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DECLARATION

"This report is a product of my own work except the citation for each of which I have mentioned the sources."

Signature :……..

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ABSTRACT

Cloud computing is a set of services that provide infrastructure resources using internet and data storage on a third party server. SMEs are said to be lifeblood of economy in many country in the world. There are known to be the silent drivers of a nation's economy. Cloud computing is new for SMEs in Malaysia especially in Melaka. In Europe country, this cloud computing had been implement by their SMEs almost more than decade. Most of the Melaka SMEs have adopted the traditional system and have incurred a heavy cost while implementing these system before. In order to encouraging SMEs adopt this cloud computing, there are several concerns and issues that had been faced. This paper will present study to explore the factor influencing adaptability of cloud computing in SMEs business. A study was conducted to top management and IT department from SMEs in Melaka. This study used a questionnaire that was adapted from the literature to examine barrier factor (relative advantages, complexity, top management support, innovativeness and external pressure) towards adaptability of cloud computing in SMEs business using data from survey to employees in SMEs in Melaka (N=130). The analysis of the data Using reliability test, correlation coefficient and multiple regression revealed the factor has a significant influence on SMEs. All requirements, and concerns surrounding the adoption of cloud computing will be discussed deeply in this study. Finally, the paper conclude with some recommendation for further research areas in the field of cloud computing in SMEs.

ABSTRAK

Pengkomputeran awan adalah satu set perkhidmatan yang menyediakan sumber infrastruktur menggunakan internet dan penyimpanan data pada pelayan pihak ketiga. PKS dikatakan sebagai nyawa ekonomi di banyak negara di dunia. Terdapat dikenali sebagai pemacu senyap mengenai ekonomi negara. Pengkomputeran awan adalah baru untuk PKS di Malaysia terutamanya di Melaka. Di negara Eropah, pengkomputeran awan ini telah dilaksanakan oleh PKS mereka hampir lebih daripada sedekad. Kebanyakan PKS Melaka telah menerima pakai sistem tradisional dan telah menanggung kos yang tinggi semasa melaksanakan sistem ini sebelum ini. Untuk menggalakkan PKS menggunakan pengkomputeran awan ini, terdapat beberapa kebimbangan dan isu yang dihadapi. Makalah ini akan membentangkan kajian untuk meneroka faktor yang mempengaruhi penyesuaian pengkomputeran awan dalam perniagaan PKS. Satu kajian telah dijalankan ke jabatan pengurusan dan IT dari SME di Melaka. Kajian ini menggunakan soal selidik yang diadaptasi daripada kesusasteraan untuk mengkaji faktor halangan (kelebihan relatif, kerumitan, sokongan pengurusan atas, inovatif dan tekanan luaran) ke arah penyesuaian pengkomputeran awan dalam perniagaan PKS menggunakan data dari tinjauan kepada pekerja di PKS di Melaka (N = 130). Analisis data Menggunakan ujian kebolehpercayaan, pekali korelasi dan regresi berganda mendedahkan faktor tersebut mempunyai pengaruh yang signifikan terhadap PKS. Semua keperluan, dan kebimbangan mengenai penerimaan pengkomputeran awan akan dibincangkan secara mendalam dalam kajian ini. Akhirnya, kertas itu menyimpulkan dengan beberapa cadangan untuk bidang penyelidikan lanjut dalam bidang pengkomputeran awan di PKS.

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NOMENCLATURE

UTeM	Universiti Teknikal Malaysia Melaka
PSM	Projek Sarjana Muda
SMEs	Small and Medium Enterprises
FPTT	Fakulti Pengurusan Teknologi dan Teknousahawan
GDP	Gross Domestic Product
IR	Industrial Revolution
ICT	Information and Communication Technologies
SME Corp	Malaysia SME Corporation
MIS	Management Information System
CDN	Content Distribution Network
SPSS	Statistic is a Software package Used for Statistical
OS	Operating System
C	Complexity
TMS	Top Management Support
IN	Innovativeness
EP	External Pressure
AD	Adaptability
RA	Relative Advantage

LIST OF SYMBOL

R	Coefficient of determination
R2	Coefficient of multiple regression
≤	Less than or equal to
=	Equal to
β	Beta

CHAPTER 1

INTRODUCTION

1.1 Background of Study

The application of information and communication technologies (ICT) able to bring the huge impact into business sectors which are improving business competitiveness and creating a genuine advantages for small and medium enterprises (SMEs). Todays, Small and medium enterprises (SMEs) are playing a consequential role in Malaysian economy. They are considered to be the backbone of industrial development in country. However, this category of firms is only place little emphasis on the use of information and communication technology (ICT) (How,2001). Based to bearish market competition and a radically shifting business environment, firms still encourage to adopt a various types of information technology (IT) devices and systems to turn up their business operation into the higher state of performance (Pan and Jang, 2008).

