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FACTORS INFLUENCING USERS' SATISFACTION ON ACCOUNTING INFORMATION SYSTEM (AIS) AND INDIVIDUAL PERFORMANCE: SMALL AND MEDIUM ENTERPRISES

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ABSTRACT

Eradication of the terrorism which prevailed for the last three decades in Sri Lanka and higher demand of business penetration in North and Eastern part of Sri Lanka. Sri Lankan government attempts to promote business for Small, medium Enterprises (SME) as it is the backbone of economic development of the country, competitive with high and new technology. Accounting Information System (AIS) may be a significant tool for an organization to make success and also to survive. There are still a limited number of empirical studies that revealed user satisfaction of AIS. User satisfaction and system usage have been identified by many researchers as critical determinants of the success of Information System (IS).

This study attempts to empirically test a framework to identify the relationships between user satisfaction, AIS usage and individual performance by issuing a set of questionnaire to examine the AIS users those who is mainly using the AIS in their organization from the Ampara District in Eastern province, Sri Lanka. The data gathered from 88 users of AIS were scaled and analyzed using descriptive statistics, Pearson correlation analysis, liners regression analysis and analysis of variance (ANOVA).

The finding reveals that a strong support to the model. The result provides that the higher level of user satisfaction can lead to increased AIS usage and improved individual performance and that of higher level of AIS usage lead to higher levels of individual performance. Model confirmed that there is a significant positive relationship between user satisfaction and AIS usage, and AIS Usage and individual performance. This study examined and empirically validated a significant positive relationship between user satisfaction and system usage that has already been proposed by DeLone and McLean (1992 & 2003) in their IS success model. The study should help managers and top level decision makers to gain better understanding the relationship between user satisfaction, AIS usage and individual performance to assess the benefits of the AIS implementation.

KEYWORDS: *End User Computer Satisfaction, Accounting Information System, User Satisfaction, AIS usage, Individual Performance.*

INTRODUCTION

In a competitive business environment, many organizations are interested and motivated to invest and implementing different types of information system (IS) such as management information system (MIS), customer relationship management (CRM), enterprise resources planning (ERP) and accounting information system (AIS), basically the belief of these investments will bring to increased employee's productivity (Jain & Kanungo, 2005). Measuring individual performance in term of IS use has been continuous attention in IS research area (Goodhue & Thompson, 1995). Even though, previous numerous research study that resulted the relationship between IS usage and individual performance revealed from positive, to even a negative relationship. (Goodhue & Thompson, 1995) studied the role of task-technology fit on individual performance effect and found a positive relationship between IS use and individual performance. But Pentland (1989) on the other hand stated that a negative relationship between IS use and individual performance. Lucas& Spitler (1999) indicated that individual performance has not been impacted by IS use.

Many scholars have revealed and recognized user satisfaction as the important determinant of the IS success (Bailey & Pearson, 1993, Doll & Torkzadeh, 1988, Delone &Mclean, 1992, and Igbaria & Tan, 1997). Delone &McLean (2003) proposed a model that revealed higher levels of individual satisfaction with using an IS will lead to a higher level of intention to use the system. Many studies investigated the system usage at the individual level brought at the user acceptance of the computer technology (Dasgupta et al., 2002). The general conventional knowledge attributed that more use of IS leads to better performance. But, empirical studies examined the relationship between IS usage and individual performance effects have revealed different results from positive to negative, to even non-significant relationship.

Hence, the objective of this research is to study whether it is prompt to identify the factors influencing users' satisfaction on AIS and individual performance. Furthermore, this study examines the following research question: how does AIS influence the AIS usage and individual job performance? In this research study, it is presented a model that identifies the relationships between user satisfaction, AIS usage and individual performance. According to Igbaria & Tan's (1997) model, it is presented that the computer satisfaction has a positive impact on individual job performance directly and indirectly through system use. Furthermore, number of previous studies on AIS satisfaction were conducted in developed and western counties, however, this study enrich the research in Sri Lanka as developing country.

BACKGROUND
SME in Sri Lanka:-

Small and medium Enterprises (SME) are tremendously important to the development of economy in any country whether it is developed or developing. It is playing the main role in economic development even Sri Lanka too. Different definitions are defined by different counties based on various criteria such as number of employees, annual turnover, the amount invested, nature of business (Gamage, 2003). Even though different countries is having a different definition for SME, but even with a country, different region might have slightly different definitions based on the criteria. There is no clear definition of SME in Sri Lanka; government departments use different method to identify SME (Cooray, 2003; Gamage, 2003). There are different terms used to identify the SME sector, such as: SME, Rural enterprise, Micro enterprise and cottage and small scale industry.

