

A STUDY ON PERCEPTION OF ADOPTION
CLOUD COMPUTING IN MELAKA SMEs

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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.”

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ABSTRACT

Cloud computing is a set of services that provide infrastructure resources using internet media and data storage on a third party server. SMEs are said to be the lifeblood of economy in many country in the world. They 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 and Northern America, this cloud computing had been implement by their SMEs almost more than a decade. Most of the Melaka SMEs have adopted the traditional systems and have incurred a heavy cost while implementing these systems before. In order to encouraging SMEs implement this cloud computing, there are several concerns and issues that had been faced. This paper will presents study to explore the perception of cloud computing from SMEs in Melaka. A study was conducted to top management and IT department from about 30 SMEs in Melaka. This study used a questionnaire that was adapted from the literature to examine barrier factor (security issues, lack of resources, role of leader, external factor, and adaptability), and SMEs perception on cloud computing using data from the survey to employees in SMEs in Melaka (N = 108). The analysis of the data using reliability test, correlation coefficient and multiple regressions revealed that the barrier factor has a significant influence on SMEs perception on adoption of cloud computing. All requirements, and concerns surrounding the adoption of cloud computing will be discussed deeply in this study. Finally, the paper concludes 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 media internet dan penyimpanan data daripada pelayan pihak ketiga. PKS merupakan nadi ekonomi di banyak negara di dunia. Mereka dikenali sebagai pemacu ekonomi sesebuah negara. Pengkomputeran awan merupakan sesuatu yang baru untuk PKS di Malaysia terutamanya di Melaka. Di Eropah dan Amerika Utara, pengkomputeran awan ini telah digunapakai oleh PKS hampir lebih daripada satu dekad. Kebanyakan PKS di Melaka masih menggunakan sistem tradisional yang membabitkan kos yang amat tinggi. Dalam usaha untuk menggalakkan PKS melaksanakan pengkomputeran awan ini, terdapat beberapa kebimbangan dan isu-isu yang telah dihadapi. Kajian ini adalah untuk meninjau persepsi pengkomputeran awan daripada PKS di Melaka. Kajian ini telah dijalankan terhadap pengurusan atasan dan jabatan IT daripada kira-kira 30 PKS di Melaka. Kajian ini menggunakan soal selidik yang telah diubahsuai daripada literatur untuk mengkaji faktor penghalang (isu-isu keselamatan, kekurangan sumber, peranan pemimpin, faktor luaran, dan penyesuaian), dan persepsi PKS mengenai pengkomputeran awan menggunakan data daripada kaji selidik itu kepada pekerja dalam PKS di Melaka (N = 108). Analisis data ini telah menggunakan ujian kebolehpercayaan, pekali korelasi dan pelbagai terurus mendedahkan bahawa faktor penghalang ini mempunyai pengaruh yang besar ke atas persepsi PKS mengenai penggunaan pengkomputeran awan. Semua keperluan dan kebimbangan yang menyelubungi penggunaan pengkomputeran awan akan dibincangkan secara mendalam dalam kajian ini. Akhir sekali, kertas ini diakhiri dengan beberapa cadangan untuk penyelidikan lanjut dalam bidang perkomputeran awan dalam 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
ICT	Information and Communication Technologies
SME CORP Malaysia	Sme Corporation
NIST	National Institute of Standards and Technology
OS	Operating System
CDN	Content Distribution Network
MIS	Management Information Systems
SPSS	Statistics is a Software Package Used for Statistical

LIST OF SYMBOL

SYMBOLS

R	:	Coefficient of Determination
R^2	:	Coefficient of Multiple Determination
\leq	:	Less than or equal to
$=$:	Equal to
β	:	Beta

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Economies are comprised of many companies, majority of which are small and medium enterprises (SMEs). They play a very important role in each market by significantly contributing to each country's Gross Domestic Product (GDP) and its labor market. Therefore proposing new strategies or developing new systems that can help SMEs become more efficient and productive is not only beneficial for SMEs but also for the economy as a whole. One of the strategies that can help SMEs become more efficient is the use of appropriate Information and Communication Technologies (ICT) (Wyld, 2009).

Cloud computing is evolving concept; hence the understanding of cloud computing by SMEs can assist in their approaches for cloud computing services utilization. The idea behind cloud computing is based on a set of many existing and well researched concepts such as distributed and grid computing and virtualization (Dubey and Wagle, 2007). Although many of the concepts do not appear to be new, the real

innovation of cloud computing lies in the way it provides computing services to customers.

Malaysia Smes Corporation (SME CORP) has provided a commonly agreed definition of cloud computing that is “a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction”.

Cloud computing became more pervasive within the organization, the increasing complexity of managing the whole infrastructure of disparate information architectures and distributed data and software has made computing more expensive than ever before to an organization (Rittinghouse and Ransome, 2009). For small and medium businesses that their capital and cash flow is very limited and they hardly afford investment for IT infrastructure, it is a bad news. Nevertheless, the promise of cloud computing is to deliver all the functionality of existing information technology services, even as it dramatically reduces the upfront costs of computing that deter many organizations from deploying many cutting-edge IT services (Aggarwal and Barnes, 2010).

1.2 Problem Statements

Despite the enormous advantages that the cloud can offer, cloud computing adoption in SMEs in Melaka has been at a slower rate from what had been expected. In order to determine which issues mostly affect the adoption of cloud computing, the study further explores SMEs’ concerns of cloud-based services. There are some security issue commonly rises by most SMEs hindering the cloud computing adoption rate. Security issues were raised by SMEs as their major concerns (Leavitt, 2009). Moreover, SMEs have also shown concern on other aspects like data protection and privacy regarding the adoption of cloud computing and also their lack of access to enough resources. (Greengard, 2010).

