SUPERVISOR'S DECLARATION

'I hereby declare that I have read this thesis and in my opinion, this thesis is sufficient in terms of scope and quality for the award of the degree of Bachelor of Technology Management (Technology Innovation)'

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A STUDY OF AWARENESS OF CLOUD COMPUTING TOWARD MANUFACTURING SMALL AND MEDIUM ENTERPRISES (SMES) : A CASE OF MELAKA.

TOH HUI CHENG

Partial fulfillment of the requirements for the award of
Bachelor of Technology Management and Technopreneurship with honour
(Technology Innovation)

Faculty of Technology Management and Technopreneurship
Universiti Teknikal Malaysia Melaka

JUNE 2015

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CONFESSION

'Hereby, I declare that the thesis entitled 'A Study of Awareness of Cloud Computing toward Manufacturing Small and Medium Enterprises (SMEs): A Case of Melaka' is the result of my own research except quotes as cited in the references'

Signature :…….
Name : Toh Hui Cheng
Date :…….

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DEDICATION

I dedicate this research project to my grandmother who always support and provide me with caring and concern during my life in the university. I also dedicate it to my parents, sibling and all my friends for their contribution and fully support me to success in my studies in University Teknikal Malaysia Melaka (UTeM).

In addition, I want to thanks to my PSM Supervisor, Pn. Murzidah binti Ahmad Murad for her fully supervision, guidance and teaching along the whole project. I also want to thanks to my PSM Panel, Dr. Fararishah binti Abdul Khalid for the advice in my research and thanks to all lecturer, staff in UTeM.

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ABSTRACT

Cloud computing is a relatively new concept in the IT industry. Cloud computing is a basically a single system that is on the Web that can store and run applications. Nowadays, SMEs are faced with several challenges which negatively affect their growth and sustainability, such as marketing factors, financial issues, management skills and lack of investment in Information and Communication technology (ICT). The evolution of ICT solutions such as cloud computing, have the potential to counter some of the challenges that SMEs are facing. However, most technologies are not adopted due to lacking knowledge and perceptions on their potentials and value. Therefore this paper research with the objective to investigates the awareness of cloud computing within SMEs in Johor. In addition, the paper research also to identify SMEs perceptions on cloud computing of the future as an alternative ICT solution.

The study adopted qualitative research approach, where case study research designs was used consisting of three SMEs organization. The data was collected through interviews, expert reviews, literature and questionnaires, where a total of 3 SMEs industries of manufacturing field at Melaka participants were used. The findings reveals a lacking levels of cloud computing awareness, thus limited knowledge on cloud computing benefits and services. The findings reveals a lacking levels of cloud computing awareness, thus limited knowledge on cloud computing benefits and services. This paper concludes that the lacking awareness and understanding of cloud computing is the main cause of slow cloud computing adoption amongst SMEs in Melaka. The paper concludes by recommending methods which can be used to increase SMEs awareness of cloud computing.

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ABSTRAK

Pengkomputeran awan adalah satu technologi yang baru dalam industry IT. Pengkomputeran awan adalah satu sistem tunggal dalam web yang boleh menyimpan dan menjalankan aplikasi. Pada masa kini, SMEs yang berhadapan dengan beberepa cabaran yang memberikan kesan-kesan negative terhadap pertumbuhan dan kemampanan dalam industry, seperti faktor pemasaran, isu-isu kewangan, kemahiran pengurusan dan kekurangan pelaburan dalam Teknologi Maklumat dan Komunikasi (ICT). Evolusi penyelesaian ICT seperti pengkomputeran awan, mempunyai potensi untuk menangani beberapa cabaran SMEs yang menghadapi. Walau bagaimanapun, teknologi ini tidak diterima kerana kekurangan pengetahuan dan persepsi mengenai potensi dan nilainya. Oleh itu, kajian ini bertujuan untuk mengkaji kesedaran pengkomputeran awan dalam SMEs di Melaka. Di samping itu, kajian ini juga dapat mengenal pasti persepsi SMEs mengenai pengkomputeran awan masa depan sebagai penyelesaian masalah yang dihadapi seperti atas.

