

ICT ADOPTION WITHIN MSMEs USING TECHNOLOGY ACCEPTANCE MODEL

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ABSTRACT

The general objective of this study is to give a real portrait of ICT adoption in Micro, Small and Medium Enterprises (MSMEs) in Depok and Qingdao on 2011 by using Technology Acceptance Method (TAM) approach. This research is using primary data by distributing questionnaire and surveying the MSMEs directly. This research consist of 7 MSMEs from Qingdao and 46 MSMEs from Depok. There are perceived ease of ICT use-PEOU, perceived usefulness of ICT-PU, user attitude towards ICT-AT, strategic value of ICT-SV and acceptance towards ICT-ACC and all variables taken from the previous research. Path analysis and Independent sample T-test performed in this research to analyze the data and the result is PU is the key factor of MSMEs to adopt ICT and the ICT adoption within MSMEs in Qingdao is better than MSMEs in Depok.

Keyword: perceived ease of ICT use-PEOU, perceived usefulness of ICT-PU, user attitude towards ICT-AT, strategic value of ICT-SV and user acceptance towards ICT ACC, Micro, Small and Medium Enterprises (MSMEs) and Technology acceptance model (TAM).

INTRODUCTION

In Indonesia, MSME has played a significant role in the economy. More than 52 Million enterprises or 99.99% are small and medium enterprises while only 0.01% is corporation. Millions of people are involved in this productive activity around 97.00 % of people working in the private sector working at MSME. They contribute significantly to the development as 60.00% of GDP comes from the MSME (BPS, 2011). When crisis happened in 1997 most of corporations collapsed during the crisis while many MSME remain stable and grow. In the recovery of the Indonesia economy after the Asian economic crisis in 1997-1998, MSME displayed particular resilience. In China After the start of an open door policy towards to market oriented economy in 1978, China has experienced a decline in state owned enterprises and an important expansion

for small businesses. The role of MSME in economic development is well documented for advanced economies and has been crucial in China's process of economic reform. It has been pivotal in China's impressive economic growth during the last decades. The emergence of dynamic MSME is one of the most important outcomes of the entire reform process. MSME are the major growing force behind the China's prominent success in terms of contribution toward the national GDP (counting for 40%), scale of assets, diversification of products, and the creation of employment. The most common problems for MSMEs are lack of access to market information, technology, low quality of human resources and lack of access to capital.

In order to anticipate the development in information technology and realizing the importance of

information technology for business expansion this research analyze how the MSMEs respond on technology especially ICT. Based on the background researcher interest to give a real portrait of ICT adoption within MSMEs using TAM method to analyze the portrait of ICT adoption by MSMEs in Depok and Qingdao. Dharma Tintri and Yananto (2008) had done a research about the implication of ICT application within MSMEs that participated in UG-ICTA on 2008 using TAM approach and using primary data by spreading question naire with perceived ease of ICT use, perceived of ICT usefulness, user attitude towards ICT, strategic value of ICT and user acceptance towards ICT. Multiple linear regression analysis was performed to analyze the data and the result of the research indicated that PEOU significantly affect PU. AT was not affected by PEOU. PU and AT in the meantime significantly affect SV. In addition, it was also found that PEOU has no significant effect on ACC and PU, AT and SV significantly affect ACC.

Technology Acceptance Model

In this proposal, Davis (1985) suggested that users motivation can be explained by three factors: Percieved Ease of Use, Perceived Usefulness and Attitude Toward Using the system. He hypothesized that the attitude of a user toward a system was a major determinant of whether the user will actually use or reject the system. The attitude of the user, in turn, was considered to be influenced by two major beliefs: percieved usefulness and perceived ease of use having a direct influence on perceived usefulness. To develop the measurement scales for perceived ease of use and perceived usefulness, Davis referred to psychometric scales in psychology (Davis, 1989). By analyzing the result obtained in his experiment, Davis found

a positive correlation between the scales and self-predicted future usage. In 1993, Davis suggested that in contrast to what he initially predicted, perceived usefulness could also have a direct influence on actual system use. At the same time, he found that system characteristics could directly influenced the attitude of a person toward using the system, without the need for the person to form an actual belief about the system.

