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THE STUDY OF END-USER COMPUTING SATISFACTION (EUCS) ON COMPUTERISED ACCOUNTING SYSTEM (CAS) AMONG LABUAN F.T. GOVERNMENT SECTORS: A CASE STUDY IN THE RESPONSIBILITY CENTRES

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ABSTRACT

It seems clear that previous research have not attempted to test the End-User Computing Satisfaction (EUCS) on the computerised accounting system (CAS) in Labuan Federal Territory (FT) government sectors. The purpose of this study is to measure the level of satisfaction among the end-users of computerised accounting system (CAS) in government sectors. Further, the study determines the relationship between EUCS factors (content, accuracy, format, ease of use, timeliness, satisfaction with the system speed, system reliability) and satisfaction. The research was conducted using a set of questionnaire to 90 Responsibility Centres' staff that using computerised accounting system (CAS). The study will provide results from empirical test of these relationships. The empirical results of this study can provide support for the Doll and Torkzadeh model (1988), which related to the factors contributing end- users' satisfaction toward accounting system.

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1. Introduction

The measurement of information system effectiveness has proven to be difficult (Seddon and Yip, 2002). In fact, MIS Quarterly described it as one of the most "haunting problems" of Management Information System (MIS) (Davis, 1989). Since it is difficult to directly measure the quality and effectiveness of information system, researchers tend to adopt the indirect measurement of information system. One of the measurements of information system is End User Computing Satisfaction (EUCS).

The relationship between the management of an organisation and the information system are measured by the end users satisfaction. This phenomenon encourages a more focused measurement to explain the overall satisfaction of the computerised accounting system (CAS). Specific questions about certain information system, i.e. CAS, in relation to the factors affecting the end users computing system seem necessary instead of general questions.

There is wealth of literature in the area of the measurement of satisfaction among end user computing. Further, it has had a long history within the IS field. Focusing in the area of end-user computing, a number of studies have attempted to capture the overall evaluation that end users have regarding the use of an information system; i.e. satisfaction, as well as the most immediate factors that form satisfaction (Doll et al. 1995; Doll and Torkzadeh, 1988; Henry and Stone, 1994; Torkzadeh and Doll, 1991). However, it seems clear that previous research have not attempted to discover the factors affecting the satisfaction of the end users of the CAS especially in the government sectors. Yet, it is essential to determine the factors that contribute to EUCS while assessing the overall evaluation of information system. This study attempts to explore the factors that contribute to the EUCS among the government sectors especially finance department in Malaysia.

2. Background of the study

Since the beginning of 1980s, many researches had conducted survey in information system field highlighting the tremendous development in end-user computing world. In fact, the growth of end-user computing is one of the significant phenomena of the 1980s in the information management world (David, 1983). According to research done by Nielsen Media Research-Media Index (2005), the statistic of personal computer at home based on total adult in Peninsular Malaysia for the year 2005 is 4,118,040 compared with year 2000 is 2,242,400. It seems there is increasing of personal computer at home aligned with the existence of information communication technology in Malaysia.

Rockart and Flannery (1981) stated that current end-user computing consumed about ten percent of computer capacity in large corporations; such use would grow to consume seventy percent of an expanded capacity by the end of the decade. Business Week, in November 1982, supported this importance growth by prediction that 26 million executives, professionals and hobbyists owned microcomputers by 1985. In the same article, Business Week quoted an estimate from Dataquest, Inc. that the training industry would capture $3 billion of the $ 14 billion spent on personal computers by 1986. These phenomena give indications that the growth of the end-user computing has already started more than 20 years ago. Furthermore, it is more complicated during the emergence of the borderless world through the introduction of Internet and other information technological advances and gadgets. Currently, internet users in Malaysia is 1,681,800 for the year 2000 compared with year 2005 is 1,992,600 (Nielsen Media

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Research-Media Index, 2005). This increasing seems to be expected that the end-users computing will also increase.

