A STUDY ON ELECTRONIC PROCUREMENT'S USER SATISFACTION

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Abstract

This study examines the direct relationship between perceived ease of use, perceived usefulness, top management support, vendor assurance, vendor responsivenss and user's satisfaction. A total of 450 questionnaires were disributed to participants who had agreed to participate in this study. However, only 312 questionnaire were usable for further analyses. Hypotheses for direct effect were tested using multiple regression analyses. Results showed that all variable tested in this study, namely perceived ease of use, perceived usefulness, top management support, vendor assurance, vendor responsivensswere significantly positively associated with user's satisfaction. Implications of the findings, potential limitations, and directions for future research are discussed.

Keywords: User satisfaction; Perceived ease of use; Perceived usefulness; Top management support; Vendor assurance; Vendor responsiveness

Abstrak

Kajian ini mengkaji hubungan langsung antara persepsi terhadap mudah penggunaan, persepsi terhadap kebergunaan, sokongan pengurusan atasan, jaminan vendor, maklumbalas vendor dan kepuasan pengguna. Sebanyak 450 soal selidik telah diedarkan kepada peserta kajian yang telah bersetuju untuk terlibat dalam kajian ini. Namun begitu, hanya 312 soal selidik sahaja yang boleh digunakan untuk analisis seterusnya. Hipotesis ke atas kesan langsung diuji menggunakan analisis regresi berganda.Dapatan kajian menunjukkan bahawa kesemua pembolehubah yang diuji dalam kajian ini iaitu persepsi terhadap mudah penggunaan, persepsi terhadap kebergunaan, sokongan pengurusan atasan, jaminan vendor dan maklumbalas vendor mempunyai hubungan yang positif dan signifikan dengan kepuasan pengguna.Implikasi dapatan kajian, limitasi dan cadangan kajian pada masa hadapan turut dibincangkan.

Kata kunci: Kepuasan pengguna;Persepsi terhadap mudah penggunaan; Persepsi terhadap kebergunaan, Sokongan pengurusan atasan; Jaminan vendor; Maklumbalas vendor

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Government procurement is necessary as the engine for economic and social development of the country. According to World Trade Organization, on average, its' account for 10-15 per cent of the GDP of the economy. Since government procurement is dealing with the public monies, it is important that it is managed in an efficient, transparent and effective way as demands by the people (Othman, Jusoff, Zakaria, Nordin, Shahidan, Muhammad & Ghuslan, 2009).

Apart from that, government procurement has also become the focal point for people to assess Government's effectiveness and efficiency (Hui, Othman, Omar, Rahman, & Haron, 2011). For this reason, the Malaysian government has decided to transform the way its operate. This can be seen by the introduction of e-Procurement in 1999 as one of the initiatives under e-Government application. It is hope to revamp the procurement activities in the Government machinery. This initiative is in line with the current technological developments.

Locally known as *ePerolehan,* the system is developed under the Ministry of Finance Malaysia as a step forward to enter the era of electronic trading or e-Commerce. The implementation of the system has been divided into four phases; system design, small scale roll-out which involved four ministries, full scale roll-out

and system hand-over to the Government (Kassim & Hussin, 2010). There are seven modules available in the system and these modules are shown in Table 1.1

Table 1.1

e-Procurement modules and services

Module	Services
Central Contract	For the purchasing of specific products contracted to selected suppliers who have been appointed by Ministry of Finance for a specific time.
Ministry Contract	For thethe purchasing of specific goods and services contracted to selected suppliers who have been appointed by Ministry for a specific time.
Direct Purchase	For the purchasing of goods and services with avalue amounting to RM50,000; buyers can do market research through online catalogue aavilable to achieve the best value for money.
Quotation	For thethe purchasing of goods and services with avaluefrom RM50,001 to RM500,000; online proposal submission and evaluation
Tender	For thethe purchasing of goods and services with a value above RM500,000; online proposal submission and evaluation
eBidding	An interactive system which enable suppliers to bid for the contract based on electronic reverse auction concept.
Supplier Registration	The specific portal for registration of supplier with Ministry of Finance; new registration, renewal, profile update and application for indigenous status.

Source: www.eperolehan.gov.my

The motivation behind this government-to-business (G2B) interaction system is to improve the public service delivery by having transparent practices, reducing operation cost, and enhancing the Government's procurement efficiency through a more user friendly system. As highlighted in the literature, e-Procurement system has several benefits such as lowering transaction costs, making faster ordering, better suppliers choice, standardization of procurement processes, improve the controlling

on the spending, reducing red tape, and less paper work as some of the process is transferring on the system (Reddick, 2004) .

Though benefits of e-Procurement have been widely discussed in the literature, the adoption rate for the system is still low. One of the reasons that had been put forward in the literature was due to lack of the necessary IT skills and knowledge as e-Procurement system is a new phenomenon to the users. A study conducted by Sambasivan, Wemyes and Rose (2010) has shown how the intention to use the e-Procurement system among Government officers was related to the system's ability to offer features demanding by users; usefulness, ease of use, Web design service quality, assurance and responsiveness of service providers and Ministries' facilitating condition.

The same system features of usefulness and ease of use that resemble technological aspect have also affect suppliers' adoption rate too. Apart from that, IT infrastructure, expertise and compatibility are another technological factor which associates with the acceptance. In addition, top management support as well as suppliers commitment was also influence the adoption of e-Procurement system in the country (Basri, Dominic, & Jehangir, 2011; Kaliannan, Raman, & Dorasamy, 2009).

1.2 Problem Statement

The implementation of the e-Procurement system in the country is done through an Information System (IS) outsourcing contract. The contract for the development of e-Procurement services has been awarded to Commerce Dot Com

Sdn. Bhd. (CDCSB) in 1999 based on Built-Operate-Transfer (BOT) model. As an appointed vendor, CDCSB developed modules for e-Procurement system namely Central Contract, Supplier Registration, Direct Purchase, Quotation, Tender and e-Bidding. The eight years contract should be ended in 2006. However, the contract has been extended for five more years until 2012 to give room for both parties; the Government and the vendor, to solve any issues regarding the technical and financial before the system is fully transferred to the Government.

According to Government Procurement Division, Ministry of Finance, the usage of the e-Procurement system has recorded 7.3 million transactions worth RM79.7 billion until 2013. This system was fully utilized by 2,668 agencies or *Pusat Tanggung Jawab* (PTJ) of the Federal Government. This means all Government agencies were e-Procurement enabled. Also, 69% or 79,305 out of 114,313 suppliers who registered with Ministry of Finance are e-Procurement enabled.

Based on the study by Esa, Rahman and Munir (2013), an increasing number in transaction activity and value every year means that the system is well implemented in the country and become a good indicator to show how the system help in improving efficiency in Government's procurement.The results of the study arein line with the indicator used by the Malaysian Government to mark their success in implementing e-Procurement system. In the study, three indicators are used to measure the success, namely the number of government agencies uses the system, the number of registered suppliers and the amount of government spending. The figuresare measured every year where an increasing numbers indicate the system has been successfully implemented in the country (Kassim & Hussin, 2010).

However, both of the studies did not assess the reason behind the increasing usage of the system. One of the most interesting facts that lead into these increasing figures is due to mandatory system usage imposed by the Government. Under this command, all federal Government agencies are required to use this system to procure goods and services and can only deal with registered suppliers only (Perbendaharaan Malaysia, 2013). Indirectly, it will force the supplier to be registered to ensure they do not lose any opportunity to transact with Government, which make their numbers growing bigger.

The mandatory action had to be taken by the Government due to the nature of the outsourcing contract. This type of contract allows the company, CDCSB to charge service fees on a certain amount that was agreed in the contract as repayment to cover the cost of the project. As for the first half of the financial year ending Dec 31, 2013, CDCSB collecting RM53.94 million from e-Procurement system that is 20.3 per cent over its mid-year target (Bernama, 2013). Instead of covering the cost, the outsourcing approach will ensure the system continuously upgrade for better performance to encourage users use the system (Aman & Kasimin, 2011).

No matter which method were chosen to execute the IS contract either through outsourcing approach or manage by Government itself, both requires a huge amount of money (Hung, Chang, & Yu, 2006). The difference is only at reducing Government's financial burden as in outsourcing the company undertook the total financing of the project. Whatever it is, the million dollars of money invested shall be commensurate with the return obtained, and the results of these investments have not been thoroughly examined.

Currently, the Malaysian government measures the e-Procurement system success through the increasing numbers of usage only. In practice, frequency of use, high transaction value and increasing numbers of registered suppliers do not mean anything. This is because the use of the system is compulsory and become one of the top management's key performance indicators. As argued by Kassim and Hussin (2010), the need to adhere with the policy become the main motivation for agency to adopt the system or any non-compliance will be subject to penalty. They also highlighted on user's complaint about the system features and its ability to meet all required public procurement process and procedures.

Therefore, this study is based on the premise that a G2B system success in a mandatory environment can be further explain by a better understanding of user satisfaction. This is because user satisfaction is one of the most important determinant of IS success especially in a mandatory environment (Delone & Mclean, 2003; Seddon & Kiew, 1996; Urbach & Müller, 2012).

1.3 Research Questions

Based on the above discussion, the central research question is "*what factors might influence e-Procurement's user satisfaction*." Specifically, the research is interested to address the following questions:

1. Do the technological factors such as perceived ease of use and perceived usefulness related to user's satisfaction?
2. Does top management support related touser's satisfaction?

3. Does vendor support such as assurance and responsiveness related to user's satisfaction?

1.4 Research Objectives

The main objectives of this study is to examine the direct relationship between technological factors such as perceived ease of use and perceived usefulness, top management support and vendor support such as assurance and responsiveness on e-Procurement's user satisfaction.