Kajian ini menggunakan kajian kualitatif, di mana bentuk penyelidikan kajian kes digunakan terdiri daripada tiga SMEs organisasi. Data diperolehi melalui temu bual, telefon dan e-mel temu bual, ulasan pakar, sastera dan soal selidik, di mana seramai 3 industri SMEs tentang bidang pembuatan di Melaka telah digunakan. Hasil kajian mendedahkan kekurangan tahap kesedaran pengkomputeran awan, dengan itu pengetahuan yang terhad mengenai manfaat dan perkhidmatan pengkomputeran awan. Hasil kajian mendedahkan kekurangan tahap kesedaran pengkomputeran awan, dengan itu pengetahuan yang terhad mengenai manfaat dan perkhidmatan pengkomputeran awan. Antara kajian ini menyimpulkan bahawa kekurangan kesedaran dan pemahaman pengkomputeran awan adalah punca utama penggunaan pengkomputeran awan perlahan di kalangan SMEs di Melaka. kajian ini diakhiri

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dengan mengesyorkan kaedah yang boleh digunakan untuk meningkatkan kesedaran terhadap perkomputeran awan di antara SMEs.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

The SMEs has an efficient and efficiency IT system and platform that can assist them to achieve the greatest companies and enhance the overall performance, it can bring the success to the organization. According to National Institute of Standards and Technology NIST (2009), Cloud Computing means 'internet computing'. The concept of the cloud computing as a convenient and on demand network has gained the attention of business. (Behnia, K., 2010). Cloud computing is a basically single Web system that can store and run applications (P. Garbacki, 2007).The cloud computing users can access database resources via the internet from anywhere, for as long as they need. Without worrying about any maintenance or management of actual resource. They store it all on the 'cloud' of the Web, or a shared data center.

Besides that, the cloud computing has increased the elasticity of the resources without paying the premium for large scale. It means enterprises with the largest volume tasks can achieve the desired results quickly without the large investment (Armbrust, M. Fox, 2009). This is because the cloud computing providing computing resources (e.g. storages, serves, processing, networking and applications) to end users as services via the internet in pay-per-use cost structure (Gartner, 2008). It's will help industry system don't have the burden of running through so many apps that could overload the capacity of their

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RAM. Apart from that, Cloud computing also provides the simple, easy to use, advanced and high powered application at minimum cost anywhere and anytime (Hyek, P., 2011). It also can be save time and reduces frustrations for team and increase work together efficiently.

For small businesses using cloud computing, it enables them to do more with less, accessing critical business applications without the need to pay for ongoing maintenance or upgrades (Conlon et al., 2002.). With low financial budget and limited available resources, the manufacturing sector can become level one beneficiary of cloud computing.

1.2 Problem Statement

In the modern economy, information technology (IT) as a primary management tool affects the competitive nature of the many enterprises. Firms that are responsive to these changes are perceived to be able to gain competitive advantage (Porter, 1980; Fisher and Kenny, 2000). Although use the IT system to management organization will take the convenience in the life, but the cost and knowledge of the IT system had been the bottleneck for SMEs in using of different fields. Cloud computing has the potential to play a major role in addressing inefficiencies and make a fundamental contribution to the growth and competitiveness of enterprises mainly for SMEs. By adopting cloud computing services SMEs will be able to obtain the latest technology, without the need for upfront cost. However, SMEs have shown concerns with regards to security and vendor lock-in. These concerns could have influenced the speed of cloud computing adoption.

According to Foong (1999). Hussein and Karim (2007) and Ismail (2007), information system success and information system impact on firms' performance. The SMEs has limited financial and human resources to adopt IT (Duan et al 2002) and lack of IT skill and knowledge (Houghton and Winklhofer 2004) and poorly utilized

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application of IT system. These applications include financial analyst, project management, budget variances, modelling, and personal management.

In addition, also have barriers from global sourcing, low productivity, lack of managerial capabilities, and lack of financing, difficulty in accessing management, technology and heavy regulatory burden. In the same way, Teoh and Chong (2008) argued that the major obstacles to entrepreneurship development are lack of access to credit, lack of access to formal business and social networks. Besides that, the intellectual capital is a very important factor for success of organizations (Leitner et al. 2011).