It seems that organisation that does not adopt and utilise the CAS faces many problems especially when the organisation grows bigger and involves in many advanced transactions. This situation leads to the awareness of the importance of adopting and implementing CAS in most of giant companies. It is impliedly clear that there are many advantages of implementing the CAS. Bassett (1987) explained the inherent benefits of this system. First, addition and entries should be more accurate. This is due to the large amount of data to be kept in the accounting records and clerks tend to be bored or distracted that lead to human errors. Second, reports can be supplied more quickly and frequently. At that time, computers can produce profit and loss accounts as frequently as required (once a day if needed). Finally, reports produced by the manual system seem to be impractical due to the time and cost involved; for example, the analysis of aged debts. In a manual system, account clerk has to refer to the sales ledger to identify customers who have not paid debts before sending them reminders asking for payment.

In general practices, there are different between the practices in the public or government sectors and the business/private companies. Hence, the applications of the CAS in these organisations also differ from one to another. For instance, the private organisation utilizes the general ledger system and the accounting principles based on accrual basis. However, the public organisations employ VOT accounting system, which is based on cash basis. The financial management of the organisation is also related to budgeting using a code and warrant system (Statutory Bodies Act 1980; Account and Annual Report; Act 240). Thus, it seems to be interesting to investigate the level of satisfaction among end user computing in government sector, since it is different compared to the company or business organisation.

The emergence of the computerised system gives an impact to both users regardless in the private sector as well as in the public sector. Due to the claim that the successful implementation of the CAS, the government steps forward to implement the system in most of the government departments. Subsequently, they are able to manage the increasing volume of the financial data transactions, which seem impossible to compile them manually. The implementation of CAS is believed to enhance the performance and productivity, which lead to better administration of financial and accounting management. The CAS does not provide the accounting report only, but also enables the user to evaluate the output of the system and the system itself.

Responsibility Centre applied Electronic Budgetary Planning and Control System (e-SPKB) to manage department financial. E-SPKB is one of computerised accounting system (CAS) and was developed to fulfill the control budget needed. The main purpose of this system is to assist in budgetary control process, supervise the expenses for Responsibility Centre and enhancing efficiencies of financial documents preparation. E-SPKB is one of the Government Electronic Application Project (EA-AG System). This project developed the accounting and financial module for Responsibility Centre and Accounting Office. It replaced the manual vote book and the standalone computerized vote book. The characteristics of the eSPKB system are:

1. Preparation, verification and approval are financial documentation process;

2. Vote books and account reconciliation are electronically updated including for bulk and payroll transaction;
3. Allocations warrants, payment vouchers, collection statements and journal vouchers are transferred online to the respective Accounting Office (AO);
4. Hardcopies of each financial document and its respective supporting documents will be kept in the Responsibility Centres. These documents will be checked and approved electronically by the Accounting Office;
5. Payment can be made via Electronic Fund Transfer (EFT) or cheque;
6. Department records such as bill registration and vot books will be managed automatically by the system;
7. Daily, monthly, and selective reports can be printed accordingly and as required;
8. Each step taken by individual staff involved in the processing of the document will be recorded in the verification information automatically;
9. The processing of financial document adopts the current financial procedures;
10. Allocation balance can be retrieved at any point of time;
11. Enhance the accuracy of data as data is input at single point of entry that is at Responsibility Centres;
12. The use of smart cards in the system tightens the control of the financial data;
13. Able to interface with other eGovernment applications that involve expenditure and accounting process; and
14. Electronic financial documents created and printed with the system can be legally used to replace the manual financial documents such as the Local Order, Waran Perjalanan Udara, Collector Statement, Journal Voucher, and Payment Voucher.

Thus, having a good financial or computerised accounting information system will increase the performance of an organisation. Eventually, this enables the organisation to increase revenue in order to follow the recommendation of self-financing by the ministry.

The objectives of the study are follows:

1. To measure the level of satisfaction among the end users of CAS in government sectors; and
2. To determine the relationship of seven factors (content, accuracy, format, ease of use, timeliness, satisfaction with system speed, system reliability) that influence satisfactory level among the end users toward the CAS.

