A STUDY ON ADOPTION OF TECHNOLOGY IN SMEs FOOD INDUSTRY: UTAUT MODEL

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MASTER OF SCIENCE IN TECHNOLOGY MANAGEMENT

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DECLARATION

I declare that this thesis entitled "A Study on Adoption of Technology in SMEs Food Industry : UTAUT Model" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : .....

Name :

Date :

APPROVAL

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 Master of Science in Technology Management.

Signature :…….....

Supervisor Name : DR. JUHAINI BINTI JABAR

Date :

DEDICATION

I dedicate this thesis to my beloved father and mother, Mr. Abu Musa and Mdm. Jasnah Binti Baba and also to my lovely family.

ABSTRACT

Small and medium enterprises (SMES) are the backbone of the world and the local economy including Malaysia as one of the developing countries. It is estimated that more than 90 percent of all enterprises are SMES and the contribution from SMES is more than 70 percent of goods and services that are sold all over the world. In Malaysia, the food industry is primarily dominated by SMEs. However, SMEs in Malaysia are still utilizing low-technology in producing their products. The adaptation of technology in Malaysian SMEs occur at a slow rate due to high costs and most importantly the lack of knowledge and capability of SMEs. The contribution of the economy and competitiveness of food manufacturing SMEs in Malaysia can be enhanced through the use of high technology. Therefore, the Unified Theory of Acceptance and Use of Technology (UTAUT) model is tested and revalidated in this research to understand and measure the use and acceptance of technology in SMEs. The UTAUT model is useful to explain the behaviour of the use of technology by the user. In this research, UTAUT model was verified in the context of SMEs in the food industry in Malaysia. Accordingly, this study has analyzed 135 food manufacturing SMEs in Malaysia to understand the behaviour of SMEs towards the acceptance and use of technology. The data was then analyzed using SPSS through exploratory factor analysis and multiple linear regression analysis. As a result, UTAUT model for SMEs food industry have been introduced. The results has demonstrated that social influence, expected effort and performance are significant in influencing behavioural intentions to use technology. In addition, the conclusion of this study provides a wide range of implications in the different context of use and acceptance of food manufacturing

ABSTRAK

Perusahaan kecil dan sederhana (PKS) merupakan tulang belakang kepada ekonomi dunia dan ekonomi tempatan termasuk Malaysia sebagai salah satu daripada negara-negara membangun. Adalah dianggarkan bahawa lebih daripada 90 peratus daripada perusahaan adalah PKS dan sumbangan daripada PKS adalah lebih daripada 70 peratus daripada barangan dan perkhidmatan yang dijual di seluruh dunia. Di Malaysia, industri makanan terutamanya dikuasai oleh PKS. Walau bagaimanapun, PKS di Malaysia masih menggunakan teknologi yang rendah dalam menghasilkan produk mereka. Adaptasi teknologi dalam PKS Malaysia berlaku pada kadar yang perlahan kerana kos yang tinggi dan yang paling penting kekurangan pengetahuan dan keupayaan PKS. Sumbangan ekonomi dan daya saing PKS pembuatan makanan di Malaysia boleh dipertingkatkan melalui penggunaan teknologi tinggi. Oleh Itu, model Teori Bersepadu Penerimaan dan Penggunaan Teknologi (UTAUT) diuji dan disahkan semula dalam kajian ini untuk memahami dan mengukur penggunaan dan penerimaan teknologi dalam PKS. Model UTAUT berguna untuk menerangkan tingkah laku penggunaan teknologi oleh pengguna. Di dalam kajian ini, model UTAUT ini telah disahkan dalam konteks PKS dalam industri makanan di Malaysia. Sehubungan itu, kajian telah menganalisa 135 PKS pembuatan makanan di Malaysia. Sehubungan itu,kajian ini telah menganalisa 135 PKS pembuatan makanan di Malaysia untuk memahami tingkah laku PKS terhadap penerimaan dan penggunaan teknologi. Data kemudiannya telah dianalisis menggunakan SPSS melalui analisis faktor penerokaan dan analisis regresi linear. Hasilnya, model UTAUT bagi industri maka nan PKS telah diperkenalkan. Keputusan telah menunjukkan bahawa pengaruh sosial, usaha jangkaan dan prestasi adalah penting dalam mempengaruhi niat tingkah laku untuk menggunakan teknologi. Di samping itu, kesimpulan kajian ini menjelaskan pelbagai implikasi dalam konteks yang berbeza terhadap penggunaan dan penerimaan teknologi pembuatan makanan di PKS.