1.5 Significant of Study

The e-Procurement system in Malaysia is now entering a new phase. The Malaysian government through a joint venture with the same vendor, CDCSB will launch the new e-Procurement system in 2015, known as Next GeneP. The Next GeneP will focus on strategic procurement rather than the automation of the procurement process and practices as what offered by the recent system. It is predicted that this new system will be more sophisticated, useful and beneficial to the user.

For that reason, this study becomes very significant as the outcomes from this study can be used to better plan the necessary improvement and enhancement to the system to increase user satisfaction in using e-Procurement system. It is also useful to help policy makers to recognize the reasons which are responsible for the success of the system. As for the vendor, the service providers, the findings can be a great input

in the process of improving the quality of the system and services that as they know which factors and features have impact to the satisfaction among users.

Lastly, it is hope that this study will contribute to the body of knowledge in IS in the context of G2B system application in developing country and further adding another empirical evidence on measuring user satisfaction and their related factors in a mandatory environment's usage.

1.6 Scope of Study

The main focus of this study is to investigate which of the factors tested in this study that might related to user satisfaction. Three independent variables were tested in this study namely, technological factors, top management support and vendor support. Technological factors were measured by perceived ease of use and perceived usefulness, while vendor support was measured by vendor assurance and vendor responsiveness. The study, which was a cross-sectional study, involved a survey of 312 public servant officers who are also the users of e-Procurement system and currently working in Procurement and Finance Division from 24 ministries in Putrajaya and Klang Valley.

1.7 Definition of Key Terms

User Satisfaction: The response or reaction given by the user to the use of the output of a system (Osman & Anouze, 2012).

Technological factor: The characteristics of information technology and its innovation effect on information system usage (Tornatzky & Fleischer, 1990).

Perceived ease of use: System must have features that are user-friendly, in which will make users use the system with ease of mind and free of effort (Davis, 1989).

Perceived usefulness: User's believe on the ability of the system to enhance job performance(Davis, 1989).

Top management support: The degree to which top management understands the importance of the IS function and the extent to which it is involved in IS activities" such as negotiation, planning and project management (Ragu-Nathan, Apigian, Ragu-Nathan & Tu, 2004)

Vendor support: The technical support, training organizing and emergency maintenance given to users in the organizations which are essential for successful implementation of information system (Raymond & Bergeron, 1992).

Vendor Assurance: The service provider's knowledge and courtesy which can instil trust and confidence among users (Parasuraman, Zeithaml, & Berry, 1988).

Vendor responsiveness: The willingness of the service provider to help users and to provide prompt service when necessitate (Parasuraman et al., 1988).

1.8 Organization of Chapters in Research Paper

This chapter is the first of five chapters in this research paper. Chapter 2 gives general review of the literature on user satisfaction and past empirical findings on factors that might influence user satisfaction such as perceived ease of use, perceived usefulness, top management support, vendor assurance and vendor responsiveness. The chapter concludes with the development of the research hypotheses.

Chapter 3 describes the method for the study, namely the research design and procedure. The chapter also reports the sample size and sampling technique, and the development of questionnaire for the research. Chapter 3 ends with a brief description of the strategies and procedures that were used to analyse data collected from the survey.

Chapter 4 reports the results and their interpretation for the study. There are reports of the descriptive statistical analysis, bivariate correlation analysis, and regressions analysis. The results are summarized in a number of tables to facilitate interpretation.

Chapter 5, the final chapter, discusses the interpretation of the research findings for the study. The findings are compared to those found in the past research reviewed in Chapter 2. The chapter ends with a discussion on limitations of the study, their implications for both researchers and practitioners, and some suggestions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter explores the literature from previous studies on user satisfaction and factors that might relate to user satisfaction such as perceived ease of use, perceived usefulness, top management support, vendor assurance and vendor responsiveness. Reviewing the literature on user satisfaction and its' related predictors is important in developing the research framework and hypotheses. In this chapter, the concept, issues and underlying theories related to variable tested are discussed.

2.2 User Satisfaction

The adoption of IS in the Government machinery is identified as a major platform to enhance the quality of services delivery. However, the implementation process involved high cost as each Government agencies need to set up a wide range of the latest equipment such as computer, software package, and the network provider internet (Cabras, 2010). That is why the performance of any IS application should continuously be measured. Driven by this situation, the study starts with the searching for the measurement of system success especially in a mandatory environment.

User satisfaction is one of the construct used in assessing IS success (Delone & Mclean, 2003) and is very useful as an indicator of success in a mandatory use environment (Urbach & Müller, 2012). Measuring user satisfaction is very complex

due to its multidimensional construct which combine technical, attitude, behaviour and marketing (Alawneh, Al-Refai, & Batiha, 2013). Apart from that, the term "satisfaction" itself is varied among researcher based on the subject area. Generally, in the IS research, satisfaction is defined as user's response to the use of the IS output (Osman & Anouze, 2012).

Traditionally, user satisfaction is indirectly measured by technical aspects, such as system quality, information quality and service quality. However, there are also researchers who assess user satisfaction based on attitude and behaviour constructs adapted from the theory of acceptance and dissemination such as Diffusion of Innovation (DOI), Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB). In addition, service quality (SERVQUAL) and website quality (WEBQUAL) are also used to study the user satisfaction from the aspect of economy and productivity.

The most widely used instrument for measuring user satisfaction is the one developed by Doll and Torkzadeh (1988). By referring to the system's end-user, they defines satisfaction as a user's feeling or emotion he or she had on the capability of the system to provide the desired results. The satisfaction of end-users are measured by using five constructs; content, accuracy, format, ease of use and timeliness. The satisfaction of end users is measured because they are the one who interact directly with the system and can judge either the system meet the needs or not.

Most of the benefits resulted from IS implementation is invisible and intangible. However, the measurement of IS benefit is very significant especially

when it is executed by the Government. It is because citizens demand the output and will keep on questioning how the money is spending. Therefore, the evaluation of performance and user satisfaction should be made on an ongoing basis purposely to enhance the Government's transparency and effectiveness (Lee, 2008). This is the reason why numerous studies were conducted on assesing user satisfaction, especially in e-Government application such as in the context of Government-to-Business (G2B) system (Jang, 2010), Government-to-Citizen (G2C) system (Alawneh et al., 2013; Wang & Liao, 2008), Government-to-Government (G2G) system (Mohamed, Hussin, & Hussein, 2009) and hospital information system (Aggelidis & Chatzoglou, 2012).

In Malaysia, the study on e-Procurement's user satisfaction has been conducted by Ambali (2010). The determinants of user satisfaction and its' relationship with the e-Procurement services were examined from suppliers' perspective as system's end users. Suppliers' community were chosen as respondent because they are the parties who actually finance the project where they are required to pay for registration, training and services fees. All these payment goes to the vendor to reimburse the costs that have been released for this project.

Ambali found that service quality, ease of access, knowledge, transparency and security are the determinants for user satisfaction. Apart from that, security is also considered as one of the essential elements in ensuring satisfaction achieved (Vaidya, Sajeev & Callender, 2006). In contrast to transparency as a factor related to user satisfaction, transparency is also classified as a construct that indicates system success (Kassim, 2009).

Meanwhile, the quality of service has long been associated with satisfaction (Oliver, 1980). Therefore, the same result found for the relationship service quality with user satisfaction in e-Procurement system (Jang, 2010).The relationship of service quality with user satisfaction measurement appeared to be a vital element (Velsen, Steenhouder & Jong, 2007), especially when it is mandatory (Urbach & Müller, 2012) and charged for using the system.

Another study on e-Procurement system usage in the context of G2B system was carried out in Taiwan by Jang (2010). The difference between this study and Ambali's lies on the framework used to assess the system success. Jang identified end-users as both the Government users and the suppliers. By using the updated DeLone and McLean IS Success model, Jang concluded that information quality, system quality, and service quality influence the e-Procurement system's benefit through the usage and user satisfaction. This is parallel with the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and study by Baroudi, Olso and Ives (1986).

In the present study, user satisfaction is used as an indicator for e-Procurement's system success. This is because user satisfaction is a valid measurement for IS success (DeLone & McLean, 2003; Urbach & Müller, 2012). User satisfaction is also used to measure system effectiveness (Gatian, 1994). However, knowing the system success only is insufficient. The same weight should also be given to identifying factors that contribute to the success (Kassim, 2009).

2.3 Factors that Influence User Satisfaction

Reviewing the literature shows that there are many factors that can influence user satisfaction. For example, Vaidya et al. (2006) have listed a set of eleven key success factors of e-Procurement implementation success in the Government. They split it into two categories: (1) human factors represent by end-user uptake and training, supplier adoption, business case and project management, and top management support; and (2) technology factor represent by system integration and security and authentication. While other critical success factors involve both categories: change management, implementation strategy, process re-engineering, performance measurement, and technology standards.

As many studies have empirically shown how acceptance lead to actual usage (Davis, 1989; Sambasivan, Wemyss, & Rose, 2010), and usage is interrelated with user satisfaction (Delone & Mclean, 2003), factors that associated with acceptance can be related with user satisfaction as well. Apart from that, a study conducted by Rahim (2008) is also useful in identifying factors that can influenced user satisfaction. In his study, Rahim had grouped the factors into three categories namely, organizational (management support), technological (perceived usefulness, ease of use, reliability) and vendor support. For this study, these categories of factors were tested against e-Procurement system's user satisfaction.

2.3.1 Technological Factors

IS project succes and failure normally depends on the system's capability to offer and provide the desirable characteristics of the information system (system quality), and information products-output (information quality) (DeLone and McLean, 1992). System quality focused on the usability aspects and performance characteristics of the system, while information quality captures on the quality and usefulness of the information generated by the system (Urbach & Müller, 2012).