Even though, there are a number of different definitions given for SME in developing and developed countries, the Japanese "new small and medium enterprise basic law" (amended Dec. 3rd, 1999) defines what consist of a number of employees and size of capital. In the same way the European Union (EU) defines using Number of employees, amount of turnover and balance sheet total (European Union, 2003).

The World Bank defined enterprise based on number of employees in Sri Lanka as follows: those with fewer than 49 employees are small; those with 50-99 employees are medium sized; and those with more than 100 employees are large. Therefore, as there is different definition for SME, the number of employees as the criteria for size appear is suitable for line of business. While the capital investment is another criteria which weaken due to the revised frequent inflation changes Ponnamperuma, 2000). AI was selected for this study as it is newly implemented in the eastern part of Sri Lanka after the war's end. There are more than 600 SME in Ampara District. Hence, it's a need to study to identify the factor influencing the user satisfaction.

LITERATURE REVIEW

Nowadays, many organizations have already implemented AIS, considered to be one of the most significant and needed software investments for organizations. AIS offer organizations the advantages of providing integrated system that connects their business activities such as account payable, account receivable, payroll, inventory control (Lee, 2000,Newell et al., 2003 and Parr and shanks, 2000).

Romney & Steinbart (2000) defined an AIS as *" a system that processes data and transactions to provide users with the information they need to plan, control and operate their business"* Hence, AIS is regarded as a system that supports managed by providing reliable information for decision making. Hence, AIS is not only to produce financial reports. It could be used for the purposes of planning, controlling and operating the business activities. Therefore, full use of the system is important to get its entire benefits.

End-user satisfaction (EUCS) is the one most popular model that has been commonly used, tested and validated in different IS research Since the 1980s, it is applied in different countries such as United states, Saudi Arabia, Iran, western Europe, Taiwan, Finland, and Mexico (McHaney et al., 1999, 2002; Doll et al., 2004; Heilman and Brusa, 2006; Pikkarainen et al., 2006, Deng et al. 2008; Azadeh et al. 2009). Doll and Torkzadeh (1988) hypothesized that the EUCS which consist the factors: content, accuracy, format, ease of use and timeliness.. In 1994, Doll and Xia (1994) studied a confirmatory factor analysis and concluded that the EUCS resulted end-user satisfaction. Doll et al. (2004) studied and validated the EUCS model using across 300 different applications from 1,166 responses. They concluded that accuracy was more important among the five first-order factors (content, accuracy, format, ease of use and timeliness)in user-satisfaction for operating personnel than it was for managerial or professional respondents. Meantime, Heilman and Brusa (2006) conducted a study of computer use using a Spanish version of the EUCS in Mexico. They concluded that the EUCS model was valid and reliable outside the United States and in a language other than English. Content, format and ease of use were the top three contributors of satisfaction. Deng et al. (2008) conducted a study using the EUCS model across cultures using samples in the United States, Western Europe, Saudi Arabia, India and Taiwan. For all the cultures that they examined, they found that all five factors were equivalent. There were no significant differences for content, format, accuracy and timeliness; however, there was a difference for ease of use. The finding stated that the result of user satisfaction may differ between cultures.

In our research, we examine to measure user satisfaction in AIS environment. In doing so, we test the EUCS model in the context of AIS. We hypothesize that EUCS is a valid model consisting of one second-order factor (satisfaction) and five first-order factors (content, accuracy, format, ease of use and timeliness). Further, we hypothesize that in anAIS environment of SME, content, accuracy, format, ease of use and timeliness of information systems will be the key contributors to end-user satisfaction which will bring the user to use the system and finally will bring individual performance.

