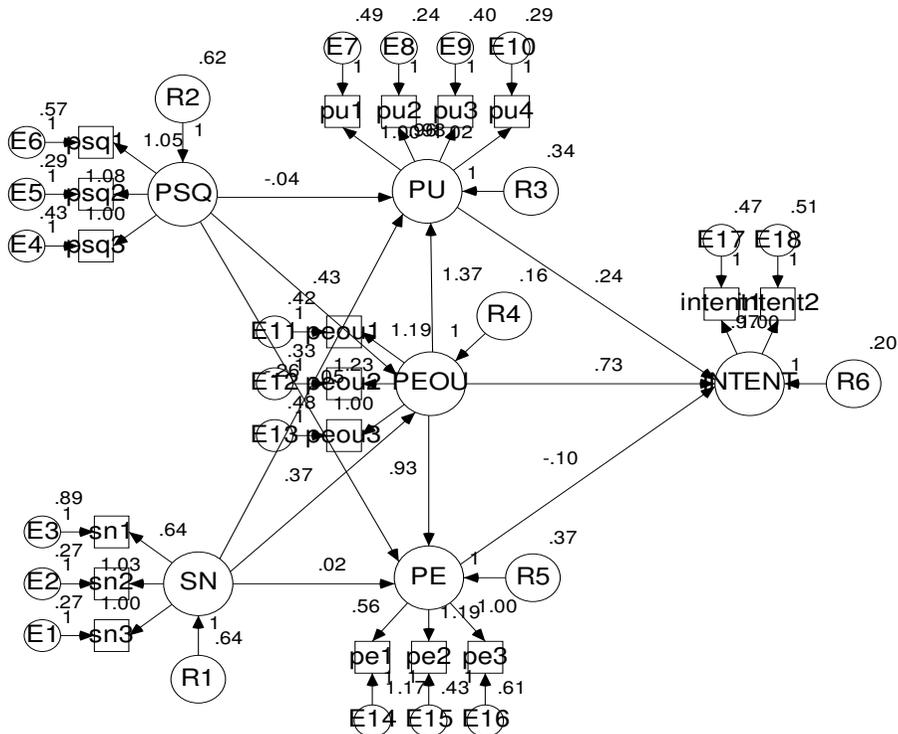


Table 4 depicts the structural equation model in this study. The table, in more detail, provides results on the goodness-of-fit of the model. The model fit was assessed by chi-square and chi-square/df value, coupled with other model fit indices like GFI, CFI, TLI and RMSEA. The cut-off value for the goodness of fit indices was based on Hu and Bentler's (1999) recommendation. As it is, the 3 fit indices for GFI, TLI and CFI should be greater than 0.90, the threshold for acceptability (Crystal, 2008). Kline (1998) recommends at least 4 tests such as chi-square; GFI, NFI or CFI; TLI; and RMR. The GFI and AGFI are not explicitly influenced by sample size, and test the degree to which the model fits better than the null model. A very good research model fit is defined as GFI and AGFI exceeding .9, a Chi-square/df = 2 ~ 3, and RMSEA \leq .08. Explained in more detail, the quality of the model depends on the fit indices. The parameter estimates ranged from .470 to .840, .740 to .845, .799 to .880, .656 to .790, .390 to .826 and .703 to .727 for social norm, perceived system quality, perceived usefulness, perceived ease of use, perceived enjoyment as well as intention to use, respectively.

Based on the above criteria, the model indicates moderate fit. Evidently, the study reported chi-square/df value (2.326), GFI (.891), CFI (.930) and TLI (.914). Here, GFI, CFI and TLI were computed in order to provide a more robust evaluation of model fit (Lee, 2008). Further, parsimony measures were also used in goodness-of-fit measures (Lee, 2008). The higher parsimony measure represented the better fit. For RMR and RMSEA, evidence of good fit is considered to be values less than .05 and values from 0.05–0.10 are indicative of moderate fit and values greater than .10 are taken to be evidence of a poorly fitting model (Lee, 2008; Browne & Cudeck, 1993). This study reported RMSEA value at .073 in which was considered as moderate fit.

The study further identified the magnitudes and significance of the path structural coefficients of the model. The analyzed results indicated that 'perceived system quality' and 'social norm' significantly influence 'perceived ease of used' ($\gamma_2 = .566$, $\gamma_5 = .494$). Consistent with the previous studies, 'perceived usefulness' and 'perceived ease of use' were both found to significantly influence 'intention' ($\beta_3 = .597$, $\beta_4 = .304$). In addition 'perceived ease of use' was also found to significantly influence 'perceived usefulness' ($\beta_1 = .884$).