The significant effect of technological factor on e-Procurement's user satisfaction has been established by Jang (2010). The findings are consistent with the findings from Rahim (2008) that the users are satisfied with the e- Procurement system because of its simplicity, easy to use and interactive. As discussed earlier in IS success model, user satisfaction will influence system usage and vice versa. However, before the benefits of the system is measured, the system must be first accepted to induce actual usage behaviour (Davis, 1989).

In other writing, Davis (1989) argued that the application will be accepted by users if they believe that the application can help them to improve their job performance. However, that believe will deteriorate if the system is difficult to use. Perceived usefulness and perceived ease of use are two variables in Technology Acceptance Model (TAM) for predicting and explaining the usage of a system. This model has been widely used and adapted in IS research area since its introduction, such as in the context of e-Government application (Colesca & Dobrica, 2008; Rahim, 2008; Sambasivan et al., 2010); mandatory environment system usage (Dalcher &

Shine, 2003; Iivari, 2005), mobile Internet services (Suki, 2012) and in an open source software (Lee, Kim, & Gupta, 2009).

In a study of e-Procurement user acceptance among Malaysian Government officers, Sambasivan et al. (2010) found a significant relationship between these two variables and the intention to use the system. He argued that when users perceive that the system can improve their productivity and efficiency, they will eventually use the system. Same principles apply to perceived ease of use. The ability of the system features to provide no-hassle services will motivate users to use the system as highlighted by Kassim and Hussin (2010). Sambasivan et al.(2010) adapted these two variables from TAM to measure system quality as perceived ease of use and information quality as perceived usefulness.

Similar results of perceived ease of use and perceived usefulness with an intention to use were also observed on user satisfaction. A study conducted in Romania by Colesca and Dobrica (2008) revealed that the higher the perception of usefulness, ease of use, quality and trust, the higher the satisfaction towards e-Government services. In other study, Rouibah and Hamdy (2009)) were also found a direct relationship between perceived ease of use, perceived usefulness and usage on user satisfaction. In their study, they also established the role of perceived usefulness and perceived ease of use as mediating the effect of external factors (top management support, user involvement and availability of training) on system usage.

In the organization when the system usage is mandatory, Dalcher and Shine (2003) proposed that there are three dimensions sequentially related to user

satisfaction: attitudinal, perceptual and behavioural. These proposed dimensions are based on TAM where an attitude formation constructs of subjective norms, system quality and computer self-efficacy is related to respondent's belief of system's usefulness and ease of use. Dalcher and Shine concluded that user satisfaction in a mandatory environment was strongly induced by the 'quality' of system, its 'usefulness' and its 'user-friendliness'.

In conclusion, the consistent findings on the effect of perceived ease of use and perceived usefulness underpins the fact on it contribution to user satisfaction in various type of IS.

2.3.2 Top Management Support

Top management support is one of the most important factor that had potential influence on IS success (Baker, 2012; Kassim & Hussin, 2010; Rahim, 2008; Vaidya et al., 2006; Sabherwal et al., 2006; Doll, 1985). The essential elements of top management support are characterizing by understanding, supportiveness, attentiveness and encouragement (Guimareas & Igbaria, 1997). The top management support is also recognized as one of the antecedents of user satisfaction (Rouibah & Hamdy, 2009).

In general, the top management support is demonstrated by two ways. First, is through the willingness to allocate the necessary resources needed for the implementation of the IS project, and second, is through the extendedness of the top management to resolve any dispute related to the IS project implementation. Both will

influence user acceptance on e-Procurement system (Rahim, 2008). The study on outsourcing success show the important of top managemet support to influence the partnership quality in the business process outsourcing (Ee, Abdul Halim, & Ramayah, 2012).

The top management can create effective partnerships through education, team building, shared goals and culture cultivation that address staff at all levels in the firm. As argued by Boonstra (2013), the success and failure of any strategic IS project are greatly influenced by the behaviour of the top management. He had categorized five types of behavior that associate with the top management support and these include the resource provision, structural arrangements, communication, expertise, and power.

The Boonstra's study is consistent with Sabherwal et al. (2006), where the greater the support given by the top management, the greater the resources will be allocated. In Boonstra's study, two out of five organizations that participated in the study were represented by the Government agencies. They are the hospital for the electronic health record project and city council for the e-Government project of digitalized and modernized services for licenses, permits, and passports. Both of these Government organizations appeared of getting non- or low support. The most obvious reason is due to the limited availability on knowledge, resources and power as agreed by most participants in five organizations involve. They do believe that securing sufficient financial, technical, and human resources is the key responsibility of the top management.

By using the meta-analysis, Sabherwal et al., (2006) found a direct relationship between top management support with user satisfaction and its indirect relationship through user participation as well as user attitude. They also demonstrate the importance of top management support in addressing IS success. Top management support indirectly influence system use through facilitating condition and user experience; user attitude; and perceived usefulness. Further, the direct relationship with system use is also established.

Top management support is very critical not only for the Government users as buyer but also to the business community as seller. As highlighted by Kassim and Hussin (2010), the government agency stressed on how importance of getting the strong supports from top management in terms of providing continuous training and complete infrastructure. The agency also emphasizes that the continuous monitoring from the ministry's top management enable them to fully utilize e-Procurement system. In the meantime, having a top management that is not serious to utilize e-Procurement system is also identified as the cause of the implementation failure.

Top management factor is apparently become one of the most contributor for suppliers' organizations to adopt e-Procurement system in Malaysia (Basri et al., 2011; Kaliannan et al., 2009; Kassim & Hussin, 2010). It is due to the mandatory usage imposed by the Government of Malaysia for all Federal agencies to use the system in procuring good and services. Hence, the firm's top management awareness and quick response in providing necessary resources to adapt with the regulation is very critical if the firm does not want to lose an opportunity to deal business with Government. Losing the opportunity to transact with Government is a great loss as

Government is the largest purchaser especially in fast-developing country (ADB, 2013).

2.3.3 Vendor Support

IS outsourcing is defined as getting someone else to take charge of an organisation's IS core function so that the organization can focus on its core competencies (Samsudin, Hashim, & Fuzi, 2013). Outsourcing is chosen due to its advantages of reducing operation cost as well as obtaining IS skills and expertise which is not available internally (Al-gharbi & Al-kindi, 2009). Outsourcing success can be measured through its impact on business performance and customer satisfaction (Ee et al., 2012).

In Malaysia, the outsourcing of IS related-services is the preferred choice of Government as a mechanism to transform public services delivery. It is resulted from the launching of the e-Government flagship in 1997. Among the most well-known outsourcing project is the implementation of e-Procurement system by Commerce Dot Com. Sdn. Bhd. The primary motivation for the government agencies to outsource services to selected vendors is due to lack of skills and human resource as well as limited financial resources.

Therefore, the vendor support becomes critical in determining the success of an outsourcing project in any IS application. This is due to the vendors' ability in facilitating user acceptance (Zhang, Lee, Zhang, & Banerjee, 2003). In Australia City Council, the vendor support in term of providing a reliable system and customised

training as according to users need are proven to influence user acceptance (Rahim, 2008). Therefore, the vendor is pressured to claim that it as a success project.

The importance of vendor support is reflecting by the quality of the services. Service quality is identified by DeLone and McLean (2003) as one of the success dimension in their updated model. According to them, service quality can be defined as the overall support delivered by the service provider no matter either it is from an internal IS department or outsourced to a selected vendor. It can be measure by assurance, empathy and responsiveness. The success metrics of service quality, namely assurance, empathy and responsiveness constitute three of the five dimensions in the SERVQUAL model. SERVQUAL model measure the expected and perceived service quality by tangible, reliability, responsiveness, assurance and empathy (Parasuraman et al., 1988).

The relationship between vendor assurance and responsiveness in outsourcing G2B system and user satisfaction have not been adequately addressed in the earlier studies. In Malaysia, Sambasivan et al. (2010) has conducted a study to assess both of these relationships to the intention of e-Procurement system usage. The significant impact was discussed for both factors (assurance and responsiveness) of the vendor to the intention to use. In a study conducted by Rahim (2008), he had explained on the importance of vendor support in terms of ensuring the reliability of the system as well as the ability to provide an excellent training is regard by an organization as the assurance of vendors.

In a study conducted by Ambali (2010), service quality of the vendor is found to be the strongest factor that determines user satisfaction in e-Procurement system in Malaysia among other factors like ease of access, knowledge, transparency, and security. The findings of positive relationship between service quality and user satisfaction by Ambali are similar with the findings from Sambasivan et al. (2010) even though Ambali's study focus on the suppliers' perspective while Sambasivan's study focus on buyers' perspective (government internal users). Sambasivan founds direct relationship on the effect of service provider's assurance and responsiveness to users' intention even though the users is different.

In other study, Kim and Kim (2008) found that the relationship of service quality with user satisfaction was established in studying factors influencing Application Service Provider success. Also, they found that the significant relationship of system support which resembles the responsiveness of service providers even though it is the weakest factors contribute to user satisfaction.

In conclusion, vendor support is important to ensure the success of IS implementation in an organization. The vendor's ability to provide quality of services, guarantee quickly response on users' difficulties as well as having sufficient IS knowledge and skills in solving system's issues or problems will lead to the success of a system.

2.4 Underlying Theories

The theoretical basis for this research is TAM, the updated DeLone and McLean model of IS success and SERVQUAL model. The TAM is widely used in information system research, and it argues that perceived ease of use and perceived usefulness will determine user behavioural intention. On the other hand, the information system success model explains six factors that will determine information system success namely system quality, information quality, service quality, usage, user satisfaction and net benefit. For SERVQUAL model, it argues on the expected and perceived quality of service using five dimensions, namely tangibles, reliability, responsiveness, assurance and empathy.

2.4.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model as depicted in Figure 2.1 was introduced into the academic world by Davis (1989). It is an extension of Fishbein and Ajzen's Theory of Reasoned Action (TRA) and Ajzen's Theory of Planned Behaviour (TPB). The primary goal of TAM is to provide an explanation of "attitude towards behaviour" factor (Davis, 1986).