Now Technology acceptance model (TAM) is generally considered as the most influential and common theory in information systems field (Lee et al., 2003), and has received through the affluent empirical supports. Lee et al (2003) explains that in over the last 18 years TAM is models are popular and widely used in various studies regarding the adoption process of information technology.

Information Communication and Technology

ICT refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication medium it also includes computers, middleware as well as necessary software, storage and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In the past few decades, information and communication technologies have provided society with a vast array of new communication capabilities. For this reason, ICT is often studied in the context of how modern communication technologies affect society. Another view describes effectiveness as as measure of how well an organization achieveness its objectives (Soh & Markus, 1995). Competitiveness refers to the use of IT to change the way

business competes in an industry (Palmer & Summer, 2005). It relates to how an organization performs externally. Competitiveness also can be described as a dynamic concept of measurement that transcends the boundary of efficiency and effectiveness (Galliers 1993; Galliers and Bacts 1998).

This implies competitiveness may include efficiency and effectiveness although it can also be used as separate measures. ICT also plays a role in the accounting field. Statement of Financial Accounting Concept No.2, the Financial Accounting Standards Board defines accounting as an information system. Financial accounting standard also states that the primary purpose of accounting is to provide information for decision makers. Information system will provide for ease of management accountants to produce financial information that can be trusted, relevant, timely, understandable and tested so that will help make decisions. American Institute of Certified Public Accountants (AICPA) recently has made a new certification is Certified Information Technology Professional (CITP). CITP systems expertise to document the accountant is an accountant who has extensive knowledge in technology and an understanding of how information technology can be used in a variety of organizations. This reflects the with accounting.

Micro, Small, and Medium Enterprises

The ministry of cooperation and SME of Indonesia defines micro and small enterprises as firms with total assets up to Rp. 200 Million (US \$ 22,500) excluding land and building or the total annual sales are not more than Rp.1 Billion (US \$ 112,700). While the medium enterprises are firms with total assets more than Rp. 200 Million but not exceed Rp. 10 Billion (US \$ 1.127 million) excluding land and buildings. While according to UU No. 20 on 2008, the criteria of small enterprises are: (1) Total assets are between Rp. 50 Million until Rp. 500 Million and it is not included land and building to operate. (2) Net sales between Rp. 300 Million until Rp. 2.5 Billion. While the criteria of medium enterprises are: (1) Total assets are between Rp. 500 Million until Rp. 10 Billion and it is not included land and building to operate. (2) Net sales between Rp. 2.5 Billion until Rp. 50 Billion.

The World Bank has more concise classification of MSME based on number of employee, total asset and annual sales. Micro enterprises are firms with total assets less than \$ 100,000, total sales less than \$100,000 and employ less than 10 persons. Small enterprises are firms with total assets or annual sales between \$100,000 up to \$ 3 Million and employ 10–50 persons. Medium enterprises are firms with total assets or annual sales more than \$ 3 Million up to \$ 15 Million and employ more than 50 up to 300 persons.

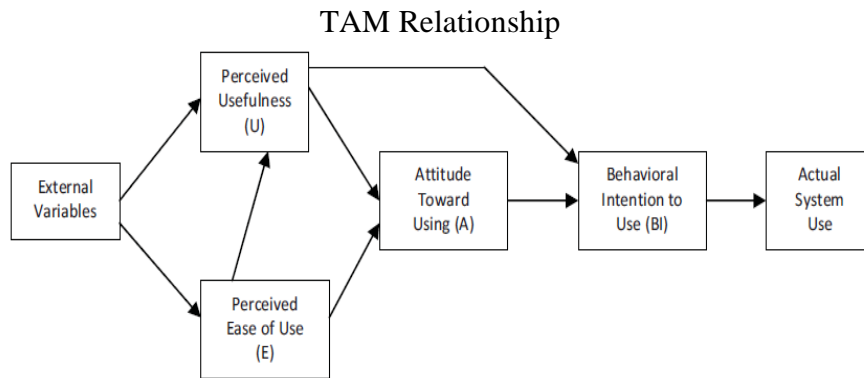


Figure 1 New relationship formulation in TAM
Source: Davis (1993)