Table 4. The Structural Equation Model

Relations		Standardized Coefficients	C. R.
Variables			
Social Norm	SN1	.476	A
	SN2	.470	7.138
	SN3	.840	7.143
Perceived System Quality	PSQ1	.740	A
	PSQ2	.845	11.685
	PSQ3	.771	11.162
Perceived Usefulness	PU1	.799	A
	PU2	.880	15.920
	PU3	.815	14.394
	PU4	.869	15.658
Perceived Ease of Use	PEOU1	.740	A
	PEOU2	.790	11.902
	PEOU3	.656	9.875
Perceived Enjoyment	PE1	.390	A
	PE2	.826	5.454
	PE3	.721	5.423
Intention to Use	INTENT1	.727	A
	INTENT2	.703	8.535
Paths			
Perceived System Quality → Perceived Usefulness (γ_1)		-.032	-3.350
Perceived System Quality → Perceived Ease of Use (γ_2)		.566*	7.448*
Perceived System Quality → Perceived Enjoyment (γ_3)		-.051	-4.95
Social Norm → Perceived Usefulness (γ_4)		-.224*	-2.492
Social Norm → Perceived Ease of Use (γ_5)		.494*	5.448*
Social Norm → Perceived Enjoyment (γ_6)		.016	.173
Perceived Ease of Use → Perceived Usefulness (β_1)		.884*	6.789*
Perceived Ease of Use → Perceived Enjoyment (β_2)		.688*	4.010*
Perceived Ease of Use → Intention to Use (β_3)		.597*	3.804*
Perceived Usefulness → Intention to Use (β_4)		.304*	2.609*
Perceived Enjoyment → Intention to Use (β_5)		-.108	-.981
Fit indices			
Chi-Square (<i>p</i> -value)			288.409
Degree of freedom (d. f.)			124
Chi-Square/ d. f.			2.326
Tucker-Lewis Index (TLI)			.914
Goodness-of-Fit Index (GFI)			.891
Adjusted Goodness-of-Fit Index (AGFI)			.850
Comparative Fit Index (CFI)			.930
Root Mean Square Error of Approximation (RMSEA)			.073

Note: * $p < .01$, ** $p < .05$; *** $p < .1$.

CONCLUSION AND PRACTICAL IMPLICATIONS

This study applied TAM to the newly emerging context of SERQS in a public university in Malaysia. Selectively, there were significant relationships between perceived usefulness and perceived ease of use, and intention to use. This study found no relationship between perceived enjoyment and intention to use. The contributions of this study into technology acceptance are:

1. The application of TAM in SERQS was different to systems previously examined—nevertheless, findings were consistent with Guriting and Ndubisi (2006) and Cheong and Park (2005) concerning perceived usefulness and perceived ease of use as significant antecedents of the usage intentions;
2. The study has extended theory in the field of TAM. As such, this study developed a modified model of TAM in order to better reflect the SERQS. The modified model is named ‘SMS Exam Result Query System Model’ (SERQSM). Thus, this study has expanded the application of TAM to a newly emerging context such as SERQS.
3. The first external variable namely ‘perceived system quality’ was significantly related to perceived usefulness, perceived ease of use and perceived enjoyment, and this subsequently affected the usage intentions. The second external variable namely social norm was significantly related to perceived ease of use and perceived enjoyment, which in turn, affected usage intentions.

Furthermore, the results of this study will provide an insight into what is needed in order for students to use this new technology and therefore allow for improved application use. Explained in more detail, the results of the study will encourage the university to strengthen the quality of the SERQS by enhancing the quality of delivered information and quality of accessibility for the benefit of users. At the same time, since students perceived the system to be useful, there is a need for the university to provide a wider range of services such as course enrolment and the selection of course adding and dropping. The university should communicate the benefits of using the system to students in terms of the system usefulness and its quality. A brief training represents a possible way to increase the use of the system by new students. A “Know-How” briefing on the system can be organized in the training, in the earlier part of the semester, for example, during the registration week, for new students in order to familiarize them with the use of the system. In addition, social norm offers opportunities to influence the use of SERQS among students. As it is, the management of the university should encourage those students who are experts in using the system to teach the new learners. A banner, such as “HELP YOUR FRIEND TO USE SERQS” can be placed in the academic departments and all schools, will play an important role in persuading the students to assist the new learners in using SERQS. By doing so, the use of the system will keep increasing from time to time. On the other hand, this study will also add to the limited knowledge presently available on TAM for SERQS, thus providing research knowledge for future relevant research in this area.

Although this study has satisfactorily achieved its research objectives, it has its own limitations. In this study, the researchers confined the limitations into two because of their benefits for future research. First, the study has a small sample size that will affect the generalisation of findings. Secondly, the study did not use extensive measures. This limitation also offers a direction for future study in the area. It will be an advantage for the future researchers to work on larger sample by incorporating samples not only from Universiti Malaysia Sabah, but also to extend it into other universities in Malaysia such as Universiti Malaysia Sarawak, Universiti Islam Antarabangsa and Universiti Sains Islam Malaysia. Moreover, we also suggest the inclusion of other variables, such as perceived expressiveness and perceived awareness that can be used in the modified model.

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