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LIST OF ABBREVIATIONS

SMEs	-	Small Medium Enterprise
TAM	-	Technology Acceptance Model
TRA	-	Theory of Reasoned Action
TPB	-	Theory of Planned Behaviour
IDT	-	Innovation Diffusion Theory
UTAUT	-	Unified Theory of Acceptance and Use of Technology
PE	-	Performance Expectancy
EE	-	Effort Expectancy
SI	-	Social Influence
FC	-	Facilitating Condition
BI	-	Behavioural Intention to Use
χ^2	-	Chi-square
p	-	Significant value
df	-	Degree of Freedom
Sig	-	Significant

LIST OF PUBLICATIONS

Refereed Journal Article

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CHAPTER 1

INTRODUCTION

This chapter has introduce the food industry in Malaysia, alongside with the problem statement, research objectives, research questions, significance of study, and research limitations.

1.1 Food Industry in Malaysia

The food industry plays an important role in Malaysia's economy. The Malaysian food industry is diverse as Malaysia has a multicultural community which brings a wide range of Asian food. The food processing industry in Malaysia accounts for approximately 10 percent of the country's total manufacturing output. The processed food is exported to more than 200 countries with an annual export value of more than RM 13 billion, amounting to two thirds of the total food exports of over RM 20 billion in 2012 (MFBD, 2014). Malaysia's total export of food and beverages remained stable at RM 15.5 billion in 2012, almost the same as in 2011. The main exports in 2012 were RM3.3 billion of cocoa and cocoa preparations, and RM 5 billion in other processed food (MITI, 2012).

In the Malaysia's Industrial Plan period of 2006-2020 (IMP3), the Ministry of International Trade and Industry (2012) targets that the food processing industry's investment to be at RM 24.6 billion. Currently, functional food, health food, convenience food, food ingredients and halal food are the key growth areas in the Malaysian food industry. This was determined on the basis of its potential contribution to manufacturing development, particularly with respect to employment generation, foreign exchange savings and value added creations (Ahmed, 2012).

The food industry has always provided plenty of opportunities for investments, thus the Malaysian government chose the food processing sector as its priority in the context of industrial policy. According to the Department of Statistics (2012), Malaysia remains a net importer of food in 2011 (RM34.5 billion). Major food imports were cereals and cereal preparation, vegetables and fruits, cocoa, sugar and sugar confectionary. Nonetheless, there are a few problems or factors faced by the food industry in Malaysia that differentiates the striking growth between this sector and other manufacturing industries in Malaysia (MIDA, 2012). A number of factors are responsible for the imbalanced growth, such as low quality of raw materials, high labour costs, inconsistent supply, poor technological inputs, lack of skilled manpower and problems relating to changes and implementation of government policies for industrialization.

However, the food processing industry is mainly Malaysian-owned and dominated by small medium enterprise (SME) companies. The majority of them are still using low technologies to produce their products, for example in the preparation of traditional food such as 'kuih bahulu', frozen curry puff, 'keropok lekor' and others. These companies still rely on manual labour and lack quality standards in their food production.

1.2 Small Medium Enterprise (SMEs)

According to SME International Malaysia (2013), some advance economies have succeeded because their small medium enterprise industry comprises over 98 percent of their total establishment and contributes over 65 percent employment as well as over 50 percent of gross domestic product (GDP). Although the numbers might be lower in Malaysia, SMEs still have the potential to provide a strong basis for growth of new industries for Malaysia's future development. Developing stronger SMEs require major changes in the manufacturing sector, as SMEs make up over 90 percent of Malaysia's manufacturing sector.

Malaysian SMEs were expected to record a steady growth pace of 6.5 to 7.0 percent in line with the official GDP projection of 4.5 to 5.0 percent to be achieved in 2012 (Economic Census, 2011). The latest statistics from the Census show that Malaysian SMEs now constitute 97.3 percent (645,136) from the total of 662,939 establishments in the country (SME, 2012).