AIS User Satisfaction:-

Many research studies have found that user satisfaction as a measure of IS success in firms (Lves et al., 1983,Bailley&Pearson 1983,Doll &Torkzadeh 1988, and Delone & McLean,1992). Cotterman& Kumar (1989) defined end user has an interaction with IS as a consumer of Information. Further, Turban et al., (2007) how the user can be at any level or functional area of an organization. Lves et al., 1983, and Bailey and Pearson,1983 did research on user satisfaction in the transaction data processing context. Doll & Torkzadeh, (1988) found that users are interacted directly with IS software to prepare reports. Ives et al., (1983), Bailey & Pearson's (1983), Doll & Torzadeh's (1988) have developed a number of instruments to measure user satisfactions which were tested and validated in several IS applications. (Law& Ngai,2007 and Somers et al., 2003) tested the instruments and found reliable. User satisfaction in multi- faceted construct consists the followings: content, accuracy, format, ease of use, and timelines and previous researches tested the validity and reliability of user satisfactions (Doll et al., 1994, Hendrickson e al., 1994, Doll & Xia, 1997, McHaney& Cronan, 1998, and McHaney et al., 1999).

System Usage:-

The system use was a main role in IS research (Bokhari, 2005, and Schwarz& Chin, 2007). According to Burton-Jones& Straub (2006) system usage has been studied in different way, such as: Is acceptance (Davis, 1989 and Venkatesh et al., 2003), IS success (Delone & McLean ,1992 , and Goodhue,1995), IS implementation (Hartwick & Barki, 1994 and Lucas ,1978) and IS fro Decision making (Barkin& Dicson,1997 and Yuthas& Young, 1998). Judge&Thompson (1995) stated that usage as the behavior of employing technology in fulfilling the task and elaborated it as IS has been integrated into each individual work task. Further, Lves et al., (1983) explained that system usage is as an indicator of success. Lea et al., (2003) review the technology acceptance model and found the measures: frequency of use, actual number of usage, amount time using and delivery of usage. In the same way, Burton-Jones & Straub (2006) found the following IS usage measures: Frequency of Use, extent of use, duration of use, decision to use, Voluntariness of use (voluntary or mandatory) features used and tasks supported.

Individual Performance:-

Delone &Mclean (1992) found that using IS impacts on the individual's actual performance and indicated that individual performance has given a

better understanding of decision making and has improved their performance. Many prior research studies have measured individual performance influence of IS with increased job performance, enhanced decision-making effectiveness and improved individual productivity (Delone &McLean (1992). For example Leidner & Elam (1993) studied that the frequency and duration of Executive IS use were revealed to increase the impact of decision making capacity at the individual level: problem identification, decision making speed and analyzing decision making. Also Lgbaria& Tan (1997) studied the system usage that has a positive effect on individual performance, such as the perceived impact of the computer system of decision making quality,

performance, effectiveness of the job and productivity.

The Research Conceptual Model and Hypotheses:-

Figure.1 shows the conceptual model developed for this study. This research framework presents that user satisfaction will bring a positive impact on individual performance though AIS usage. The following factor such as Content, accuracy, format, ease of use and time lines are identified as influence factors on user satisfaction and individual performance has been operationalized from the prior literature (Leidner & Elam, 1993, and Igbaria & Tan, 1997).
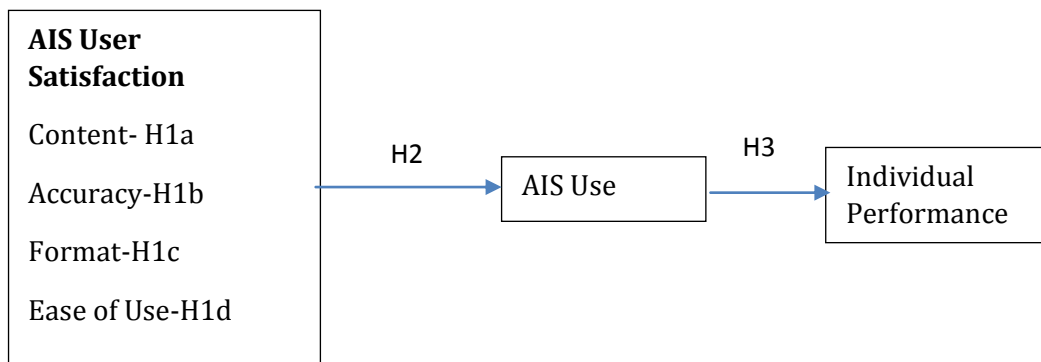
AIS user Satisfaction and AIS Use:-

The previous studies examined the relationship between user satisfaction and system usage (Livari, 2005) the intention to use (Chiu et al., 2007 and Halawi et al., 2007). User satisfaction associated with system usage (Kulkarni et al., 2007) duration of system usage (Guimaraes & Igbaria, 1997). Parikh& Fazlolaahhi (2002) examined the higher level of user satisfaction will bring to positive attitude toward system usage. Delone &McLean (2003) proposed that user satisfaction will lead to the user to use with higher intention, which consequently affect the use a system. This study aims that AIS user satisfaction would have a significant influence on AIS usage. Hence, after studying a number of literatures for studying factors influencing the user satisfaction of AIS, we proposed the following hypotheses.