Malaysian government has been trying to promote this to SMEs by providing some facilities and more recently motivating the adoption of cloud computing. The main intention is to enhance the adoption of cloud computing solution among Small and Medium Enterprises (SMEs) and also elevate the competitiveness and efficiency of local SMEs in doing their business. Moreover, the Malaysia SMEs Corporation (SME CORP) also agreed in the same opinion on cloud computing platform, which they believe "cloud technology is a model for enabling convenient on-demand network access to shared pool of configurable computing resources that can be provision and release with minimal management effort or service provider interaction".

Cloud computing turns into an aggressive approach within the organization due to the technology growth, the complexity in managing the whole infrastructure are increasing despite the information structure and architecture on distributed data including the software to control the whole process in business. The impact of these situation has made computing become more exclusive and expensive than previous to an organization. The huge capital and cash flow is essential to be ready for SME to construct their investment in purchasing IT infrastructure. According to Aggarwal and Barnes (2010), upfront cost of computing can be reduce dramatically with the functions delivered by cloud computing in collaborate with existing information system.

1.2 Problem Statement

Malaysian SMEs are importance component of the country's financial improvement and account for large share of the entire business in diverse sectors. SME also make contribution on contribution on widespread percentage in term of gross domestic product (GDP). Consistent with SMIDEC (2002), SMEs accounted for 93.8 per cent of companies in production sector. In lots of rising markets, the SME sector is one of the fundamental predominant riding pressure of economic growth and job creation. Beside from their role in phrases of their contribution to export, employment, and economic growth. The result on the literature study shown there is a huge reputation about the demanding situation and limitation dealing with Malaysian SMEs on adopting cloud computing. Despite the massive advantages that cloud technology may additionally offer, the adoption in SMEs in Malaysia still at a slower rate from what have been expected. The further study to explores SMEs' concerns of cloud-based services are critical to determine which issues mostly affect the adoption of cloud computing.

Many SME face a dilemma on whether or not to discard their present day budget for funding for the cloud computing adoption (Bhattacharjee, 2009). They believed that emigrate to the cloud services, they need to prepare to incur not only for migration cost

but also the price of restructuring their organization to match for this new system. With restricted of budget, most of this SMEs prefer to choose to expand their current stage of business instead of switching for cloud services. (Zhang, 2010). As a result of the limited financial sources available to most SMEs, it may be additionally more difficult to reap vital external expertise or additional training from IT providers (Dodgson, 2011). Furthermore, the leader require to perform all managerial feature such as organizing resources, planning for business road mapping, executing decisions and evaluating, as well as, monitoring the functionalities of all part of the organization (Mirchandani and Motwani, 2011).

Based on present day monetary environment, the capacity to respond to swiftly changing purchaser desires is a key competitive differentiator, but some of the SMEs are not believe that speedy changing business environment from traditional to the cloud technology will help their business growth positively. The fear on the adaptability of new technology application (Cloud Computing) may harm their business in future. (Leavitt, 2009). This lack of all critical support on cloud may make many SMEs hesitates to move their operation into cloud services.

1.3 Research Question

RQ1: What the relationship between relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business?

RQ2: What are the most prominent factor that influence adaptability of cloud computing in SMEs business in Melaka?

RQ3: What is significant correlation between relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business?

1.4 Research Objective

RO1: To study the relationship between relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business

RO2: To determine the most prominent factor that influence adaptability of cloud computing in SMEs business in Melaka.

RO3: To study the significant correlation between relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business.

1.5 Scope, Limitations and Key Assumption

1.5.1 Scope

The scope of this research is focusing on the factor that influence the adoption of cloud computing by SMEs ; which are the relative advantage, complexity, top management support, innovativeness, external factor, market scope and adaptability. The target respondents are the top level management and employees from IT department.

1.5.2 Limitations

There are a few of restrictions that being faced by the researched when conducting this research. First, the sample size itself is small. The study can be strengthened by increasing the sample size and including participants in other geographical areas.

Then, researcher sometimes faced a difficult situation to collect data from the respondents due for some financial burden. Moreover, researcher assumes that the respondents give an honest answer for the questionnaire given to them. This can become

a problem if the respondents give a uncertainty answer which can affect the data findings afterwards.

1.5.3 Key Assumption

The main purpose of this research is to find out the relationship between relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business, determine the most prominent factor and study the significant correlation between relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business.

