CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

This chapter provides an overview of the study, summarizes the major findings, discusses the implications of the findings, outlines the limitations of the study and suggest recommendations for future research.

5.1 Summary and Conclusion

The DeLone and McLean IS Success model has been the definitive framework to measure IS effectiveness since its conception in 1992. This model had been used in many settings like education and business but lack in e-government environment. This study attempted to replicate the causal model posited by Delone and McLean in the hope to measure the overall effectiveness of Pahang State Education Department and the resulting end-user satisfaction. Data was obtained using a convenience sampling method resulting in 142 usable responses. The survey results were tested for reliability and correlation to test the posited hypothesis outlined as part of this research objective.

Understanding end-users' perception about their adopted Information Systems (IS) might assist operators and decision makers to understand the weaknesses and promises of IS. Therefore, examining organizations' IS in the light of several

identified attributes may provide more and clearer tools to understand and assess its performance.

This present study is an attempt to identify the IS attribute (amongst systems quality, information quality and service quality) which is perceived to be most significant relationship in determining end-user satisfaction. Further it intends to examine the relationship between the perceived importance and the actual performance of the individual IS attributes and to analyze the association between the demographic factors of the end-users and their evaluation of the overall IS performance. Finally, it is attempt to carry out an importance-performance analysis on the identified IS attributes in order to identify the performance gaps requiring further action.

Demographically, the survey results revealed that, the respondents were dominated by female, aged between 41 to 50 years old, above 20 years of job experience, secondary school highest level of education, less than 5 years working experience at this organization, and majority were none officer and also they don't have information technology education background. In summary, this study can be concluded as per Table 5.1 while detailed elaboration can be found in the latter paragraphs.

Table 5.1

Summary of Study Objectives and Findings

No	Objectives	Findings	Hypothesis	Reference to previous research
1	To identify the IS attribute (amongst systems quality, information quality and service quality) which is perceived to be most significant relationship important in determining end-user satisfaction.	System quality is the most significant relationship in determining end-user satisfaction	(i) **Reject H1**; no significant relationship was found between information quality and user satisfaction. (β =-0.42, r =0.223, p=0.638) (ii) **Accept H2**; system quality was found to be significant relationship in determining user satisfaction. (β =0.50, r = 0.487, p=0.000) (iii) **Reject H3**; no significant relationship was found between service quality and user satisfaction. (β =0.20, r =0.222, p=0.813)	Contradicts past researches (e.g. Almutairi 2005, Seddon 1997, Delone & McLean, 1992) Supports past researches (e.g. Rolden Leal,2003) Contradicts past researches (e.g. Delone, 2003; Luarn, 2003; Kim, 2005)

Table 5.1 continued

Summary of Study Objectives and Findings

No	Objectives	Findings	Hypothesis	Reference to previous research
2	To examine the relationship between the perceived importance and the actual performance of the individual IS attributes.	There is a relationship between the perceived importance and the actual performance of the individual IS attributes (surrogate for end user satisfaction).	**Accept H4**; There is a significant relationship between the perceived importance of IS effectiveness and the actual performance of IS (surrogate for end-user satisfaction). (r=0.539, p=0.000)	Supports past researches (e.g. Robbins, 2003; Elliot and Devine, 1994).
3	To analyze the association between the demographic factors of the end-users and their evaluation of the overall IS performance.	There is no significant association was found between the end user demographic factors of the end-users and their evaluation of the overall IS performance.	.	Contradicts past researches (e.g. Harrison and Rainer, 1996; Holsapple & Sena, 2003,2005)

Table 5.1 continued

Summary of Study Objectives and Findings

No	Objectives	Findings	Hypothesis	Reference to previous research
4	To carry out an importance-performance analysis on the identified IS attributes in order to identify the performance gaps requiring further action.	The subsequent IP map revealed that all twenty two IS attributes were performing below the end-users' expectations. The three variables with highest gap scores were "Able to provide precise information", "IS is up-to-date" and "Knowledgeable staff".		Congruents past researches (e.g. Ainin & Hisham, 2008)

From the correlation analysis done on the data set concerning to see the correlation between system quality, information quality, service quality and end-user satisfaction, it was statistically proven that all the independent variables (system quality, information quality, and service quality) are positively related to dependant variable (end-user satisfaction). However, when regression analysis was carried out in order to assess the predictive power of the predictors (or independent variables) i.e. system quality, information quality and service quality in explaining the variance of dependent variable i.e. user satisfaction, the result of the analysis showed differently.

The standardized coefficients value for system quality (β = 0.500) is the highest among the predictors, which indicates that system quality is the most important variable in the predicting user satisfaction. This finding is consistent with Roldan Leal (2003) which found a significant relationship between system quality and end-user satisfaction. In this study, the attributes affecting system quality include easy to use, easy to learn, adaptable for user and easy to become skilful.

Surprisingly, information quality and service quality are not statistically significant in explaining the variance in user satisfaction despite the correlation analysis results showed positive relationship between the two variables.

From this study, the statistical analysis shows that there is no significant relationship between information quality and end-user satisfaction since its

regression significance level is more than the selected significant level of 0.05 and the correlation analysis shows a weak positive relationship between the two variable (r = 0.223). This finding is not support the finding produced in studies conducted by Almutairi (2005) which found a significant relationship between information quality and user satisfaction.