It seems clear that there is lack of study has been conducted in the area of EUCS among government sectors, particularly in Labuan F.T. Thus, the study aims to contribute to the existing body of knowledge in the area of information technology. Further, the study provides the constructs to measure and evaluate EUCS among the government sectors in Malaysia.

Theoretically, this study measures and validates the instrument of Doll and Torkzadeh (1988)'s EUCS (with some additional dimensions) among government sectors. In addition, this instrument is very useful in practice, not only for public sector but also for private sector. Indeed, this is an exploratory study in the public sector towards the achievement of the excellent and better performance.

3. Literature review

The scope of the discussion is related to EUCS; the previous factors that contribute to the EUCS, Doll and Torkzadeh Model (1988); i.e., content, accuracy, format, ease of use, and timeliness and the modification made by Chin and Lee (2000), i.e. satisfaction with system speed, and system reliability (self developed). The model will become the fundamental guidelines to examine factors contributing to EUCS in finance department among government sectors.

Many researchers defined end user computing based on their own objectives and setting of the study. Ives et al. (1983) defines User Information Satisfaction (UIS) is one such evaluation mechanism as to extent to which users believe the information system available to them meets their information requirements. Chin and Lee (2000) defined end-user satisfaction with an information system as the overall affective evaluation and end-user has relating with his or her experience in the information system. They stated that the term "experience" could be made more specific to focus into different aspects related to the information system such as computing or training. According to Doll and Torkzadeh (1988), EUCS is the affective attitude towards a specific computer application by someone who interacts with the application directly. End-user satisfaction can be evaluated in terms of both the primary (application) and secondary user roles (inquiry and decision support application).This study deployed Doll and Torkzadeh (1988) definition of the end user computing and EUCS. The end user computing in this study is the people who interact and use the CAS such as financial officer, administrative officer, bursar assistant, account clerk and etc, and eventually they can interpret the report as in needed by the organisation. These end users were asked to reflect their satisfaction or perception on the CAS in their own organisation.

Previously, Amdan et al. (2006)   has done study of EUCS on CAS among Peninsular Malaysia Public Universities. The study is to measure the level of EUCS, evaluate the relationship between EUCS factors and satisfaction and study the different of perception among demographic variables. This study also focus on five factors of Doll and Torkzadeh Model (1988), one factor from Chin and Lee (2000) and system reliability as a self developed factor. The dependent variable for this study is also satisfaction.

EUCS model is the extension of the User Information Satisfaction (UIS) model, which previously had been developed by Ives et al. in 1983. There were quite numbers of studies done by information system researchers treated User Information Satisfaction (UIS) as their dependent variable. Eindor and Segev (1978) and Hamilton and Chervany (1981) stated that several information system researchers have suggested user satisfaction as a success measure for their empirical information system research. These researchers found that user satisfaction is appropriate when a specific information system was involved. Meanwhile, McKinsey & Company (1986) studied the chief executives' satisfaction in their attempt to determine the success of the overall Management Information System (MIS) effort.

Ginzberg (1981) also treated user satisfaction as dependent variables in his two empirical studies on implementation success. Lucas (1978) in his study found that sales representatives rated their satisfaction with a new computer system. Moreover, Lucas (1981), in his study on executives in a laboratory setting, has asked them to rate their enjoyment and satisfaction with regards to information satisfaction, in relation to aided decisions of an inventory-ordering problem. Powers and Dickson (1973), has asked

managers about how well their information needs were being satisfied.

Amoli and Farhoomand (1996) used structural equation modelling techniques to explore the relationship between EUCS and user performance. In their study, it was found that six-attitudinal dimensions of EUCS account for a significant portion of the variation in user performance. Chen et al. (2000) had identified the underlying factors of end-user satisfaction with data warehouses and had developed an instrument to measure these factors. The study demonstrated that most of the items in classic end-user satisfaction measure are still valid in the data warehouse environment, and that end-user satisfaction with data warehouses depends heavily on the roles and performance of organisational information centres.