Cloud computing, the long-held dream of computing as a utility, has the potential to transform a large part of the SMEs industry (Armbrust et al., 2010). Besides that, many experts predict cloud computing to be much more than an incremental advancement in IT. Although the computing is considered as a solution to solve above problem, but the SMEs adoption of cloud computing system still has not reached the expectation and compare to large firms is growing slowly (Yu, 2009). There has been a lot of interest around cloud computing during the last couple of years and despite many perceived benefits, many organizations seem to be still conservative regarding the migration to cloud (IDC, 2009; Gartner, 2008). Thus, implement Cloud Computing at Malacca, which in a wide urban region during the last decade of the twentieth century. It has contributed too many issues for SMEs manufacturing industry, particularly capital problem. Normally, manufacturing field SMEs are requirement more cost to expand their industry, such as cost equipment and maintenance fee. Thus, SMEs to implement Cloud Computing at Malacca has higher feasibility and efficient for SMEs manufacturing (Gartner, 2008).

According to Galligan (2011) state, SME has less chance of being sent for training and on cloud- related services compare to the larger firms and then at the end to cause SMEs is a lack of confidence and internal expertise in understanding the cloud computing, hence they are not willing to embrace a new system.

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1.3 Research Question

In recent years, the SMEs has been faced with several challenges which negatively affect their growth and sustainability, such as financial issues, low productivity, lack of managerial capabilities, difficulty in accessing management, technology and heavy regulatory burden, and so on. The concept of the cloud computing as a convenient and on demand network has gained the attention of business (Behnia, K., 2010). Nonetheless the SMEs adoption of cloud computing system still have not reached the expectation and compare to large firms is growing slowly (Yu, C., 2009)

Research question constructed as below:

1 What is the awareness level of SMEs in the manufacturing field in Malacca towards Cloud Computing?
2 What are the advantages of implementing Cloud Computing in manufacturing SMEs?
3 What are the future plans to implement Cloud Computing?

1.4 Research Objective

The objectives of the study are to provide an understanding of the awareness level of Cloud Computing in Malacca SMEs. Besides that, the research also to investigate the advantages of implementing Cloud Computing in SME manufacturing sectors. Lastly, this research is to analyze the future plans to implement Cloud Computing.

1 To investigate the awareness level of SMEs in the manufacturing field in the Melaka towards Cloud Computing.
2 To identify the advantages of implementing Cloud Computing in the manufacturing field of SMEs.
3 To analyze the future plans to implement Cloud Computing.

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1.5 Scope

The scope of this research is to investigate the awareness level of Cloud Computing in the Melaka SMEs. Besides that, this research is also to identify the advantages of the future plan to implement Cloud Computing in the manufacturing field of SMEs. Since the scope of this research is can be through the Cloud Computing system to improve the SMEs development and minimizing the financial cost (Hyek, 2011) in the SMEs.

The researcher were chosen Malacca SMEs of manufacturing field as the study subject. The Malacca SMEs field are having 5 types which are include Service, Manufacturing, Agriculture, Mining and Quarrying, and Construction. SMEs manufacturing establishment are occupy 1,107 in Malacca.

According to the Malacca Chief Minister Datuk Seri Ali Rustam had claimed that state had achieved its developed-state status after it met with the 32 criteria set by the OECD to qualify as a developed economy. Besides that, he had also pointed out that this initiative was a part of a 10-year development plan for the country's second smallest state, known as Malacca Maju 2010. Thus, implement Cloud Computing at Malacca, which in a wide urban region during the last decade of the twentieth century has contributed too many issues for SMEs industry, particularly capital problem. Thus, implement Cloud Computing at Malacca has higher feasibility and efficient for SMEs.

For my target research respondents will be from small and medium sized enterprises (SME) that is mainly in the manufacturing field and the located will be in Malacca area. The respondents will be those SMEs managers of IT department managers. These group respondents will be providing the primary data for this research.