Malaysian SMEs play a major in contributing towards economic growth (Omar et. al., 2009). The future progress of Malaysia seem to depend greatly on the development of SMEs and for them to be fully developed. In order to become an industrialized nation by the year 2020, Malaysia should capitalize on the country‘s strengths and overcome its weakness through SMEs (Omar et al., 2009). Thus, the government has also recognized the role of SMEs in the economy and has implemented various policies and programs to assist them in difficult circumstances (Char et. al., 2010).

To be more competitive in the global business environment, SMEs require support or assistance from the government to potentially be the engine of economic growth as seen in developed countries such as Germany and Japan (Khan and Khalique, 2014). Furthermore, the success of SMEs in Malaysia enable the country to revolutionize from a middle income nation to a high income nation. However, there are several constraints that hinder Malaysian SMEs, such as lack of financing, human capital issues, lack of business competitiveness, lack of infrastructural support and difficulty to gain access to the management and technology (Zain et al., 2012). This growing number of challenges as discussed above may contribute to the low level of efficiency among SMEs in Malaysia, and this includes the SMEs in the Malaysian food industry. Low levels of productivity and input quality are the challenges which contribute to the low levels of added value in the Malaysian food industry, which eventually affects the performance of SMEs (Saleh and Ndubisi 2006). Low financing and lack of managerial capabilities in Malaysian SMEs are also the challenges that hinder them from improving their productivity in technology.

In order to enhance their productivity levels yet remain competitive, SMEs need to keep up with technological changes as well as innovation activities. The Masterplan (2012) had highlighted innovation and technology adoption as among the most important indicators of performance in order for Malaysian SMEs to successfully contribute to the national aspirations of becoming a high income nation by 2020. Technology adoption among Malaysian SMEs becomes an important issue due to the government focusing on a fresh approach to bring SMEs to the next level by accelerating growth through productivity gains and innovation (SME, 2012).

A complete study on technology adoption was last done in 1988, and there are limited recent studies on the adoption of various technologies among SMEs in Malaysia (Abdullah and Shamsuddin 2009). Therefore, the range of SME technology adoption in Malaysia is still not clear and needs further investigation. The next section discuss on technology adoption in developing countries.

1.3 Technology Adoption

Technology adoption is one of the processes where organizations or individuals decide to make full use of an innovation in their daily operation or business (Rogers, 2003). As mentioned by Venkatesh (2003), "for technologies to improve productivity, they must be accepted and use by employees in organizations" (p.426). Technology works as a tool to help employees or organizations to improve their productivity levels. Despite the increased international competition for high skilled employees, several East Asian countries including Malaysia and Thailand have managed to build globally competitive sectors that require high levels of technology adoption and utilization (Maynard et al., 2007). The major issue with developing countries attempting to catch up technologically is when the current workforce set who are developed under one economic stage have difficulties in adapting to a new stage (Steinmueller, 2001).

1.4 Adoption Theory

Several theories have been proposed to explain the adoption of innovations/new products during last few decades ago, and it attracted the attention of researchers studying in the information communication field, banking sector, education field and other fields. The first theory is the diffusion innovation theory (IDT), which is a theory that seeks to explain how, why and at what rate a new idea or technology spreads through cultures (Rogers, 1995). Although there are more than four thousand articles across many disciplines published on this theory, there are some limitations (Robert, 2005). Diffusion is difficult to quantify because humans and human networks are complex and it is impossible to measure what exactly causes adoption of an innovation (Damanpour, 1996). For example, for adoption of technology in the workplace, it is impossible to forecast individual intentions or their decisions to adopt the technology.

The first theory is theory of reasoned action (TRA) introduced by Fishbein and Ajzen (1975). This theory is forecast individual behaviour in variety of domains and it is general develop in social psychology. Although TRA is widely applied in different field of study but it seems that the power prediction of TRA narrowed to which it is applied under the context of voluntary behaviour since the original objective of developing TRA are aimed to explain voluntary behaviour (Hale et. al, 2003).

The second theory is the theory of planned behaviour (TPB) which was developed by Ajzen (1991) as an improvement to the TRA model by adding the construct of perceived behavioural control. The complexity of the TPB model limits its use in information system research. TPBs include more variables than may be important in most information systems' technology implementation (Taylor and Todd 1995).