Hypothesis H2: Higher level of AIS satisfaction will lead to higher levels of AIS usage

H1a: Information content of AIS affects AIS user satisfaction

H1b: Accuracy of information provided by AIS affect AIS user satisfaction

H1c: Format of the reports of AIS affects AIS user satisfaction

H1d: Ease of use of AIS affect AIS user satisfaction

H1e: Timelines of information provided by AIS affect AIS user satisfaction

AIS Usage and Individual Performance:-

Past studies have revealed different findings in relation to the impact of IS and individual performance. Jain& Kanungo, (2005) produced that it is more complex in term of relationship between use of an IS and individual performance. Further, some researchers have found that there is a positive association between IS usage and individual performance (Leidner & Elam, 1993, Goodhue & Thompson, 1995, Igbaria & Tan, 1997, and TorKzadeh & Doll, 1999). While (Pentland, 1989 and Szajna, 1993) concluded that there is a negative impact on individual performance or even Lucas& Spitler, (1999) found that IS has no impact on individual performance. Even though the result about the relationship between IS usage and individual performance is different, There is a logical expectation that IS will not be used unless it will contribute to individual performance. Similarly IS must be properly used by the user to get the better performance effect (Goodhue & Thompson (1995). Hence, it can be expected that with proper or increase use of IS will an increase in individual performance. Therefore, there is a positive relationship should be

exist between system usage and individual performance. Therefore, we proposed the following hypotheses.

Hypothesis (H3): higher level of AIS usage will lead to higher levels of individual performance

RESEARCH METHODOLOGY

Direct and a mail survey method were applied to collect the questionnaire. The sample was taken from the Kachari Report by 2014, which lists SMEin Ampara District, Eastern Province, Sri Lanka. The questionnaire was directly sent to accountant who uses AIS in their organizations.Mail and direct method were used to collect the questionnaire. The sample were drawn from the report and sent via mail to 128 organizations and directly submitted to 46 organizations. Finally responses received only from 88 0rgernization. The target respondents for the sampling frame were accountant who uses AIS in their organization. As the accountant is the key person who has plenty of experience and knowledge in AIS in an organization. This method was done to avoid concern about common respondent bias in survey research. The survey method contained a questionnaire, a cover letter and a sample envelop. The questionnaire included three sections which consist of the following demographic questions, their organization, and the extent to which the use the AIS.

Construct Measurements:-

The items applied to operationalize the constructs were taken from previous researches. All scale items were reworded to relate to the AIS and were measured using a five –point Likert scale (from 1= "Strongly Disagree" to 5 =" Strongly Agree"). To make sure the content validity of scale, a pilot test was carried out with 10 AIS users from organization in Amapara District. The clarity of words and the appropriateness of items in each scale were the main concern to evaluate the pilot questionnaire. We modified the wording in questions based on the feedback we received from them. Further, we used a 12 items of scale for measuring user satisfaction based on Doll & Torkzadeh(1988) EUCS instruments which were consisted of five components content (four items), accuracy (two items), format (two items), ease of use (two items), and timeliness (two items). Doll &Torkzadeh(1988) EUCS instruments has been widely empirically validated through previous researches (e.g.,Abdinnour-Helm et al., 2005, McHaney et al., 2002,Doll et al., 1994, and Hendrickson et al., 1994).The system usage was widely measured in the past literature includes:

frequency of use, duration of use and extent of use by individual (Mathieson et al., 2001 , Venkatesh and Davis, 2000, Igbaria et al., 1995, Hartwick and Barki, 1994, , Leidner and Elam, 1993, and Davis, 1989,). Individual performance was evaluated based on 7 items. Four of these items were measured the perceived impact of AIS on job performance, individual productivity, job effectiveness and decision making quality were adapted from Igbaria and Tan (1997).