TAM provides a basis to explain how external variables influence belief, attitudes, and intention to use. In this model, two main cognitive beliefs are central: perceived usefulness and perceived ease of use. According to TAM, the actual usage of the system is influenced directly or indirectly by the user's behavioural intentions, attitude, perceived usefulness of the system, and perceived ease of the system. It also

proposed that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use (Davis, 1989).

TAM has been tested and extended in many studies (Almahamid, Mcadams, Kalaldeh, & Eed, 2010; Amoako-Gyampah & Salam, 2004; Chu, Hsiao, Lee, & Chen, 2004; Davis, 1993; Holden & Karsh, 2010; Rouibah & Hamdy, 2009; Venkatesh, Morris, Davis, & Davis, 2003). It has been found that TAM is enabled to explain attitude and adoption behaviour toward using an information system better than the other models like TRA and TPB (Mathieson, 1991).

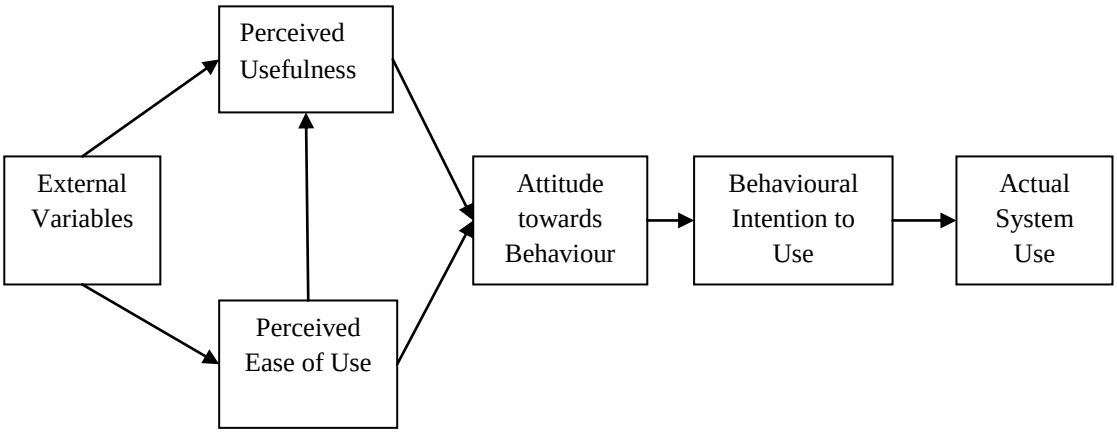

Figure 2.1. Technology Acceptance Model

2.4.2 The Updated DeLone and McLean Information System Model

The updated model of DeLone and Mc Lean developed from the previous model of assessing information system success. This model is an extension from the previous model with justification that it will extensively cover the area of system success determinants. This model is intended developed to explain the causality effect

between variables: like increasing in A will cause B to increase (decrease). The model is shown in Figure 2.2.

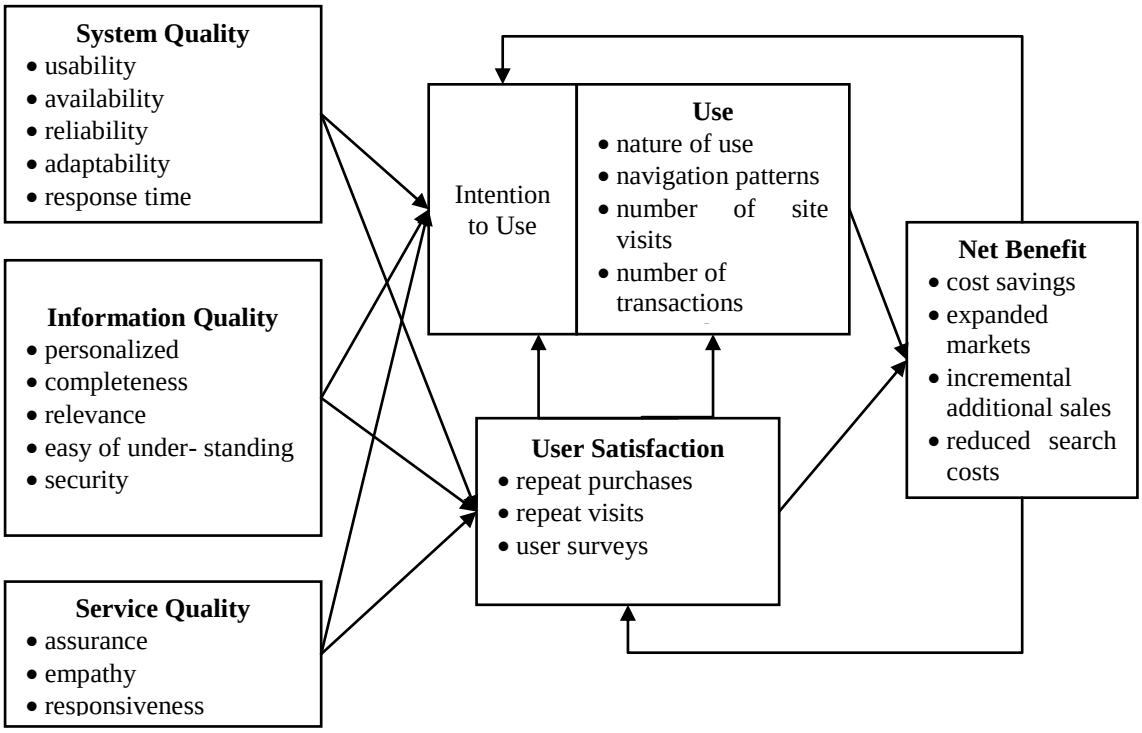

Figure 2.2. The updated DeLone and McLean IS success model

According to the framework, factors that affect the success of the system represented by system quality, information quality and service quality that belong to the system development level. As what presented in the original model, use and user satisfaction are closely interrelated. Use will positively impact user satisfaction and vice versa; user satisfaction will positively affect intention to use and thus use. As a result, net benefit will occur. The system uses, user satisfaction, and perceived net benefit belong to the effectiveness-influence level.

This model had been adapted and validated in numerous studies of e-Government application such as in government to citizen (G2C) system (Wang & Liao, 2008) and government to business (G2B) system (Jang, 2010), in a mandatory environment setting (Iivari, 2005) as well as in an open source software (Lee et al., 2009).

2.4.3 SERVQUAL

The SERVQUAL model is developed purposely for assessing customer perception of service quality in servicing and retailing organizations (Parasuraman et al., 1988). It is the most prominent framework used to assess quality of services received by customers, such as in mobile Internet Banking services (Suki, 2012); helpdesk and helpline services (Velsen et al., 2007); and e-Procurement services (Ambali, 2010). In this model, quality of services is measures by identifying possible discrepancies between expected and perceived service experiences. Users or respondent will be asked to evaluate the quality of services. Users are going to compare services they received with the services they expected. The accumulation of these discrepancies determines the perceived service quality and will affect users' satisfaction. If the balance between expectation and experiences is positive, users will be satisfied, and user will dissatisfy if the balance is found to be negative (Velsen et al., 2007).

In SERVQUAL, there are five dimension measurement that are "tangibles - physical facilities, equipment and appearance of personnel; reliability – ability to perform the promised service dependably and accurately; responsiveness –

willingness to help customers and provide prompt service; assurance – knowledge and courtesy of employees and their ability to inspire trust and confidence; empathy – caring, individualized attention the firm provides its customers" (Parasuraman et al., 1988).

2.5 Research Framework

The research framework shown in Figure 2.3 is developed based on the discussion of literature on user satisfaction, technological factors such as perceived ease of use and perceived usefulness, top management support and vendor support in term of assurance and responsiveness (Davis, 1989; Rahim, 2008; Rouibah & Hamdy, 2009; Sambasivan, et., 2010; Zhang, Lee, Zhang & Banerjee, 2003). The research framework for this study shows the relationship between independent variables which are represent by perceived ease of use, perceived usefulness, top management support, vendor assurance, and vendor responsiveness with user satisfaction as a dependent variable.