Table 1.
Classifications of MSMEs by Government of Indonesia and World Bank

Government of Indonesia			World Bank			
Classification	Sales	Assets	Classification	Sales	Assets	Employment
Micro	< Rp. 1 Billion	Rp. 200 Million	Micro	< USD 100.000	< USD 100.000	< 10 persons
Small	< Rp. 1 Billion	Rp. 200 Million	Small	USD 100.000- USD 3 Million	USD 100.000- USD 3 Million	10-50 persons
Medium	> Rp. 1 Billion	Rp. 200 Million-Rp. 10 Billion	Medium	USD 3 Million- USD 15 Million	USD 3 Million- USD 15 Million	50-300 persons

Source: Rudjito (2003)

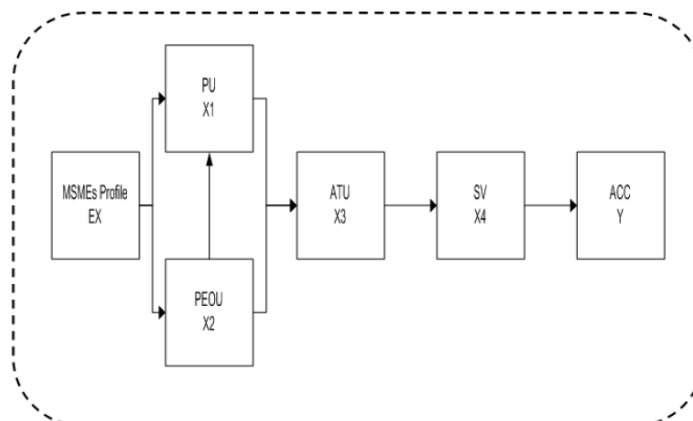


Figure 2 Conceptual Framework
Source: Researcher (2011)

While China's government has their own classifications of MSMEs

Based on the tentative classifications standards on the small and medium sized

enterprises, National Bureau of Statistics of China on 2003 defines classifications of SMEs into 7 types and from 3 aspects such as; payroll, annual revenue and total assets. The first one is industry if the industry has employee under 300 persons, annual sales below 3000 RMB / US \$ 476 and total assets is below 4000 RMB/ US \$ 634 then it categorized into small enterprises. If the employee is between 300-2000 persons, annual sales 3000 RMB – 30.000 RMB and total assets 4000 RMB- 40.000 RMB then it categorized into medium enterprise.

Hypothesis of Research

This research aimed to analyze the ICT adoption within MSMEs by using TAM method, because this method is widely used to analyze the adoption of ICT in a company. Picture 2 showed the research framework of this research.

Hypothesis 1:

Ho 1: Perceived Ease of ICT Use-PEOU not influence the Perceived Usefulness of ICT-PU

Ha 1: Perceived Ease of ICT Use-PEOU influence the Perceived Usefulness of ICT-PU

Hypothesis 2:

Ho 2: None of Perceived Ease of ICT Use-PEOU and Perceived Usefulness of ICT-PU influence the User Attitude Towards ICT-AT

Ha 2: One of Perceived Ease of ICT Use-PEOU or Perceived Usefulness of ICT-PU influence the User Attitude Towards ICT-AT

Hypothesis 3:

Ho 3: None of Perceived Ease of ICT Use-PEOU, Perceived Usefulness of ICT-PU and User Attitude Towards ICT-AT influence the Strategic Value of ICT-SV

Ha 3: One of Perceived Ease of ICT Use-PEOU, Perceived Usefulness of ICT-PU

and User Attitude Towards ICT-AT influence the Strategic Value of ICT-SV

Hypothesis 4:

Ho 4: None of Perceived Ease of ICT Use-PEOU, Perceived Usefulness of ICT-PU, User Attitude Towards ICT-AT and Strategic Value of ICT- SV influence the User Acceptance towards ICT-ACC

Ha 4: One of Perceived Ease of ICT Use-PEOU, Perceived Usefulness of ICT-PU, User Attitude Towards ICT-AT and Strategic Value of ICT- SV influence the User Acceptance towards ICT-ACC

Hypothesis 5

Ho 5 : The independent variables simultaneously not influence the dependent variable

Ha 5 : The independent variables simultaneously influence the dependent variable

Hypothesis 6:

Ho 6: There are no different of ICT adoption by MSMEs in Depok and Qingdao

Ha 6 : There are different of ICT adoption by MSMEs in Depok and Qingdao

RESEARCH METHOD

Object of Research

The object of this research is ICT adoption within MSMEs use TAM by using perceived ease of ICT use-PEOU, perceived usefulness of ICT -PU, user attitude towards ICT-AT, strategic value of ICT-SV and user acceptance towards ICT-ACC and the research units are the 46 MSMEs in Depok, West Java and 7 MSMEs in Qingdao, North China and all of the objects are using ICT.

Method of The Research

In this research the researcher uses descriptive and verification method.

Population and Sampling

This research uses non probability sampling which is purposive sampling method because the object of research is only MSMEs nearby the researcher's campus whether in Depok and Qingdao. This research used 53 samples of respondents which consist of 46 MSMEs in Depok and 7 MSMEs in Qingdao.

Operational Variables

This research contain of 5 independent (X) variables and 1 dependent variable (Y). Dependent Variable (Y) contains IT usage in MSMEs in Depok and Qingdao.

While Independent Variable (X) in this research are:

1. Perceived Ease of ICT Use (PEOU) Perceived ease of ICT use is the degree to which a person believes that using a system would be free of effort.
2. Perceived of ICT Usefulness (PU) Perceived of ICT usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance.
3. Attitude towards ICT (AT) User attitude towards ICT is the way of user re-acts at the ICT. In this step the users will decided to accept or reject the ICT.
4. Strategic Value of ICT (SV) Strategic value is the impact of using ICT to the MSMEs. The Ordinal categories are divided into 3 which are efficiency, effectiveness and competitiveness. The indicators obtained from the two variables are set forth in a list of questions (questionnaire) using likert scale with the form of closed questionnaire and directed survey.

RESULT AND DISCUSSION

The influence of PEOU to PU

Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance". The definition of perceived usefulness is

based on the expectancy-value model underlying the Theory of Reasoned Action. Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort". Many other researchers find no empirical evidence to support the relation between perceived ease of use and perceived usefulness (Chau and Hu, 2001; Bajaj and Nidumolu, 1998; Hu et al., 1999; Jackson et al., 1997; Subramanian, 1994). This research also supports many previous researches that PEOU has no correlation to PU. The unit research in this research is MSMEs in Depok and Qingdao, as we know and realize that the role of ICT in this recently years has becoming more important in our daily life from formal sector to informal sector it is also included in micro, small and medium enterprises. This research finds that PEOU not influence PU it means that user friendly factor is not the reason of MSMEs adopt ICT in their business. The real phenomenon that happens in MSMEs in Depok and Qingdao is they already able to operate ICT but they think adopting ICT will cost a lot of capital investment considering the expensive price of ICT devices.