DATA PRESENTATION
Reliability of the Scales & Validity of the Data:-

Before finalizing the research instrument (questionnaire) the pilot study was conducted to reduce the language bias. In the pilot study, 10 questionnaires were issued to Accountant. In the process of research instrument development, first, questions were prepared in the English version researcher with the help of the questionnaire dimensions in Ummah (2009) and Olufunso (2010). Secondly, the questions were translated into Tamil also. Both Tamil and English questionnaires were checked by academics in South Eastern University of Sri lanka. During the pilot study, some inconvenience words to the respondents were changed by the researcher with the help of the respondents of the pilot study.

Furthermore, Reliability was established with an overall Cronbach's alpha. It was compared the reliability value with the standard value of 0.7 advocated by Cronbach (1951), a more accurate recommendation (Nunnally& Bernstein's,1994) or with the standard value of 0.6 which was recommended by Bagozzi& Yi's (1988). Cronbach's alpha was 0.797, 0802, 0.895, 0.836, 0.847, 0.766 and 0.886 for Content, Accuracy, Format, Ease of use, Time line, AIS usage and individual performance respectively.

FACTOR ANALYSIS

Factor analysis was found to be the most popular method in the literature for determining construct validity. Factor analysis was used to revalidate the structure and internal reliability of the instruments. Therefore, factor analysis is applied as a data reduction method in leadership variables, decision making variables, and employee morale variables in this study.

Table 1: Principal component factor Analysis

Main Factor / Variable	(KMO)Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Eigen Cumulative %
Content	0.785	78.17%
Accuracy	0.500	83.70%
Format	0.500	90.52%
Ease of Use	0.500	86.23%
Time Line	0.500	86.75%
AIS use	0.500	82.12%
Individual Performance	0.843	73.06%

According to the criterion, to explain the Content the KMO is 0.795 which is greater than the minimum value of 0.500. The content first two principal components are sufficient, and these two principal components extract 78.17% of original information of Content. These two principal components are combined into one variable using principal component technique and this combined variable is used for further statistical analysis.

According to the criterion, to explain the Accuracy, format, ease of use, time line and AIS use the KMO value is 0.500 for all above variable respectively, which is equivalent value to the minimum standard. For the above variable, the first one principal component is sufficient at the rate of 83.70%, 90.52%, 86.23%, 86.75% and 82.12% respectively and these variables are used for further statistical analysis.

According to the criterion, to explain the Individual performance the KMO is 0.843 which is greater than the minimum value of 0.500. The Individual performance first two principal

components are sufficient, and these two principal components extract 73.06% of original information of Individual performance. These two principal components are combined into one variable using principal component technique and this combined variable is used for further statistical analysis.

Statistical Analysis between Content and AIS use:-

The main objective of this research is to check the correlation between content and AIS use. Correlation between the variables can be checked by Pearson correlation analysis and simple regression analysis.

Pearson correlation between Variables:-

The r values between content and AIS use is 0.209, Accuracy and AIS use is 0.462, Format and AIS use is 0.592, Ease of use and AIS use is 0.426, and Time line and AIS use is 0.422 (all five >0.3) except content is 0.209 (less than 0.3). Thus, AIS use is associated with Accuracy, Format, Ease of Use, and Time.

Table 1.1: Hypothesis testing results for Content, Accuracy, Format, ease of use and time line Factor

Hypothesis	Pearson correlation	P - Value	Decision
Content	0.209	0.051	Hypothesis rejected
Accuracy	0.462**	0.000	Hypothesis Accepted
Format	0.592**	0.000	Hypothesis Accepted
Ease of Use	0.426**	0.000	Hypothesis Accepted
Time line	0.422**	0.000	Hypothesis Accepted

**. Correlation is significant at the 0.01 level (2-tailed).

The R-Square value is 0.410, which means 41% of the variation in AIS use can be explained by Time, Content, Ease_of_Use, Accuracy, and Format. The p-value from the ANOVA is less than 0.001, which means that at least one of the five variables: Time, Content, Ease_of_Use, Accuracy, and Format can be used to model AIS use.

AIS use = -1.755E-016 -0.27 X1 +0.222 X2+0.381 X3+ -0.123 X4+ 0.015 X5

AIS use =. -1.755E-016 -0.27 Content +0.222 Accurtacy+0.381Format+ -0.123 Ease of Use+ 0.015 Time line +e

Pearson correlation between AIS use and individual performance:-

The above correlation result confirmed that there is a positive significant correlation exists between AIS use and Individual performance because correlation between AIS use and Individual performance is r = 0.710 and its corresponding probability value is P = 0.000.