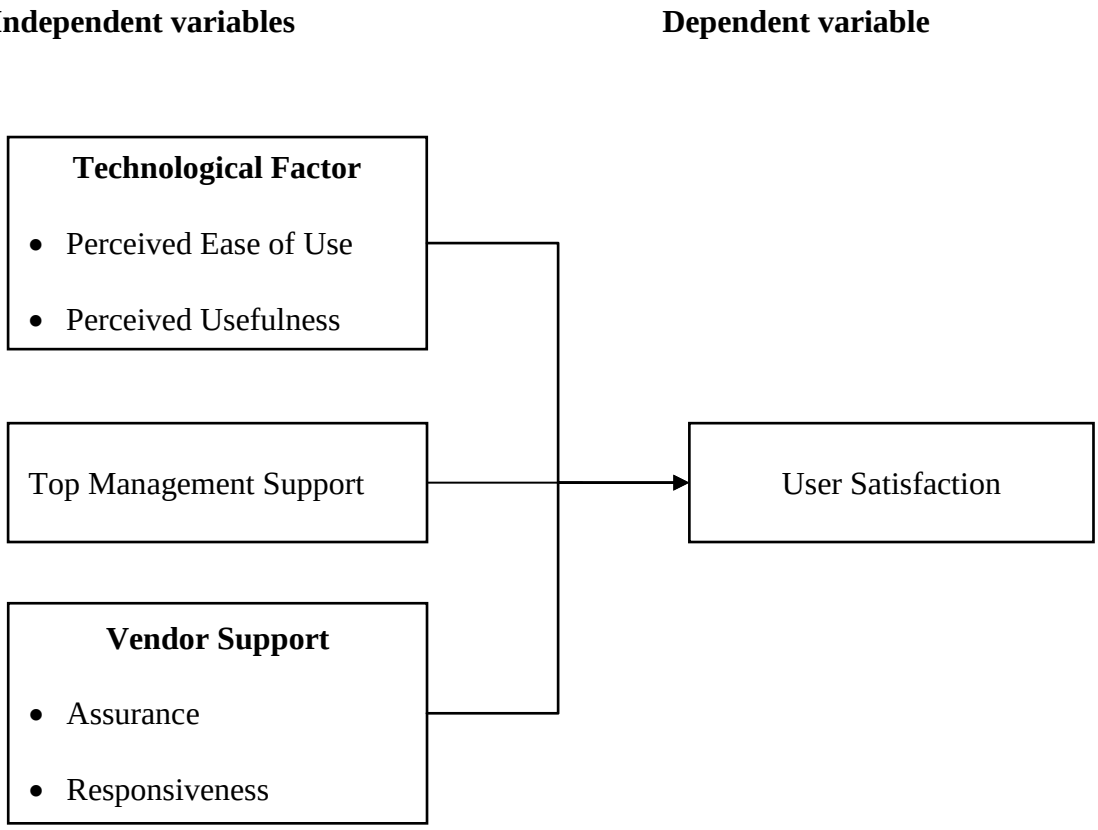

Figure 2.3. Research framework

2.6 Development of Hypotheses

2.6.1 Relationship between Technological Factor and User Satisfaction

Reviewing the literature on ease of use and perceived useful have shown mixed results. Some studies have shown positive relationship while other show no relationship between the variables. For example, in the Government-to-Business system in Taiwan, it is found that perceived ease of use had no direct effect on user satisfaction but indirect effect through perceived usefulness (Chu, Hsiao, Lee & Chen, 2004). In other study, Suki (2012) found no significant relationship between perceived usefulness and user satisfaction for mobile Internet services when tested on 200 Malaysian students.

In a study conducted by Jang (2010), positive relationship between three aspects of information system namely system quality, information quality, service quality and user satisfaction were found when tested on 650 Taiwan's public servants and employees. Similar findings were also found in the relationship between the quality (referring to website quality) dimensions on user satisfaction when tested on 193 e-commerce website users in China (Zhou & Zhang, 2009). In other study, Rahim (2008) also found ease of use and usefulness are positively affect user acceptance in e-Procurement system in Australia.

Apart from ease of use and usefulness, system quality and information quality are also considered as two main important system characteristics demanded by users. These two dimensions commonly measured as system ease of use and system usefulness in IS research area. As argued by TAM, the importance of user's perspective on the system's ability has been proven, and thus, perceived ease of use and perceived usefulness are grouped as technological factors. Sambasivan, Wemyss and Rose (2010) tested perceived ease of use to represent information quality and perceived usefulness to represent system quality on 1150 government e-Procurement system users in Malaysia where both variables were positively significantly with system usage.

Positive relationship was also found when perceived ease of use was tested against user satisfaction in the e-Government application of Government-to-Citizens system both in Romania (Colesca & Dobrica, 2008) and Kuwait (Rouibah & Hamdy, 2009). Similar findings were also found in a mandatory environment system usage where perceived ease of use and user satisfaction was tested among 175 Bank

Treasury's employee in two Europeans' Countries (Dalcher & Shine, 2003). A similar positive link was also observed in a study among 200 students in the Federal Territory of Labuan, Malaysia where system ease of use had found positively affect students' satisfaction with the mobile Internet application services (Suki, 2012).

Perceived usefulness was also found to be positively related to user satisfaction in electronic tendering system in the Taiwanese Government (Chu et al., 2004). Similarly, the positive relationship between perceived usefulness and user satisfaction were found in a study conducted by Colesca and Dobrica (2008) on 530 Romanian citizens and Rouibah and Hamdy (2009) on 420 Kuwait's public servants. Both studies are regarding with e-Government services. The same result do also established when the effect of perceived usefulness on user satisfaction is tested in a mandatory environment system usage (Dalcher & shine, 2003).

Based on the above discussion, the following hypotheses are proposed:

H1a: There is a positive relationship between perceived ease of use and user satisfaction

H1b: There is a positive relationship between perceived usefulness and user satisfaction

2.6.2 Relationship between Top Management Support and User Satisfaction

The impact of top management support on IS success has been shown in past studies (Boonstra, 2013; Khan, Lederer & Mirchandani, 2013; Ragu-Nathan, Apigian, Ragu-Nathan & Tu, 2004; Rai, Brown & Tang, 2009). For example, top management support has improved IS performance as indicated in a study conducted by Khan, Lederer, and Mirchandani (2013) on 47 chief operating officers from profit commercial organizations in America.

However, specific study that test direct relationship between top management support and user satisfaction is limited. Most of the previous studies in government-to-business system focused on the effect of top management support on users' acceptance and system usage. For instance, Basri, Dominic and Jehangir (2011) found positive relationship between top management support and organizational readiness to adopt e-Procurement system in the organizations among 142 manufacturing companies in Malaysia. Kaliannan, Raman and Dorasamy (2009) also found positive relationship between top management support (in term of organizational leadership) and e-Procurement system adoption when tested on 502 registered suppliers in Malaysia.

In another study of e-Government application, Rouibah and Hamdy (2009) found that top management support was directly related with system usage and indirectly related with user satisfaction when tested on 420 Kuwait's public servants. Meanwhile, in the context of IS outsourcing contract, a study conducted by Ee, Abdul Halim and Ramayah (2012) revealed a positive effect of top management support on

user satisfaction among 105 bank managers from 9 commercial banks in Malaysia. Therefore, the following hypothesis was proposed:

H2: There is a positive relationship between top management support and user satisfaction

2.6.3 Relationship between Vendor Support and User Satisfaction

Past studies have shown mixed results on how vendor support was related to user satisfaction. In a study conducted by Ambali (2010), he found that vendor support (in terms of quality of services given) was positively related to user satisfaction when tested on 150 registered suppliers in Malaysia. In addition, vendor was also significantly positively related to user satisfaction in a study conducted by Velsen, Steehouder and Jong (2007) on 329 users of user support facilities in Dutch.

In terms of vendor assurance and vendor responsiveness, Kim and Kim (2008) found positive relationship between these two dimensions and user satisfaction when tested on 52 users of application service providers from different vendors in Korea. Similar findings were also shown in a study conducted by Suki (2012) between vendor responsiveness and user satisfaction on 200 users of mobile Internet application in Malaysia.

On the other hand, negative relationship was found in a relationship between vendor and overall user satisfaction when tested on 166 hospital information system users in Taiwan. Ping, Suki and Suki (2012) also did not found any significant relationship between these two dimensions of vendor assurance and vendor

responsiveness to the user satisfaction in their study among 50 electronic banking users in Malaysia.

Though in past studies mixed results were found, majority of the studies have shown positive relationship. Therefore, the following hypotheses are proposed:

H3a: There is a positive relationship between vendor assurance and user satisfaction

H3b: There is a positive relationship between vendor responsiveness and user satisfaction.

2.7 Conclusions

The chapter has discussed on the conceptual definitions, variable's dimension and discussion of the previous findings on user satisfaction. Also, five hypotheses have been developed to be tested in this study. In the next chapter, Chapter 3, method of the study is discussed.

CHAPTER 3

METHOD

3.1 Introduction

Chapter 3 describes the method for the study. In this chapter, the research design, population and sampling, development of research measures, pilot testing and data collection procedure are presented. The chapter ends with strategies for data analyses.

3.2 Research Design

The present study employed quantitative research design as it allows the researcher to better understand and explain the problem through analysing the factors relating to outcome (Creswell, 2009). Hence, quantitative research design is more suitable for this study as it allows the testing of relationship between variables using statistical methods. This is consistent with the primary objective of this study, which is to examine the relationship between technological factor (perceived ease of use and perceived usefulness), top management support, vendor support (vendor assurance and vendor responsiveness) and e-Procurement's user satisfaction. Second, it allows the analysis to be carried out on a large sample which can be generalized to the whole population. Third, permits the use of standard and formal sets of questionnaire to be distributed to every respondent.

The study is conducted in the natural environment of the organization with minimal interference from the researcher. There were no changes to the work process and organizational setting and the respondents can carried out task as normal. Conducting a research in such environment allows respondent to answer the questionnaire freely without the pressured and influenced of the researcher (Sekaran, 2003).

The unit of analysis for this study is at the individual level (public servant officers who use e-Procurement system and work in Ministries' Procurement and Finance Department). The source of the data is the primary data and it was collected through distribution of questionnaire. Respondents' perceptions about the technological factor, top management support and vendor support is important to understand their influence on e-Procurement's user satisfaction. Thus, choosing the individual as the unit of analysis is appropriate to test all the variables in the study.

Finally, the study is cross-sectional, where the data was collected at one point of time. A cross-sectional design is simple, inexpensive and allows for the collection of data in a relatively short period.

3.3 Population and Sampling

3.3.1 Population

The study population includes all e-Procurement system's users who are currently working in Procurement and Finance Department in each ministry located in the area of Putrajaya and Klang Valley. In this study, only Putrajaya and Klang Valley

were chosen as it located various ministries where most of the procurement activities are centralized. Based on statistics given by CDCSB with permission from Government Procurement Division, Ministry of Finance, there are 5000 public servants who are currently using e-Procurement system in the area of Putrajaya and Klang Valley as of 10th September 2014.

3.3.2 Sample Size

As argued by Zikmund (2003), it is not practical to collect data from the whole population. Therefore, a sampling process is needed to determine the sampling size. Generally, sampling process involved identifying the population, sample size and choosing the sample. As mentioned earlier, the total population is 5000. As suggested by Krejcie and Morgan's (1970) sample size table, the sample size for this study is 357.This means 357 public servants is needed to represent the whole study population. This sample size fit with Roscoe's rule of thumb where a sample that is larger than 30 and less than 500 is appropriate for most research. However, the researcher has decided to distribute 450 questionnaires with the intention to receive high response rate. Besides, Hair, Money, Samouel and Page (2007) argued that a large sample size is needed to be able to generalize to the whole population.