Heilman and Brusa (2001) evaluated the reliability and validity of a Spanish version of the User Information Satisfaction (UIS) short form (Ives et al., 1983), and used the instrument to investigate user information satisfaction among employees of organisations in northern Mexico. Results indicated that Mexican computer users have positive attitudes toward and are generally satisfied with their employers' information systems, especially with their IT staff and services. On an individual scale assessment level, the users are least satisfied with the level of user training they receive.

Seddon and Yip (2002) provided an empirical evaluation of three user satisfaction measures for use with computer based general ledger accounting systems. The three measures tested are Ives et al (1983)'s User Information Satisfaction measure, Doll and Torkzadeh (1988)'s EUCS measure, and a composite measure that includes questions specifically related to the features offered by general ledger systems. The results from the analysis of the data suggested that Doll and Torkzadeh (1988) is a more useful measure of satisfaction with general ledger systems as compared to Ives et al. (1983)'s UIS.

Higher user satisfaction leads to positive attitude toward using the system, and in turn, increases the actual use of the system in voluntary situations (Mihir and Bijan, 2002). As end users increasingly use the system, system objectives is realised and the system is success. Therefore, the EUCS is a critical factor for promoting CAS use and ensuring system success.

Furthermore, empirical research proved that a good information system leads to a better organisational performance. In a survey of several large companies, Rivard and Huff (1984) interviewed data processing executives and asked them to assess the cost reductions and company profits realised from specific user developed application programs. Hamilton and Chervany (1981) suggested that company revenues could also be improved by computer based information systems. Chismar and Kriebel (1985) proposed measuring the relative efficiency of the information systems effort by applying Data Envelopment Analysis to measure the relationship of corporate outcomes such as total sales and return on investment to IS inputs.

User satisfaction emphasises on the traditional data processing environment, rather than EUCS which focusing on today's personal computing and end user computing environment (Doll and Torkzadeh, 1988). However, according to Delone and McLean (1992), either user satisfaction or EUCS is probably the most widely used single measure of information system success as dependent variable. The reasons for this are at least threefold:

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1. First, "satisfaction" has a degree of face validity. It is hard to deny the success of a system, which its users say that they like;
2. Second, the development of the Bailey and Pearson instruments (as a base instrument) and its derivatives has provided a reliable tool for measuring satisfaction and for making satisfaction among studies; and
3. The third reason for the appeal of satisfaction as a success measure is that most of the other measures are so poor; they are either conceptually weak or empirically difficult to obtain.

The dependent variable for this study is overall EUCS. The items, which represent overall EUCS, are combined from certain item in every EUCS dimensions. Doll and Torkzadeh (1988) previously used this method in their initial study of EUCS. In those particular items, the respondents were asked whether they satisfied with overall EUCS in general or not. This method was implied so that the respondents would not focus to the certain factor or dimension which is overall EUCS. However, to avoid the high correlation between dimensions of EUCS (independent variable) and overall EUCS (dependent variable), the study used different items in questionnaire as overall EUCS (dependent variable) and precisely not uses the same items in preparing the analysis. Therefore, the high correlation of the expected result is not because of the same item to measure the independent variable and also the dependent variable, but it is due to reliable and valid instrument, which have been used in this study.

Doll and Torkzadeh (1988) specifically designed their instrument to measure EUCS. They developed instruments that consisted of content, accuracy, format, ease of use, and timeliness. Their instrument was specifically designed to work within the end-user computing environment. They conducted personal interviews with end-users (especially middle and lower level managers) in 44 non-randomly selected firms, and then administered an 18-item instrument employing what appear to be 5-point Likert scales. Doll and Torkzadeh (1988) argued that a five-factor model was more interpretable. This study was based on this EUCS instrument by Doll and Torkzadeh (1988) because it is widely used instrument, and has been validated through several confirmatory analyses and construct validity test. After the exploratory study was completed in 1988, two confirmatory studies with different samples were conducted respectively in 1994 and 1997, which suggested the instrument was valid (Doll et al., 1994; Doll and Xia, 1997). A test-retest of reliability of the instrument was conducted in 1991, indicating the instrument was reliable over time (Torkzadeh and Doll, 1991).