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1.6 Limitation

In this research paper, there are several limitations has been identified. Firstly, this research is focused on Malacca areas with specific location, choose for examining the awareness level of SMEs in the manufacturing field in Malacca towards Cloud Computing. The limitation would be the lack of cost or budgets and duration of time to conduct this research. Second, the researcher assuming the respondents answers with logical and honestly that variety of category respondent will be taken to ensure this research becomes more precise and reliable. Thus, the qualitative will be applied as a research strategy in this case.

1.7 Importance of the Project

The mainly focused on investigating the awareness level of SMEs in the manufacturing field in the Malacca in Malaysia towards Cloud Computing. Besides this, in this study also needs to identify the advantages of implementing Cloud Computing in the manufacturing field of SMEs and to analyze the future plans to implement Cloud Computing.

In addition, the researcher also wants to find out the key determinant of Cloud Computing towards in the manufacturing field in the Malacca. Therefore, it can serve as a guideline to the authorities of Cloud Computing is important situated in Malaysia for the purpose of finding out the most appropriate way to continuously enhance and improve their management functions.

Apart from that, knowing the strength of the identifies the advantages of implementing Cloud Computing in the manufacturing field of SMEs and to analyze the future plans to implement Cloud Computing to fulfill each SME's needs and better

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improve their IT system more effectively because they can provide the right service to the right SME at the right time.

1.8 Summary

Cloud computing is a relatively new concept in the IT industry. Cloud computing is a basically a single system that is on the Web that can store and run applications. It's will help industry system don't have the burden of running through so many apps that could overload the capacity of their RAM and to enhance the system management and minimizing the capital cost on IT system. Although the computing is considered as a solution to solve above problem, but the SMEs adoption of cloud computing system still has not reached the expectation and compare to large firms is growing slowly (Yu, C., 2009). This reason to let the researcher to implementation this research.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss in detail about cloud computing system in Small and Medium Enterprises (SME) manufacturing field. The researcher will provide an overview of Small and Medium Enterprises (SMEs) in section 2.2. The sub-section 2.2.1 will show and explain the distribution statistics of SMEs in Malaysia.

The section 2.3 will explain about the cloud computing among SME. The sub-section 2.4 will then explain the types of Cloud Computing Service Model while section 2.5 explain types of cloud. Section 2.6 will clarify the awareness of cloud computing system among SME. Section 2.7 will stated the advantages of implementing cloud computing. In section 2.8 is the future plan to implement cloud computing in small and medium enterprises (SME). Lastly, the conceptual framework is illustrated in section 2.9 and summary for chapter 2 will be shown at section 2.10.

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2.2 Overview of Small and Medium Enterprises (SMEs)

In Malaysia, SMEs operate in almost every major industry. Small and Medium business entrepreneurs operate and manage various businesses such as Manufacturing, Services, and Agriculture area, and contribute to the national economy. SMEs are often defined by number of factors and criteria such as the location, size, age, structure, organization, number of employees, sales volume; worth of assets, ownership through innovation and technology (Rahman, 2001).

SMEs defined by three parameters, such as number of full time employees, annual sales turnover and gross asset or shareholders' funds (excluding fixed asset) (Falkena, 2002). According to the National SME Development Council state a new definition of Small and Medium Enterprises (SMEs) in the manufacturing sector (including agro-based) and MRS is an enterprise with full-time employees are not exceeding 150 increase to not exceeding 200, and the annual sales turnover is also increase from not exceeding RM25 million increase to not exceeding RM50 million.

The Small and Medium Enterprises (SMEs) sector is considered crucial to Malaysian competitive development. That is because they are an essential source of jobs, create entrepreneurial spirit and innovation in the Malaysian and are thus crucial for fostering competitiveness and employment.

According to Census Report on SMEs 2011, there was a total of 645,136 SMEs operating their businesses in Malaysia, representing 97.3% of total business establishments. SMEs in the manufacturing sector are occupying the largest which results showed that 5.78 % of the total establishments in that sector. Apart from that, SMEs also contribution GDP, Malaysia increased from 29.4% in 2005 to 32.5% in 2011. In 2011, the growth registered by SMEs was 6.8% compared to the overall growth of 5.1%.

According to the Asia-Pacific Economic Cooperation (APEC) (2012) states, SMEs contribute significantly to economic growth, SMEs account for over 97 percent of

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