1.6 Importance of Study

Right through this study, the researcher want to find out whether the relative advantages, complexity, top management support, innovativeness, and external pressure towards the factor influencing adaptability of cloud computing in SMEs business. Thus, at the end of the research conducted, this research can be able to know if each variable are connecting to one another for the industry to enhance and practically focus on significant of cloud computing adoption in the business. Besides, the outcome of the study can convince more SMEs to migrate their systems to the cloud computing services which creating the potential increasing on Malaysia's economic growth.

1.7 Summary

Cloud computing is web based subscription model enabling the user to pay as per their need and usage. Cloud technology provide IT based services and capabilities online with data shared on a third party server. The implication of these technology will result in a substantial cost saving, leverage the benefits of the solution and give the competitive advantage to SMEs.

CHAPTER 2

LITERATURE REVIEW

The literature review was conducted to improve the better understanding of the study carried out by reference to variety of books, journals and previous studies. All the resources are available from library and internet platform to get the latest information on research which related to the study of cloud computing adoption on SMEs. The new phenomenon of cloud computing may help SMEs tackling many issues related to cost saving and risk management (Carr,2005).

The past researches in Europe and America have investigated significant factor influencing the adoption of new technology. But due to novelty of cloud computing in small and medium business, the adoption of cloud computing especially in Malaysia SMEs seems to be less explored and examined topics.

Many previous researcher are using the Technology Acceptance Model (TAM) to investigate the adoption of certain technology. However, the influence from the internal and external factor also becoming the main issues here. After undergoes the literature review process, researcher identify the multi-perspective framework that has developed by Rocco DePietro, Edith Wiarda and Mitchell Fleischer. The TOE framework is an organization-level theory (Baker, 2011). Moreover, it represents one section of the innovation process, example how the firm context influences the adoption and implementation of innovations which more suitable for SMEs.

2.1 Cloud Computing

Cloud computing is the latest trend of 20th century's technology that is being encourage by the IT industry to elevate the potential revolution to change on how the internet and information system function into the new level and targeting to be used by the world at large. The example of cloud application are network server, storage, application and services. Berman (2012) stated, cloud computing is a pay-per-use utilization and delivery framework that allows immediate delivery of configuration computing resources. Cloud services basically designate in different various layers of the cloud computing architecture, including platform as a service (Paas), software as a service (Saas) and infrastructure as a service (IaaS). Basically cloud computing is a network-based platform of environment and shared resources and they can even be hardware or software. Through cloud technology, the computing vision can be utilize and these contain grid computing, cluster computing, and more recently by implement cloud computing in the operation process (Armbrust et al., 2010; Buyya et al., 2009). Furthermore, Low & Chen (2011) stated that cloud computing technology is a type of computing application services that's is like office software, e-mail and enterprise resource planning (ERP) because the uses of everywhere resources mutually by the business employee or trading partners.

Reducing the cost by allowing sharing hardware and software is the one of benefits of using cloud computing technology. The customer only pay for what they have to use not for all other resources sush as hard disk, memory, cooling system and others (Assocham, 2006). These are greatly scalable resources delivered over the internet to several companies, which pay only for what they utilize. Cloud computing platforms are based on utility model that enhance the reliability, scalability, performance and need based configurability and all these capabilities are provided at relatively low cost as compared to the dedicated infrastructure (Wyld, 2009). Cloud computing provide benefits range from cost saving to speed and flexibility to enhance performance and efficiency. This new model of medium sharing is widely adopted by the industries and this can give a good returns to

2.2 Small and Medium Enterprise (SMEs)

SME stand for Small and Medium Enterprise, there is no specific definition for SMEs. Different countries define SMEs differently and the classification is based on their own guidelines. The scale of the enterprise can be categorized generally based on the number of employees, annual income, assets or any combination of these. At present, SMEs is the backbone of economy breeding to create the capability of industrial development process.

However, the key characteristics of SME by Bolton Committee in 1971 still relevant as the best description and globally approved. According to Baker (2007), small and medium company is an impartial commercial enterprise that managed via its owner or part owners and having a small market share.

In Malaysia, previously different agencies define SMEs based on their own criteria, commonly benchmarking against annual sales turnover, and number of full-time employees or shareholders' funds. During the 14th NSDC Meeting held on 11 July 2013 in Putrajaya, The National SME Development Council (NSDC) which is chaired by former the Prime Minister, Dato' Seri Mohd Najib Tun Razak Bin with participants from key Ministries and Agencies, including Sabah and Sarawak. The meeting had approved the proposal to elevate the qualifying threshold for income turnover and employment of SMEs for all economic sectors.

The new definition is predicted to result in more firms being categorised as SMEs, particularly from the services sector. This will facilitate the country's transformation to a high income nation through the initiatives under the SME Masterplan. As a result of the change in definition, the share of SMEs to total establishments is expected to increase from 97.3% currently, to 98.5%.