The instrument is widely accepted and adopted in other researches. McHaney et al. (1999) conducted a test–retest reliability study of EUCS instrument by Doll and Torkzadeh. The instrument was distributed to real-world representational decision support system users through a mail survey. The result suggested that the instrument was internally consistent and stable when applied to its users. McHaney et al. (2002) focused on the psychometric stability of the EUCS instrument by Doll and Torkzadeh (1988) when applied to Taiwanese end-users of typical business software applications. Using a survey of 342 users, the research provided evidence that the instrument is valid and reliable measurement in Taiwanese settings. Given this evidence, managers and software developers can confidently apply the instrument in the investigation of competing tools, features, and technologies.

Dimensions of EUCS

The dimensions of the study consist of content, accuracy, format, ease of use, timeliness, system speed, and system reliability. These seven factors measure is formulated to test the relationship with the overall EUCS that more focused questions, aimed specifically on CAS.

The research questions are:

1. RQ1: What is level of satisfaction among the end users of CAS in government sectors?
2. RQ2: How strong seven factors of EUCS influence satisfactory level among the end users toward the CAS?

4. Research methodology

4.1. Study design

This study relied on survey design as it deemed more appropriate compared with other designs of research to achieve of the study. The population of this study covered the end users of CAS at finance department of government sectors in East Malaysia. However, only 62 Responsibility Centres were chosen due to the purpose of this study. The Responsibilities Centre consists of 62 departments. We have distributed 2 questionnaires for each department and the total population are 124 respondents. Sekaran (2003) has stated the sample should be taken for this population are 97 respondents. Nevertheless, 90 respondents have fulfilled these questionnaires.

4.2. Instrumentation

Basically, the instrument of this study is based on the instruments, which was developed by Chin and Lee (2000). It presents a new set instrument while focusing on the same five construct domains. They are: content, accuracy, format, ease of use, and timeliness (Doll and Torkzadeh, 1988); and satisfaction with system speed (Chin and Lee, 2000). According to their findings, the relationship between the overall measures of satisfaction than the baseline model is expected to relate strongly. However, based on the related literature as discussed earlier, this study proposes another dimension, which is system reliability. This dimension is already tested on the validity and reliability during the pilot study. The value of the Cronbach's Alpha of 0.70 indicates that the instruments of this study are acceptable and reliable to measure what they are supposed to measure.

Table 1: dimensions of EUCS

Dimension and Instrument	Sources
(1) Content, (2) Accuracy, (3) Format, (4) Ease of Use, and (5) Timeliness	Doll and Torkzadeh (1988)
(6) Satisfaction with System Speed	Chin and Lee (2000)
(7) System Reliability	Self Developed

For the purpose of this study, the instruments are adapted from Chin and Lee (2000)

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and Doll and Torkzadeh (1988). The table summarises the justifications of the selection of the instrumentations. However, some modifications have been made to enable the instruments are fit to be used in the CAS environment. For instance, "Does the system provide the precise information you need?" is modified to "Does the CAS provide the precise information you need? This will ensure the respondents are kept reminded that the system is CAS.

The questionnaires are also attached with a cover letter from the researcher explaining the purpose of the study and the Questionnaire. EUCS section was divided into 6 parts namely: (1) Part A -Content, (2) Part B - Accuracy, (3) Part C - Format, (4) Part D - Ease of Use, (5) Part E - Timeliness, and (6) Part F - Satisfaction with System Speed. A five-item scale was used, where 1 = never; 2 = some of the time; 3 = about half of the time; 4 = most of the time; and 5 = always. The instructions requested respondents to circle the response which best to describe their satisfaction level with the application of computing system.