3.3.3 Sampling Technique

In this study, all the 450 respondents are selected based on a systematic random sampling. According to Gay and Diehl (1996), systematic random sampling involves six steps. First, define the population. In this study, the population is 5000.

Second, determine the desired sample size. The sample size for this study is 450. Third, obtain a list of the population. The list was obtained from CDCSB with the permission from Government Procurement Division, Ministry of Finance. Fourth, determine the K by dividing population by the desired sample size. In this study, K is equal to 11 (5000/450 = 11.11). Fifth, determine the total respondent for each of the ministries under study (refer Table 3.1). Sixth, researcher will pick a random number from the list of public servant officers for each ministry as the starting number. Then every 11th name is automatically in the sample.

Table 3.1
Distribution of respondents for each ministry

Ministry	**Total number of public servant (N = 5000)**	**Total respondents (S = 450)**	**% of sampling**	**Systematic random**
Prime Minister's Department	759	68	15	11th
Ministry of Youth and Sport	64	6	1	11th
Ministry of Home Affairs	329	30	7	11th
Ministry of Rural and Regional Development	87	8	2	11th
Ministry of Works	259	23	5	11th
Ministry of Urban, Wellbeing, Housing and Local Government	166	15	3	11th
Ministry of Health	681	61	14	11th
Ministry of Finance	202	18	4	11th
Ministry of Communication and Multimedia	91	8	2	11th
Ministry of Foreign Affairs	14	1	0.64	11th

Ministry	Total number of public servant (N = 5000)	Total respondents (S = 450)	% of sampling	Systematic random
Ministry of Tourism & Culture	144	13	3	11th
Ministry of Women, Family & Community Development	110	10	2	11th
Ministry of Education	609	55	12	11th
Ministry of Transport	99	9	2	11th
Ministry of International Trade & Industry	8	1	0.64	11th
Ministry of Domestic Trade, Co-operatives & Consumerism	24	2	0.64	11th
Ministry of Defense	474	43	9	11th
Ministry of Agriculture & Agro Based Industry	247	22	5	11th
Ministry of Plantation Industries & Commodities	6	1	0.64	11th
Ministry of Science, Technology & Innovation	161	14	3	11th
Ministry of Natural Resources & Environment	179	16	4	11th
Ministry of Human Resource	242	22	5	11th
Ministry of Energy, Green Technology & Water	32	3	1	11th
Ministry of Federal Territories	15	1	0.64	11th
Total	**5000**	**450**	**100**	

3.4 Operational Definitions and Measurements

3.4.1 e-Procurement's User Satisfaction

In this study, e-Procurement's user satisfaction was operationalized as public servants feelings about the e-Procurement system after using it for Government procurement process and activities (Chu, Hsiao, Lee & Chen, 2004). To measure participants' satisfaction level towards specific components of the system, an established 12-item measure of IT system user satisfaction from Doll and Torkzadeh (1998) was adapted. The scale was chosen because it is conceptualized as "the affective attitude towards a specific computer application by someone who interacts with the application directly" (Doll & Torkzadeh, 1988, p. 261). The 12 items represent five underlying dimensions of end-user satisfaction: content, accuracy, format, ease of use, and timeliness. Based on a five-point scale whereby, 1 = strongly disagree, and 5 = strongly agree, participants rated their degree of agreement with the user satisfaction statements.

Table 3.2

Operational definition and user satisfaction items

Variable	Operational Definition	Items	Authors
e-Procurement's user satisfaction	Public servants feelings about the e-Procurement system after using it for Government procurement process and activities	1. The e-Procurement system provides the precise information that I need. 2. The information content meets my needs. 3. The e-Procurement system provides reports that seem to be just about exactly what I need.	Doll and Torkzadeh (1988)

Variable	Operational Definition	Items	Authors
		4. The e-Procurement system provides sufficient information. 5. The output is presented in a useful format. 6. The information is clear. 7. The e-Procurement system is accurate. 8. I am satisfied with the accuracy of the e-Procurement system. 9. I get the information I need in time. 10. The e-Procurement system provides up-to-date information 11. The e-Procurement system is user friendly. 12. The e-Procurement system is easy to use.	

3.4.2 Technological Factor

In this study, technological factor was measured by two dimensions, namely perceived ease of use and perceived usefulness. Perceived ease of use is operationalized as the degree to which a public servant who are user of the system believe that using e-Procurement is easy, comfortable and does not take so much effort (Sambasivan et al., 2010). While perceived usefulness is operationalized as the degree to which a public servant who are user of the system believes that by using an e-Procurement system, their productivity will increase as they can process more procurement without wasting time (Sambasivan et al., 2010). To measure

participant's perceived ease of use and perceived usefulness towards e-Procurement system,11 items were adapted from Davis, Bagozzi and Warshaw (1989) and Sambasivan, Wemyss and Rose (2010).In this study, participants rated their degree of agreement with perceived ease of use and perceived usefulness statements based on five-point scale whereby, 1 = strongly disagree, and 5 = strongly agree. Table 3.3 shows the technological factor items used in this study.

Table 3.3
Operational definition and technological factor items

Variable	**Dimensions**	**Operational Definition**	**Items**	**Authors**
Technological factor	Perceived usefulness	The degree to which a public servant who are user of the system believes that by using an e - Procurement system, their productivity will increase as they can process more procurement without wasting time	1. Using the e-Procurement system improves performance in my job. 2. Using the e-Procurement system in my job increases productivity. 3. Using the e-Procurement system enhances my effectiveness in the job. 4. Using the e-Procurement system makes it easier to do my job. 5. Using the e-Procurement system enables me to accomplish my transactions quickly.	Davis, Bagozzi and Warshaw (1989); Sambasivan, Wemyss and Rose (2010)

Variable	Dimensions	Operational Definition	Items	Authors
			6. Using the e-Procurement system gives me control over e- Procurement system transactions. 7. I find e-Procurement system useful in my job.	
	Perceived ease of use	The degree to which a public servant who are user of the system believe that using e-Procurement is easy, comfortable and does not take so much effort	1. Learning to operate e-Procurement system is easy for me. 2. I find it easy to get the e-Procurement system to do what I want to do. 3. My interaction with e-Procurement system is clear and easily understandable 4. Interaction with EPS does not require much mental efforts	

3.4.3 Top Management Support

Top management support is operationalized as support and commitment in e-Procurement implementation in the organization (Lee & Kim, 1992).Top management support was measured by 8 items adapted by Lee and Kim (1992) and Rouibah and

Hamdy (2009).In this study, participants rated their degree of agreement with top management support statements based on five-point scale whereby, 1 = strongly disagree, and 5 = strongly agree. Table 3.4 shows the top management support items used in this study.

Table 3.4
Operational definition and top management support items

Variable	Operational definition	Items	Authors
Top management support	Top management support and commitment in e-Procurement implementation in the organization	1. My top management is much interested in e-Procurement system usage rate. 2. My top management frequently mentions the various problems related to e-Procurement system development and operation 3. My top management makes an effort to provide stable funding for the system development and operation activities 4. My top management takes part in deciding in what order the e-Procurement system should be implemented. 5. My top management is always encouraged my department to use e-Procurement system. 6. My top management is favorable to computerization of tasks. 7. My top management is much concerned with the performance of e-Procurement. 8. My top management persists to have latest technology.	Lee and Kim (1992); Rouibah and Hamdy (2009)

3.4.5 Vendor Support

In this study, vendor support was measured by two dimensions, namely vendor assurance and vendor responsiveness. Vendor assurance referring to vendor courteous and knowledge to solve user's problem regarding the system while vendor responsiveness is the ability of the vendor to fulfil users request in a timely manner (Parasuraman et al., 1988). Vendor support was measured by 7 items developed by Parasuraman et al. (1988) and Sambasivan et al. (2010). In this study, participants rated their degree of agreement with vendor support statements based on five-point scale whereby, 1 = strongly disagree, and 5 = strongly agree. Table 3.5 shows the vendor support items used in this study.

Table 3.5
Operational definition and vendor support items

Variable	Dimensions	Operational Definition	Items	Authors
Vendor support	Assurance	Vendor courteous and knowledge to solve user's problems regarding the system.	1. The behaviour of service providers instils confidence in users. 2. I am confident that the service providers have sufficient knowledge to answer my questions on e-Procurement system. 3. The service providers are consistently courteous with users. 4. The service providers ensure a provision of safe environment in all transactions.	Parasuraman et al. (1988); Sambasivan et al. (2010)

Variable	Dimensions	Operational Definition	Items	Authors
	Responsiveness	Vendor ability to fulfill users request in a timely manner.	1. The service providers give prompt service to their customers (users). 2. The service providers tell exactly when the customer service will be performed. 3. The service providers are always willing to help users.	Parasuraman et al. (1988); Sambasivan et al. (2010)

3.5 Layout of Questionnaire

All survey materials were prepared in both Bahasa Malaysia and English. Participants were given the choice between the two versions so that they could express their ideas freely. The Bahasa Malaysia version was translated using back translation. First, the English version was translated to Bahasa Malaysia. Then, the Bahasa Malaysia versions were given to two bilingual native speakers who then translated them back into English (working independently). The final translated version was consistent with the original. Both versions of the questionnaire are shown in Appendix A-1 and A-2. All participants in this study chose the Bahasa Malaysia version.

The seven-page questionnaire consisted of five sections. Section 1 asked about the technological factor and there are 11 items. Section 2 asked about top management support and there are 8 items. In Section 3 of the questionnaire, there are

7items asking the respondents on vendor support, while Section 4 consists of 12 on user satisfaction. The final section of the questionnaire, Section 5, sought the demographic characteristics of the participating staff, and their respective organizations.