In addition, from the correlation analysis done to test the significant relationship between service quality and user satisfaction, it shows a weak positive relationship between the two variables (r = 0.222). Even though, it shows positive correlation between service quality and user satisfaction and consistent with Kim (2005) but further analysis using regression analysis indicated an insignificant relationship between service quality and user satisfaction (significance value is 0.813 which is more than p= 0.05).

Therefore, there is only hypothesis one, *H1: There is a relationship between system quality and user satisfaction*; was supported as the relationship between the variables were statistically significant (significance value is 0.000 which is less than p=0.05). Furthermore, the Pearson Correlation showed a medium positive relationship between two variables (r = 0.487).

Correlation analysis between the perceived importance and the actual performance of IS attributes showed a moderate positive relationship. The F

value calculated from the ANOVA analysis was high, statistically proving that the model was a good fit. When the variables were subjected to Pearson's correlation test, the r value at 0.539 was deemed significant. In summary, there is a significant correlation between the perceived importance and the actual performance of the identified IS attributes.

On the other hand, the correlation analysis conducted to examine the association between demographic factors (age, job designation and duration of employment) and the actual performance of IS showed a very weak positive relationship. Additionally, the F value calculated from the ANOVA analysis did not meet the significant level while its p value at 0.530 indicated that the result is not significant and the model is a poor fit. As such, it can be concluded that there is no significant association between the said demographic factors and the actual performance of IS.

The IPA framework utilized helped provide context for the data despite the inconclusive correlation test mentioned previously. Mapping the mean scores for both data sets onto a scatter plot and analyzing the distance of the scores plotted against the iso-rating line gave much insight to help guide the prioritization of resources and management intervention.

From the gap scores, it is apparent that there is insignificant different between performance and importance for all the IS attributes with the gap values below -1.

This result shows that generally all end-users are satisfied with the systems they used and also with all the IS attributes presented.

However, the IS department needs to work harder at improving the system in order to be able to provide up-to-date and precise information and also needs to improve further the level of knowledge of the ICT staffs regarding to the systems. These three items which are having the highest gap scores indicate the biggest discrepancy between importance and performance. This is also maybe due to the fact that it is highly challenging to change the older system used particularly in public sectors.

With limited budget for IT and IS empowerment, Government's approval is compulsory before new systems can be implemented with discretion of annual budget. In addition, the technical and human error during input process has reduced the precision of information gathered by the system. Besides, lack of proper training of the ICT staffs has also become one of the reasons behind the high discrepancy for knowledgeable staffs.

On the other hand, the items with the lowest gap scores suggest that the current performance levels are manageable, even if they are still below end-users' expectations. It shows that the existing system is easy to use and learn, and highly adaptable for end-user. Furthermore, end-users are also satisfied with the courtesy of ICT staffs when performing their jobs.

5.2 Implications of the study

There are two main implications of this study. First, finding from this study could give public managers the basis to perform a benchmark amongst the different IS applications and therefore to help them in further assessing the issues of user satisfaction, system quality, information quality and service quality of ICT divisions that internal users are facing with each day with regard to the use of the system. Furthermore, they may undertake a review on the gap between end user initial expectations of IS and its current offerings of the systems to further drill down to the source of this variability.

In addition, the results of this study at least can be considered by top level management in developing the future policies and strategies to exploit its information resources, to develop its information infrastructure, and to promote the utilization of IS for the purposes of achieving more effective growth of public services. Failure to initiate effective and timely action will have serious ramifications for the ability of a government to stimulate effective social and economic development of the country particularly in education sector.

5.3 Limitations

Firstly, due to the time constraint, the sample size of this study was quite small for the results to be generalizable. This is may be due to the fact that, during the period of data collection, most of the staffs were not at the office as they were posted outstation. A larger sample might produce different results and bring out different implications. A more diverse sample will produce results that are more generalizable.

The second limitation of the empirical study is the use of a convenient sample rather than a random systematic sampling, since convenient method may have introduced sampling bias. Additionally, end-user responses on the perceived importance may suffer from their desire to rank everything as "Very Important" to suggest a highly concerned outlook on the overall state of the factors presented.

Finally, one of the limitation in this study is regarding to the accuracy of the data from respondents who are majority have average academic qualifications of SPM or STPM. While answering the questionnaire, it is observed that most of them marked 'good' for all IS attributes. This might be due to their perception which tends to believe any lower marks they have scored for the questionnaire could affect their appraisal, despite of clear statement that no name was required and the results are to be analyzed collectively rather individually. Another possible reason is, the sluggish attitude of respondents towards accomplishing something

that is not relevant to their job scope, for an example, the questionnaire. From the results, it is evident the disparity between executive and staffs on how they answered the questionnaire. As a results, there is disparity existed between executive and non-executive staffs on how they answered the questionnaire.

5.4 Suggestions for Further Research

This study could greatly benefit if the sample size is larger as a larger sample might produce better result. Period of data collection should be longer so that more employees can be participated in the study.

In addition, future studies could take observation and interview approaches to understand reasons or specific issues that account for variability in users' perception of each IS attributes.

Within the application context, it might be worthwhile to isolate the perceived importance measures from the actual performance. End-users may get confuse between the two and this could adversely impact the consistency and validity of the data provided. Also, a simplification of the tool can greatly aid the end-user in providing a more accurate response.

Lastly, an annual survey can help the IS department to measure its performance and deduce trending analysis over a certain period of time. A standardized tool is

required to ensure the consistency of factors used, although special circumstances may require the addition or removal of certain factors. For instance, with the introduction of a new system, application or tool, the IS department may want to evaluate specific responses related to the recent deployment.