5. Results

5.1. Data analysis method
To analyse the data, the study conducted frequency analysis, cross tabulation analysis, descriptive analysis, correlation analysis, t-test and analysis of variance (ANOVA) using the SPSS 12.0 (statistical package for social science) software for windows. The study also tested reliability of the instrument so that it enables to produce a robust and valid result.

5.2. Reliability analysis
Table 2 summarizes the reliability analysis for each items and satisfaction. Each items show above 0.7. It seems that this study provides more reliable instruments because most of the score is higher than Doll and Torkzadeh (1988). The content score in Doll and Torkzadeh (1988)'s study is 0.89 as compared to 0.918 in this study; accuracy=0.91 (0.875); format=0.78 (0.927); ease of use=0.85 (0.927); timeliness = 0.82 (0.751). The coefficient alpha for system speed is higher (0.800) than Chin and Lee study (0.72) and system reliability is a new factor provides 0.759 and presents a reliable dimension for EUCS measurement. The reliability of the instruments of the study can be compared with Amdan et al (2006). From Table 2, only system reliability and ease of use show better than Amdan et al (2006).

Table 2: Reliability analysis

Variable	Alpha (Coefficient)	Alpha (Coefficient)	Alpha (Coefficient)	Alpha (Coefficient)
	Current study	Doll and Torkzadeh (1988)	Chin and Lee (2000)	Amdan et al (2006)
Satisfaction (Dependent Variable)	0.771	-	-	0.8550
Content	0.918	0.89	-	0.9243
Accuracy	0.875	0.91	-	0.8834
Format	0.927	0.78	-	0.9256

Ease of Use	0.927	0.85	-	0.8912
Timeliness	0.751	0.82	-	0.8711
System Speed	0.800	-	0.72	0.9126
System Reliability	0.759	-	-	0.7204

5.3. Descriptive statistics

The results of the computer output are shown in Table 3. From the result, the highest mean is satisfaction with the format (3.69) and the lowest mean is timeliness (3.34). It seems like most of the staff satisfied with format factor and less satisfied with timeliness factor. The highest standard deviation is ease of use (0.69) and the lowest is system reliability (0.56). The ease of use is deviate too far from the mean and system reliability is too close to the mean. The minimum, maximum, mean and standard deviation result has answered research question 1.

Table 3: Descriptive analysis

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Content	90	2.33	5.00	3.76	.58
Accuracy	90	2.43	5.00	3.55	.59
Format	90	2.43	5.00	3.69	.68
Ease of Use	90	2.14	5.00	3.60	.69
Timeliness	90	2.50	5.00	3.34	.59
System Speed	90	2.33	4.83	3.48	.56
System Reliability	90	2.29	4.71	3.49	.57
Satisfaction (Dependent Variable)	90	2.14	5.00	3.61	.63
Valid N (listwise)	90				

Table 4 presents the correlation coefficient between satisfaction and EUCS factors. It shows the result from the current study, Doll and Torkzadeh (1988)'s study and Amdan et al (2006)'s study. This current study shows strong correlation between satisfaction and seven EUCS factors. The strong correlation is between satisfaction and ease of use = 0.827. Followed by accuracy = 0.816; content = 0.804; system speed = 0.782; format = 0.754; system reliability = 0.738 and timeliness = 0.602. The correlations are significant at the 0.01 level (2 tailed).

In Doll and Torkzadeh study, correlations of each factor with satisfaction were: content = 0.69; accuracy = 0.55; format = 0.60; ease of use = 0.58 and timeliness = 0.60. The correlation in this study is higher than the correlation in Doll and Torkzadeh (1988)'s study. In Amdan et. al. study, the correlation of each factor with satisfaction were: content = 0.851; accuracy = 0.819; format = 0.826; ease of use = 0.834; timeliness = 0.764; system speed = 0.752 and system reliability = 0.6010.