3.6 Pilot Test

Pilot test is conducted to test the validity and reliability of the questionnaires developed before the actual data collection process begins. The purpose of conducting the pilot test is to test how far the instrument used is reliable and consistent. The most widely used method to determine reliability is through measuring an internal consistency – Cronbach alpha.

In this study, the pilot test has been conducted at Selangor State Health Department from 8 September 2014 to 12 September 2014.The questionnaire was distributed to 30 e-Procurement users at the department. The pilot study results indicate that there were no changes required to the questionnaire. The internal consistency reliabilities (Cronbach's Alpha) of the research measures from the pilot study are reported in Table 3.6. As shown in Table 3.6, all variables have satisfactory reliability values ranging from.82 to .95.

Table 3.6
The Cronbach's Alpha for each research measures from the pilot study (n = 30)

Variable	No. of items	Cronbach's Alpha
Technological factor	11	0.82
Top management support	8	0.82
Vendor support	7	0.87
User satisfaction	12	0.95

3.7 Data Collection Procedure

The actual data collection began after the pilot test was conducted. A written permission to conduct the study was first obtained from the respective ministries through emails. A follow up telephone call was then made. Once the permission was granted, the process of distributing the questionnaire began. The actual data collection process began on 15 September 2014 and the process ended on 14 October 2014. During that time, the questionnaire was distributed to respondents through a representative appointed by the researcher for each of the ministries under study. Each respondent was given a week to complete the questionnaire. Completed questionnaire were then collected by the researcher from each of the ministry's representatives.

3.8 Technique of Data Analysis

Data collected through the survey were analysed using SPSS (version 19) program for Windows. Prior to primary analyses, the data were examined for data entry accuracy, outliers, and distributional properties.

3.8.1 Descriptive Statistic

The descriptive analysis is the first conducted after the data entry has been completed. It is an essential step because the analysis will provide the researcher with the demographic characteristics of repondents. The process is crucial to ensure that the respondents obtain in this study represent all the demographic characteristic of the population. Here, the demographic characterictics of respondent such as age, gender, academic qualifications, marital status, length of services in respective department as well as users experince using the systemwere decribed by using frequency and percentage.

Other that analzying the demographic characteristics, the normality of the data will be assessed by measuring the skewness of all variables. The data is considered normally distributed if the the value is in the range between -1.0 and 1.0.

3.8.3 Correlation Analysis

Correlation is one of the most common and most useful statistics. That describes the degree of relationship between two variables (Trochim, 2006). Correlation analysis measures the relationship between two items, and the resulting value shows that changes in one item will result in changes in the other item. It means that any changes in independent variable will cause changes in dependent variable. The correlation coefficient measure a linear association between two variables. The values are always between -1 and +1. The value of +1 indicates that two variables are perfectly related in a positive linear sense, whereas the value of -1 indicates that two

variables are perfectly related in a negative linear sense. The correlation coefficient of 0 indicates that there is no linear relationship between two variables (Trochim, 2006).

In this study, the correlation analysis was conducted to test the relationship between technological factors (perceived usefulness and perceived ease of use), top management support and vendor support (assurance and responsiveness) and user satisfaction. The correlation analysis can determine the strength of the relationship (r) for each of the variables as described in Table 3.7. The positive and negative values explain the direction of variables. A positive value indicates that when the independent variable increase, the dependent variable is likely to increase too. While the negative value describe the opposite relationship, where when the independent variable increase, the dependent variable is likely to decrease. Therefore, it is suitable to use this analysis to investigate the effect of each the independent factors on the user satisfaction.

Table 3.7
The strength of correlation value (r)

Correlation Value, r	Strength of Relationship
± .70 or higher	Very High
±.50 to ±.69	High
±.30 to ±.49	Moderate
±.10 to ±.29	Low
±.01 to ±.09	Very Low

Source: Davis (1971)

3.8.2 Regression Analysis

Regression analysis is a statistical technique used to study linear relationship between two or more variables. It is conducted after the correlation between variables was established. Generally, regression analysis is conducted for three purposes: to make predictions, to model the relationship between independent and dependent variables, and to test for hypothesis.

The multiple regression analysis was carried out to test research hypotheses proposed in this study. The test was carried out as it can determine the best predictor among the tested variables simultaneously. The results highlight which independent variables have a significant influence on the dependent variables together with the strength indicate by β coefficient. Perceived ease of use, perceived usefulness, top management support, vendor assurance and vendor responsiveness are the independent variables and user satisfaction is the dependent variable employ in the study.

3.9 Conclusions

This chapter has explained the research method for the study. It described how the sample of respondents was obtained, development of the research materials, and the data collection procedure. This chapter also briefly explains the adoption of several analyses such as correlation and regression analysis to test the research hypotheses. The results of the study are reported in Chapter 4.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the results of the study. The discussion starts by reporting the response rate and the demographic characteristics of the participants. It then presents the data screening process before continue with a report on correlation and regression analysis.

4.2 Response Rate

As reported in Chapter 3, survey was used as a mean for collecting the data for the study. A total of 450 questionnaires were distributed between 15 September and 14 October 2014. Each respondent was given a week to complete and return the questionnaire. Towards the end of the survey period, a total of 330 were returned, yielding a return rate of 73%. However, 18 respondents' data were excluded as they failed to complete the survey. Thus, data from 312 participants are taken for further analysis. Table 4.1 presents the summary of respondents' response rate.

Table 4.1
Respondents' response rate

Ministry	Total survey distributed	Total survey received	Percentage
Prime Minister's Department	68	45	66
Ministry of Youth & Sport	6	5	83
Ministry of Home Affairs	30	25	83
Ministry of Rural & Regional Development	8	6	75
Ministry of Works	23	17	74
Ministry of Urban Wellbeing, Housing & Local Government	15	11	73
Ministry of Health	61	45	74
Ministry of Finance	18	9	50
Ministry of Communication and Multimedia	8	5	63
Ministry of Foreign Affairs	1	1	100
Ministry of Tourism & Culture	13	10	77
Ministry of Women, Family & Community Development	10	9	90
Ministry of Education	55	27	49
Ministry of Transport	9	7	78
Ministry of International Trade & Industry	1	1	100
Ministry of Domestic Trade, Co-operatives & Consumerism	2	2	100
Ministry of Defense	43	40	93

Ministry	Total survey distributed	Total survey received	Percentage
Ministry of Agriculture & Agro Based Industry	22	15	68
Ministry of Plantation Industries & Commodities	1	1	100
Ministry of Science, Technology & Innovation	14	11	79
Ministry of Natural Resources & Environment	16	15	94
Ministry of Human Resource	22	19	86
Ministry of Energy, Green Technology & Water	3	3	100
Ministry of Federal Territories	1	1	100
	450	**330**	**73%**

4.3 Demographics of the Respondents

Detailed descriptive statistics of the participants' demographic characteristics are presented in Table 4.2. It is noted that 72.1% of the 312 participants in this survey were females. Most of the respondents (36.9%) were aged between 26 and 30 years old. Out of 312 participants, 78.5% were married. With regards to highest academic qualification, most of the respondents (34%) were holding a diploma. Majority of the participants (79.2%) are supporting staff and most of the participants (45.8%) had been in the Procurement and Finance Department for 2 to 5 years. In terms of number

of years of experience using e-Procurement, majority of the participants (52.6%) had been using e-Procurement for 2 to 5 years.

Table 4.2
Demographic characteristics of participants (n=312)

Descriptions	Frequency	Percentage
Gender:		
Male	87	27.9
Female	225	72.1
Age:		
Below 25	15	4.8
26 – 30	115	36.9
31 – 35	100	32.1
36 and above	82	26.3
Marital status:		
Single	58	18.6
Married	245	78.5
Divorce	9	2.9
Academic Qualification:		
SPM	77	24.7
STPM	39	12.5
Diploma	106	34.0
First Degree	77	24.7
Master Degree	11	3.5
Doctoral Degree	0	0
Others	2	0.6
Current Position		
Professional and Management	65	20.8
Support Staff	247	79.2
No. of yrs in Procurement / Finance Department:		
Less than 1 year	71	22.8
2 – 5 years	143	45.8
More than 5 years	98	31.4
No of years using e-Procurement:		
Less than 1 year	91	29.2
2 – 5 years	164	52.6
More than 5 years	57	18.3

4.4 Data Screening

The data screening is performed before further analysis was conducted. The purpose of screening the data is to check if there are any error during the key-in process such as entering out-of-range values. Other than that, it is also to check for missing values, detecting for outliers and normality of the data. By employing this procedure, the researcher will decide ways in handling the situation. In this study, there is no error detected with no missing values as incomplete questionnaire returned already excluded from further analysis. Normality test showed that the data is normally distributed with the measure of skewness for all variables fall between -.52 and -.29. However, there are four outliers detected and the regression is run without the outlier.

4.5 Correlation Analysis

Table 4.3 presents the means, standard deviations, and Pearson correlations of variables for the 148 participants who participated in the study. The internal consistency reliabilities (Cronbach's Alpha) of the research measures are reported in parenthesis along the diagonal of the correlation table. As shown in Table 4.3, the Cronbach's alpha for perceived ease of use and perceived usefulness have satisfactory reliability values ranging from .83 to .91.It is also noted that Cronbach's alpha for top management support was .86. For vendor assurance and responsiveness, the Cronbach's alpha has satisfactory reliability values ranging from .83 to .84. Finally, user satisfaction also has high reliability value of .95.

Perceived ease of use and perceived usefulness were found positively significantly correlated with user satisfaction ($r = .57$ and $.59$, $p > .01$). These results imply that the higher the perception of ease of use and usefulness, the higher the user satisfaction towards e-Procurement.