The summary of hypothesis testing of AIS use and Individual performance, Pearson correlation value, significance value and hypothesis testing decision are given in table 1.2.

Table 1.2: Hypothesis testing results for AIS use and Individual performance Factor

Hypothesis	Pearson correlation	P - Value	Decision
There is a significant impact of individual's Performance of AIS usage	0.710**	0.000	Hypothesis Accepted

**. *Correlation is significant at the 0.01 level (2-tailed).*

To confirm the above correlation between the AIS use and Individual performance factor simple regression analysis was used. The simple regression ANOVA results are given. The R-Square value is 0.505, which means 50.5% of the variation in Individual performance can be explained by AIS use. The p-value from the ANOVA is less than 0.001, which means that only variable: AIS use can be used to model Individual performance.

Individual Performance = 1.939E-016+0.531 X1

Individual Performance = 1.939E-016 +0.531 AIS use +e

DISCUSSIONS AND CONCLUSION

Empirical studies that investigated the relationship between IS usage and individual performance effects have reported contradictory results. The primary purpose of this study was to empirically examine the research framework, identifying the relationships between AIS User satisfaction, AIS usage, and individual performance in the context of a AIS. We examine the research questions: 1) does there exist a significant positive relationship between AIS user Satisfaction and AIS usage; (2) does an individual with higher levels of AIS usage have higher levels of individual performance. Based on survey data, the research framework was examined using correlation and regression modeling. Overall, these results provide strong empirical evidence that AIS user satisfaction lead to increased AIS usage and improved individual performance. This finding also confirms the argument of DeLone and McLean (2003), who suggest a significant bidirectional positive relationship between system use and user satisfaction so that the greater the use of the AIS, the more satisfied the user and the greater the use of the AIS. Consistent with prior studies (Gelderman, 1998 and Igbaria and Tan, 1997), our research results indicate that higher levels of AIS user satisfaction lead to improved individual performance by using

AIS. The strong and statistically significant impact of AIS user satisfaction on individual performance supports the suggestion that user satisfaction may serve as a valid surrogate for individual performance (Iivari, 2005 and Ives et al., 1983). AIS adoption in organizations helped individuals accomplish their tasks more effectively, increased their productivity, and improved their decision-making quality. Therefore, organizations can improve employee performance if the user has a higher level of user satisfaction with AISs.

IMPLICATIONS

As discussed earlier, while the role of AIS as a source of improved decision-making capabilities has received a great deal of interest from researchers and practitioners (Chou et al., 2005, Friedman and Hostmann, 2004, Hou and Papamichail, 2010 and InformationAge, 2006), few empirical studies have investigated the impact of AIS usage on user performance at the individual level or examined the relationships between user satisfaction, system usage, and individual performance.

This study presents and empirically tests a research framework and makes the following theoretical and practical contributions. In the AIS context, this study empirically validates a significant bidirectional positive relationship between system usage and satisafction that has already been proposed by DeLone and McLean (2003) in their IS success model. Furthermore, our results indicate that system usage and AIS user satisfaction both influence the individual performance by using the AIS. Furthermore, this study implemented moderating effects of voluntariness of use based on the valid statistical analysis suggested by Keil et al. (2000).

From a practical standpoint, the study should enable managers to gain a better understanding of the relationships between user satisfaction, AIS usage, and individual performance to assess the benefits of the AIS implementation.

LIMITATIONS AND FUTURE RESEARCH

The study has its limitations. First, we measured user satisfaction using an established measurement instrument. Future research should attempt to identify additional measures of user satisfaction that are specific to a AIS environment. Some measures could cover issues related to data security and privacy, and integration with legacy systems. Second, this study was conducted in a SME and, therefore, the generalizability to other industries may be questionable. Further research is needed to determine the applicability of the results of this study to other industries. Third, our empirical study was carried out in Ampara District, Sri Lanka and the results might not be directly applicable to other countries due to cultural differences. Consequently, this study should be conducted in different countries. Fourth, this study focuses on users' perceptual measures of system usage and performance rather than on objective measures, because most of the data required to measure performance are intangible or qualitative.

Finally, this study measures users' perceptions at one point in time. It is logical to assume that users' perceptions may change over time as they gain more experience using AIS (Mathieson et al., 2001 and Venkatesh and Davis, 1996). Hence, a longitudinal approach should be considered in future research.

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