2.3 Significant of Cloud Computing on SMEs

Cloud computing allow SMEs to compete in the advance technology environment. This give the ability to success in business with the most suitable platform. Konwinski (2009) stated, certain SME are not fully yet realize the advantage of cloud computing may offer. In meantime, hundreds of cloud vendors are preparing for the expected upswing evolution in popularity among cloud services for SMEs and for private consumers as well.

SMEs today usually begin with the simple email cloud solution without knowing that they are already reaching for the cloud (Sharif, 2010). Dropbox and Goole Drive are the common example of cloud for file sharing platform. The physical infrastructure like IT equipment require maintenance to maintain and replacing process to sustain the operation when it get outdated, but now the business able to grow without numbers of equipment that require higher cost compared to cloud system.

2.4 Technology, Organisation, Environment (TOE) Framework

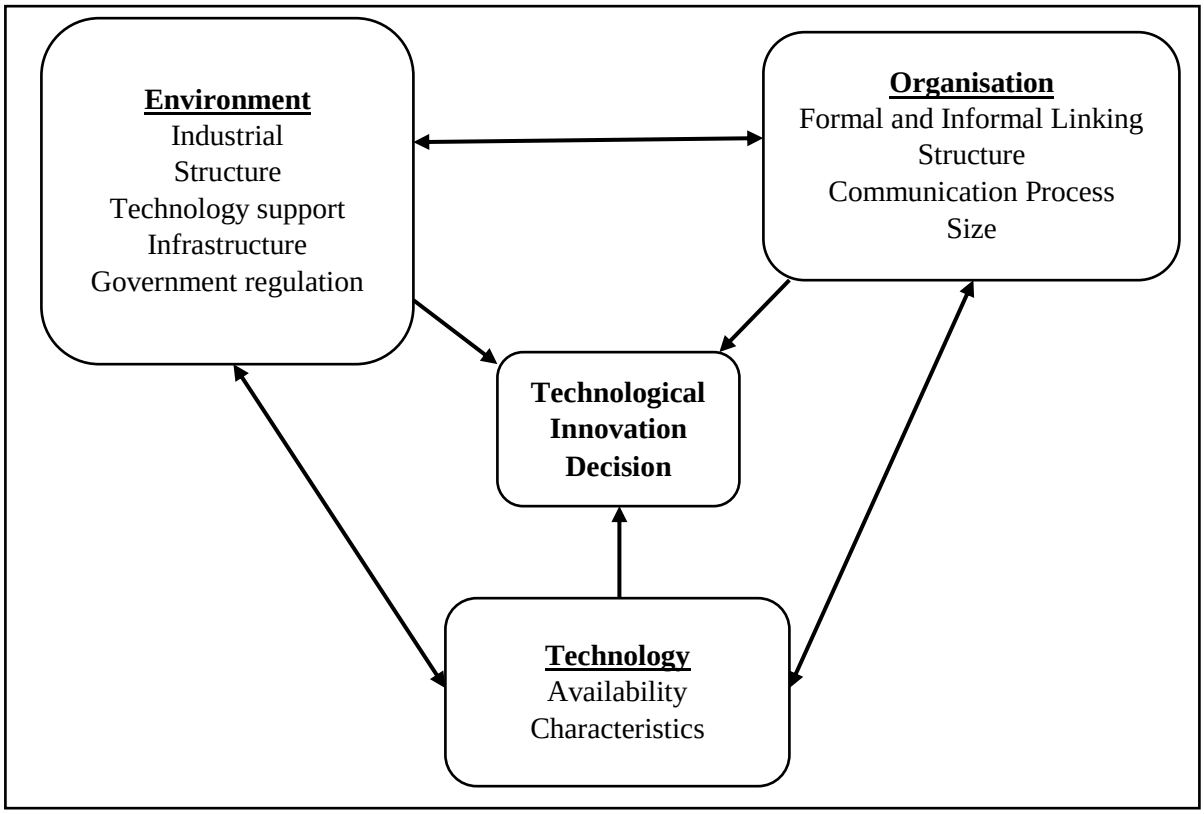

Figure 1 : TOE Framework (Tornatzky and Fleischer 1990)

The TOE framework is an organization-level theory. Moreover, it represents one section of the innovation process, example how the firm context influences the adoption and implementation of innovations (Baker,2011). The TOE is a multi-perspective framework that was developed by Rocco DePietro, Edith Wiarda and Mitchell Fleicher (DePietro et al.,1990). Tornatzky and Fleischer (1990), via their TOE framework, suggested that the process by which an organisation adopts and implements technological (T), organizational (O), and environmental (E) contexts. In this study, the research model consolidate technological, organisational and environmental context as fundamental determinants of cloud computing adoption.