Table 4.3 also revealed significant positive relationship between top management support and user's satisfaction ($r = .56$, $p > .01$). This result implies that the higher the management support received by the participants, the higher the user satisfaction.

The correlation results in Table 4.3 also shows significant positive relationship between vendor assurance and user's satisfaction ($r = .68$, $p > .01$). There were also significant positive correlation between vendor responsiveness and user satisfaction ($r = .62$, $p > .01$). This findings imply that the vendor support in terms of assurance and responsiveness, the higher the user satisfaction towards e-Procurement.

Table 4.3
Descriptive statistics, scale reliabilities and correlations of variables

Variables	N	Mean	S.D.	1	2	3	4	5	6
1. Perceived ease of use	312	3.64	.55	(.83)					
2. Perceived usefulness	312	3.81	.52	.56**	(.91)				
3. Top management support	312	3.70	.48	.32**	.33**	(.86)			
4. Assurance	312	3.76	.52	.56**	57**	.39**	(.82)		
5. Responsiveness	312	3.61	.57	.38**	.43**	.41**	.76**	(.84)	
6. User's satisfaction	312	3.66	.53	.57**	.59**	.56**	.68**	.62**	(.95)

*Note:** Correlation is significant at the level 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).*

4.6 Multiple Regression Analysis

To test hypotheses 1a, 1b, 2, 3a and 4b, regression analysis was conducted. Results in Table 4.4 showed that 64.2% (R^2 = 0.642, F = 109.93 p< .01) of the variance in user's satisfaction was significantly explained by perceived ease of use, perceived usefulness, top management support, assurance and responsiveness. In the model, all variable tested were found positively associated with user's satisfaction with top management (β = .277, p<.001) be the most significant predictor of user's satisfaction. Therefore, all the hypotheses were supported. The results demonstrate that users are more satisfied in using e-Procurement system if they received support from their top management; there are vendor assurance and responsiveness; and the system is easy to use and useful to their work. Thus, all variables were proved to be significantly affecting the level of user's satisfaction.

Table 4.4
Regression results of perceived ease of use, perceived usefulness, top management support, vendor assurance and vendor responsiveness on user satisfaction

	Dependent variable (User satisfaction) (Standardized Beta)	**Significant (*p*)**	**Tolerance**	**VIF**
Independent variables				
Perceived ease of use	.182	.000	.59	1.70
Perceived usefulness	.193	.000	.59	1.70
Top management support	.277	.000	.79	1.27
Vendor Assurance	.217	.000	.32	3.26
Vendor Responsiveness	.193	.000	.40	2.48
F value	109.93			
R^2	.642			
Adjusted R^2	.637			
Durbin Watson	1.856			

4.7 Conclusion

This chapter described the demographic characteristics of the 312 participants and the results of correlation and regression analyses. The results indicate that top management support, vendor assurance, vendor responsiveness, perceived usefulness and perceived ease of use have significant positive relationship with user's satisfaction. The research implications, limitations and direction for future research are discussed in the next chapter, Chapter 5.

CHAPTER 5

DICUSSIONS, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

This chapter discusses the findings of the study in light of the literature reviewed on user's satisfaction and the hypotheses developed in Chapter 2. The present study elaborates and extends prior research on user satisfaction. The findings, as presented in Chapter 4, are discussed in the sections below. The discussion that follows is organized around the hypotheses presented in Chapter 2.

5.2 Summary of the Research

The main purpose of this study is to investigate the relationship between technological factors such as perceived ease of use and perceived usefulness, top management support, vendor support such as assurance and responsiveness and user's satisfaction. To test the research hypotheses, multiple regressions were conducted. Multiple regressions analysis were conducted to test hypotheses 1a, 1b, 2, 3a, and 3b which is to test the direct relationship between two components of technological factors namely perceived ease of use and perceived usefulness, top management support and two components of vendor support namely assurances and responsiveness and user's satisfaction. The findings revealed that both perceived ease of use and perceived usefulness were positively related to user's satisfaction. Positive relationship was also found between top management support, vendor assurance and vendor responsiveness and user's satisfaction.

5.3 Relationship between Technological Factor and User Satisfaction

In this study, technological factors were measured by perceived ease of use and perceived usefulness. The present findings indicate that both perceived ease of use and perceived usefulness are positively related to user satisfaction. These findings were consistent with previous studies conducted by Colesca and Dobrica (2008), Dalcher and Shine (2003) and Rouibah and Hamdy (2009). These findings are not surprising. Logically, users may feel satisfied and happy when dealing with a system that is easy to use and very useful to their daily work. This is because a user friendly system tends to reduce user's time in exploring how to use the system during work hours and this will indirectly reduce the feeling of frustration. Thus, users may not have to waste so much time when working with the system.

Another possible explanation for these results is that users may also feel satisfied in using the system when they know that the system is very useful to their work and able to enhance their productivity and performance. A good performance is a key to a bright future for any employees in the organisation specifically for their career advancement. That is why, the ability of the system to facilitate work processes mainly on increasing time efficiency as well as producing better quality work, compared to work done manually is much more valued by users.

5.4 Relationship between Top Management and User Satisfaction

Results from the present study indicate that top management support was positively related to user satisfaction towards e-Procurement system. These findings

support previous studies conducted by Ee, Abdul Halim and Ramayah (2012), Kassim and Hussin (2010), Rouibah and Hamdy (2009) and Sabherwal, Jeyaraj and Chowa (2006). One possible explanation for these findings is that when top management show their commitment in the implementation of e-Procurement system by providing necessary resources such as sufficient IT infrastructure, training for users and other related facilities, this will indirectly influence users' feelings towards the system in a positive way.

Another possible explanation relating to this positive relationship is that with the top management's involvement in e-Procurement system implementation, and during the strategic planning process, many issues can be resolved easily. This is because top management has the power and authority to resolve any dispute or conflict arises during the process either among the departments or vendor.

5.5 Relationship between Vendor Support and User Satisfaction

Vendor support was measured by assurance and responsiveness. The present study indicates that both assurance and responsiveness have a positive association with user's satisfaction. The findings support previous studies conducted by Sambasivan, Wemyss and Rose (2010). One possible explanation for these results is that the ability of vendor in giving quick, efficient response when users are having problem with the system may reduce the disruption of work. Thus, users are able to continue working without further delay and this may lead to feeling of satisfaction.

Another possible explanation why vendor support is seen very important in determining the user satisfaction in this study may be due to the education background and computer skills that the respondents of this study have. Most of participants in this study are supporting staff with secondary school education. Therefore, their dependency on vendors is likely to affect their satisfaction with the system.

5.8 Research Implications

5.8.1 Theoretical Implications

The current findings have contributed to the current body of knowledge on e-Procurement's user satisfaction in several ways. First, findings from the current study have given empirical evidence on the relationship between perceived ease of use, perceived usefulness, top management support, vendor assurance, vendor responsiveness and e-Procurement's user satisfaction. In this study, technological factors such as perceived ease of use and perceived usefulness, top management support and vendor support such as vendor assurance and vendor responsiveness were found positively related to e-Procurement's user satisfaction.

Apart from that, the current research findings have empirically confirmed and extended the existing TAM model where perceived ease of use, perceived usefulness, top management and vendor support were found positively related to e-Procurement's user satisfaction in measuring G2B system success in a mandatory environment.

5.8.2 Practical Implications

The current research findings have several implications for management of government agencies. The research results demonstrate that higher satisfaction towards the usage of e-Procurement system can be achieved when the system is easy to use and is useful to daily work. Therefore, any new development of e-Procurement system in the future must take into the consideration of these technological aspects. Offering features that fulfil the needs of users might indirectly encourage them to use the system and increase their satisfaction level.

The study also demonstrated that user satisfaction towards the usage of e-Procurement system was influenced by the top management support. Therefore, the management must continue supporting the users by providing enough funding to improve IT infrastructure, proper training on how to use the system, and rewarding those who using the system.

Finally, the study also revealed how vendor support influenced user satisfaction towards the system. As indicate in this study, users are more satisfied with the system when they received excellent and prompt technical support from the vendor. Thus, the management might want to give closer attention on the issues of vendors' supporting services when selecting the appropriate vendor in the future.

5.9 Limitations and Direction for Future Research

There are limitations in the design of this study that might influence the interpretations and generalizations of the findings. These issues are discussed next.

The study was aimed at understanding the influence of technological factors, top management support and vendor support on user's satisfaction, but the study was conducted on government ministries located in Putrajaya and Klang Valley only. The study does not include e-Procurement system's users from rural areas where the IT infrastructure may not be as good as in big cities. Thus, the findings only captured perceptions of public servant officers from big government ministries regarding factors that might influence their satisfaction towards the usage of e-Procurement system. Therefore, there is a need for future research to extend the exploration of the influence of technological factors, top management support and vendor support on other smaller government agencies which might offers greater understanding on the issues of e-Procurement system satisfaction among the public servant officers. Smaller government agencies might have different kind of issues relating to technological factors, top management support and vendor support that can lead to different findings.

Apart from that variables tested in this study were limited to technological factors (perceived ease of use and perceived usefulness), top management support and vendor support (assurance and responsiveness). Other situational factors that beyond the scope of this study such as individual factors was not included in this study. This provides another direction for future research.

In short, while there are some limitations associated with the approach used here and given the exploratory nature of the study, the results of this study provide useful findings that should be of interest both researchers and practitioners.

5.10 Conclusions

The aim of this study was to investigate factors that might influence user satisfaction in using e-Procurement. The main concern of this study is the role of technological factors such as perceived ease of use and perceived usefulness, top management support and vendor support such as assurance and responsiveness on user satisfaction. The results indicate that perceived ease of use, perceived usefulness, top management support, vendor assurance and vendor responsiveness are all related with user satisfaction towards e-Procurement system. It is hoped that through the examination of these factors, a more complete understanding of e-Procurement user's satisfaction will be achieved.

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