Besides that, many SMEs face a dilemma on whether to discard their current budget for investment or to opt for the cloud computing (Bhattacharjee, 2009). They believed that to migrate to the cloud services, they need to prepare to incur not only for cost of migration but also the cost of restructuring their company to fit for this new system. With the limited of budget, most of this SMEs prefer to choose to expanding their business rather than switching for cloud services. (Zhang, 2010). As a result of the limited financial resources available to most SMEs, it may be additionally more difficult to obtain necessary external expertise or additional training from vendors or IT providers (Dodgson, 2011).

In the most SMEs environments, the owner of the company playing a significant role in order to implement cloud services in their company. According to (Cragg and King, 2003), limited knowledge of the owner can be considered as a major barrier in adoption of cloud computing. As an owner or leader of any SMEs, the leader needs to perform all managerial functions including planning for business road map, organizing resources, evaluation and executing decisions, as well as, monitoring the functionalities of all parts of the organization (Mirchandani and Motwani, 2001). In fact, many of the owner not just only do not considered to using cloud services, but they also have no plan for cloud services in their company for the future (Venkatesh and Brown 2011).

Nowadays in economic environment, the ability to respond to rapidly changing customer needs is a key competitive differentiator. However, some of the SMEs are not believe that fast changing business environment from traditional to the cloud computing services will help their business expand. They fear about the adaptability of new cloud computing will harm their current business. (Leavitt, 2009)

External factors like lack of government support, lack of facilities and competitive pressure also need to investigate in order to study the effectiveness of cloud computing in Melaka SMEs (Dillon, 2010). This lack of all critical support on cloud may make many SMEs hesitates to move their operations to the cloud services. An aggressive campaign need to be held to attract more SMEs to switching their systems to cloud based services.

1.3 Research Questions

The research question has been constructed based on the considerations of the four main research objectives as well as adaptation of cloud computing in SMEs is still new in Melaka. Thus these are the following research question that has been formulated:

1. To determine the relationship between security issues, lack of resources, role of leader, external factor and adaptability toward the SMEs perception on adoption of cloud computing.
2. What is the most prominent barrier that influences Melaka SMEs in adoption of cloud computing?
3. What is the significant correlation between security issues, lack of resources, role of leader, external factor and adaptability with SMEs perception in adoption of cloud computing?

1.4 Research Objectives

There are four objectives to be achieved in this research, namely;

1. To study the relationship between security issues, lack of resources, role of leader, external factor and adaptability with Melaka SMEs perception on adoption of cloud computing.
2. To determine most prominent factor that influent most Melaka SMEs in adoption of cloud computing.
3. To determine the significant correlation between security issues, lack of resources, role of leader, external factor and adaptability with SMEs perception in adoption of cloud computing

1.5 Scope of the study

The scope of this research focuses on the effectiveness of cloud computing in various industries of Melaka SMEs. At the same time, the researcher determines the adaptability of cloud computing in various industries in Melaka SMEs. Thus, the research will emphasize on the internal and external factor and issue that raised in order the study of perception of cloud computing in Melaka SMEs.

This research will be conducted at several SMEs in Melaka. The area of the research will involves on SMEs in Cheng Industrial Park, Batu Berendam Industrial Park and Air Keroh Industrial Park. The main targets are the top level management and employees from IT department.

1.6 Limitations and Key Assumptions of the Study

There is several limitations state for this research. Firstly, the study is to determine the adaptability of cloud computing in Melaka SMEs. Therefore as the result of the study, only applicable to SMEs Company that adapt the cloud computing system.

Secondly, the research study is conduct in SMEs in Cheng Industrial Park, Batu Berendam Industrial Park and Air Keroh Industrial Park. So the result is not cover the overall perception on the issues that raised among the SMEs industries in order to implement the cloud computing in Melaka.

1.7 Significance of the Study/Importance of the Study

Small Medium Enterprise (SMEs) is infrastructure of economy in each country. They usually do not have enough budgets to spend so much on IT program, enhance

their software and upgrading and maintaining their hardware. Through this study, all the factor affecting adoption of cloud computing on SME can be identify.

Besides that, the outcome of the study can convince more SMEs to migrate their systems to the cloud computing services. It automatically will increase the economic growth of Malaysia.

1.8 Summary

Cloud Computing is web based subscription model enabling the users to pay as per their need and usage. Cloud Computing Model provides IT based services and capabilities online with data shared on a third party server. As the users are paying on hourly basis and in some cases on monthly basis, cloud computing will result in a substantial cost saving and it will leverage the benefits of the solutions

CHAPTER 2

LITERATURE REVIEW

The literature review was conducted to improve the understanding of the study carried out by reference to a variety of books, journals and earlier studies ever conducted, which is available from the library and get the latest information on research related to the study of cloud computing on SMEs. Cloud computing is a new phenomenon which helps SMEs tackling many issues such as cost and risk management (Carr, 2005).

There is no universal definition for cloud computing but in his research cloud computing is defined as a computing paradigm in which the computing resources are delivered to customers over a network (Armbrust, 2009). In other words they can access the computing resources at anytime and anywhere they have access to the network. Cloud Computing has recently become a hot issue in today's competitive market place.

Many past researches especially in Europe and North America have investigated significant factors influencing the adoption of new technologies or service solutions. However, due to the novelty of cloud computing, adoption of cloud computing especially in Malaysia SMEs seems to be one of the less explored and examined topics.