It seems to suggest that the EUCS factors represent the satisfaction towards CAS. The respondent who is satisfied with one of the factors is also influenced the overall

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satisfaction in handling CAS. It represent that the end-users satisfied with the e-SPKB system in Responsibility Centre. This result has answered research question 2 because this study shows strong correlation between seven factors and satisfaction. Those seven factors strongly influence satisfactory level at 0.001 level of significant level (2 tailed).

Table 4: Pearson correlation

	Content	*Accuracy*	*Format*	*Ease of Use*	*Timeliness*	*System Speed*	*System Reliability*
Satisfaction (current study)	.804**	.816**	.754**	.827**	.602**	.782**	.738**
Satisfaction (Doll and Torkzadeh, 1988)	0.69	0.55	0.60	0.58	0.60	-	-
Satisfaction (Amdan et al, 2006)	0.851	0.819	0.826	0.834	0.764	0.752	0.610
Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000

6. Conclusion

This research attempted to measure the end-users satisfaction of computerised accounting system (CAS) and determine the relationship of seven factors that influence satisfactory level. The empirical results of our study can provide support for Doll and Torkzadeh (1988)'s EUCS model including two new factors, which are satisfaction with system speed and system reliability. In overall, research question 1(RQ1) and 2 (RQ2) has been answered. The RQ1 indicates that some are almost satisfied with the CAS. It can be explained by descriptive statistics table according to the end-users satisfaction for each EUCS factors. From the RQ2 result, the ranking of EUCS factors commences with: ease of use (0.827), accuracy (0.816), content (0.804), system speed (0.782), format (0.754), system reliability (0.738) and timeliness (0.602). In addition, the study has enabled to evaluate the strong relationship between EUCS factors and satisfaction towards CAS. It seems that EUCS factors strongly influence the end-users satisfaction when handling the e-SPKB.

6.1. Implications to research and practice

The proposed model has a number of implications for research and practice. However, this study extended Doll and Torkzadeh (1988) and Chin and Lee (2000) works by considering the additional dimension in EUCS model. Another area of future research is by applying several analytical approaches to the research model. This study utilized Pearson correlation while Doll and Torkzadeh (1988) used factor analysis and modified the instruments, examined discriminant validity of the modified instruments, and assessed reliability and criterion-related validity by nature and type of application. Using different analytical approaches could help to discover the reason behind several inconsistencies and might lead to different conclusions. The work of Doll and Torkzadeh (1988) and Chin and Lee (2000) are an excellent step in this research direction.

However, for the spirit of the knowledge advancement, the need for substantive knowledge to derive modelling, exploration, and interpretation of results should be observed (Chin and Todd, 1995). The study demonstrated the EUCS factors in the government sectors with the CAS. The study also suggests that content, accuracy, format, ease of use, timeliness, satisfaction with system speed and system reliability must be emphasized to the standardized CAS. Thus, software developers must address rich system features and powerful system speed and functionality as important design objectives when developing systems in ensuring better output.

The finding of this study is preliminary and shall not be generalized to the other government sectors yet. This is due to the different in the adoption of the information technology and CAS especially in information system usage. The number of the sample is relatively small. The small sample size is limited only 90 end-users of CAS. This small sample size may be jeopardizing the population of the end user among the government sectors. The aspect of time also affected the data collection method; i.e., by using questionnaire. A respondent who is not particularly interested in answering the questionnaire is more likely interspersed to answer the question. This is because some of them are very busy with their tasks and duties. As a result, they did not answer the questionnaire genuinely.

The future study can propose the other data collection method such as in depth interview with the end user computing (i.e. the bursar assistant). In this study, the only data collection method is that the research is conducted through questionnaire owing to the fact that financial and time are of the essence. The sample size should also be increased. A larger sample size would be required to ensure that the generalization ability of research. The future research should also consider the type of software, whether the department purchases or develops the system. It is essential to measure the different of perception on the overall EUCS among them since the end users are expected to have a different level of satisfaction.

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