The Influence of PEOU and PU to AT

This research finds that only PU influences the AT. Attitude toward using technology refers to an individual's overall affective reaction to using a system (Venkatesh et al., 2003). The TA models posit that perceived usefulness is the strongest predictor of an individual's intention to use an information technology (Davis, 1989; Venkatesh and Davis, 2000; Venkatesh et al., 2003). Yananto and Ediraras on 2008 also found that PU is significantly influence the AT. In this research most of the MSMEs owners in Depok and Qingdao feel easy to operate ICT but this research proof that the easiness to use ICT is not

the key factor of MSMEs in Depok and Qingdao to adopt ICT as the discussion of the influence of PEOU to PU. But this research finds that if MSMEs want to adopt ICT in the future the key factor is the usefulness of ICT. This research finds that most of the MSMEs already considered the function of ICT moreover in the future.

The Influence of PEOU, PU and AT to SV

This research finds only PU influence on SV. The strategic value means how far the ICT adoptions help to increase the effective, efficiency and competitiveness of the MSMEs. Earl (1989) suggests that the impact of IT can be divided into three categories: those designed to obtain efficiency, those design to promote competitiveness. The definition of efficiency is described by Carlson and McNurlin (1992) as a concept which relates to the question of how an organization performs internally and the measure of efficiency are, seeks to ensure that maximum output is obtained from a minimal level of IT resources. This research finds that only PU influence on SV, Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance”. In this research MSMEs in Depok and Qingdao that already used ICT in their business feel that by using ICT able to enhance their job performance and also give them strategic value like make budgeting, doing administration and financial activities, and stock opname.

The Influence of PEOU, PU, AT and SV to ACC

ACC is an individual’s positive or negative feelings about performing the target behavior. In this research MSMEs in Depok and Qingdao feel that using ICT is useful like; budgeting, doing administration and financial activities

and stock opname, they have a positive interest to adopt ICT that is why they are using ICT.

The objective of this research is to give a real portrait of ICT adoption by MSMEs in Depok and Qingdao by using TA method. The Independent variables are: PEOU, PU, AT, SV and the dependent variable is ACC. And the results of this research are:

1. PEOU not influence PU it means that user friendly factor is not the reason of MSMEs adopt ICT in their business. The real phenomenon that happens in MSMEs in Depok and Qingdao is they already able to operate ICT but they think adopting ICT will cost a lot of capital investment considering the price of ICT devices.
2. PU influence AT, this research finds that if MSMEs want to adopt ICT in the future the key factor is the usefulness of ICT. This research finds that most of the MSMEs already considered the usefulness of ICT moreover in the future.
3. This research finds that PU influence to SV. MSMEs in Depok and Qingdao that already used ICT in their business feel that by using ICT they able to enhance their job performance and also give them strategic value like make budgeting, doing administration and financial activities, and stock opname.
4. In this research MSMEs in Depok and Qingdao feel that using ICT is useful like; budgeting, doing administration and financial activities and stock opname so that they have a positive = interest to adopt ICT.
5. Simultaneously perceived ease of ICT use, perceived of ICT usefulness, attitude towards ICT, strategic value of ICT influence the user acceptance of using ICT.
6. There is different of ICT adoption among MSMEs in Depok and Qingdao, this research finds that ICT adoption within MSMEs in Qingdao is better than MSMEs in Depok. This result also

supported by the internet users in 2011 by World Bank, it describes that the number of internet users in China is 460,077,957 users while in Indonesia is 21,828,255 users.

CONCLUSION AND SUGGESTION

Based on the result of this research can be concluded that MSMEs in Depok and China have a good interest of adopting ICT and they already consider the role of ICT to support their business operation. This research also finds that MSMEs in Depok lag behind in ICT adoption than MSMEs in Qingdao and it is also supported by the number of internet users among China and Indonesia it is because most of the MSMEs in Depok have financial problem to adopt ICT consider relative expensive.

The key factor of ICT adoption within MSMEs in Depok and Qingdao is the usefulness of ICT itself. So that the government of Indonesia especially ministry of telecommunication and information and also ministry of trades and the ministry of cooperation and SME of Indonesia have to start to socialize that ICT adoption is considered to be important for MSMEs in this global era. And for education institution especially Gunadarma University because it is IT based University and it has open source community so that it can help to make a handmade system that applicable for MSMEs in Depok with associations of local government.

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