Journal of Economics, Business, and Accountancy Ventura Volume 16, No. 1, April 2013, pages 13 – 26
Accreditation No. 80/DIKTI/Kep/2012

MODEL OF IT ADOPTION FOR INCREASING THE MSME'S COMPETITIVE ADVANTAGE

Nurhadi
University of Pembangunan Nasional "Veteran" Jawa Timur
E-mail: nurhadi_aburoyyan@yahoo.com
Rungkut Madya Street, Gunung Anyar, Surabaya, 60294, East Java, Indonesia

ABSTRACT

In the emerging global market context, the adoption and use of information technology (IT) is widely seen as critical for the competitiveness of Micro, Small and Medium Enterprises (MSMEs). This study aims to describe: the degree of IT adoption; the reasons to use IT; the inhibiting factor of IT adoption; and the pattern of IT adoption for MSMEs. This study is a descriptive research. The population is MSMEs registered in the Bag and Suitcases Industry Cooperative (INTAKO) Sidoarjo. Sampling method was a purposive sampling. Data was collected using interview technique and questionnaire, than analyzed by the descriptive statistical techniques. The results show that the adoption of IT for MSMEs is relatively low. The main reasons for MSMEs to adopt the IT are the benefits of IT to increase company competitiveness and performance and the encouragement of external factors. The inhibiting factors for MSMEs to adopt IT are cost and human resources constraints, and the complexity of IT. Four factors determining the IT adoption for MSMEs are individual characteristics, characteristics of technology, corporate context and environmental context. Furthermore, the low degree of IT adoption of MSMEs lead the IT adoption can not provide a significant improvement of the enterprise competitiveness.

Key words: *Adoption, Information Technology, Competitiveness.*

MODEL ADOPSI TEKNOLOGI INFORMASI DALAM RANGKA MENINGKATKAN DAYA SAING USAHA MIKRO KECIL DAN MENENGAH

ABSTRAK

Dalam konteks pasar global, penerapan teknologi informasi (TI) dalam perusahaan dapat dipandang sebagai masalah penting khususnya bagi bisnis Usaha mikro, Kecil dan Menengah (UMKM). Penelitian ini menguraikan tingkat adopsi TI, alasan memakainya, faktor penghambat, dan pola adopsinya. Penelitian ini merupakan penelitian deskriptif dengan populasi UMKM yang terdaftar di Koperasi Industri Tas dan Kopor (INTAKO) di Sidoarjo. Data dikumpulkan dengan purposive sampling dan interview serta kuesioner, kemudian dianalisis secara deskriptif. Hasilnya menunjukkan bahwa adopsi TI masih rendah. Alasan utama UMKM mengadopsi TI adalah manfaatnya untuk meningkatkan daya saing, kinerja dan karena dorongan faktor eksternal. Faktor penghambatnya adalah faktor biaya dan hambatan SDM serta kompeksitas TI. Empat faktor penentu adopsi TI adalah karakteristik individu, karakteristik TI, konteks perusahaan, dan konteks lingkungan. Tingkat adopsi TI yang rendah di UMKM tidak bisa memberikan peningkatan daya saing yang signifikan.

Kata Kunci: *Adopsi, Teknologi Informasi, Daya Saing.*

INTRODUCTION

Micro-Small and Medium Enterprises (MSME) have provided a great contribution to the Indonesian economy. The have influenced the economic activity for SME population that reaches 49.8 million, representing 99.99 percent of the total units in Indonesia with the total of 49.845 million as presented in Table 1.

In the global market, the adoption and use of information and communication technology is widely regarded as critical for the competitive advantage of SMEs (Dyerson R, et al. 2009). It is obvious that Information Technology (IT) can be a very useful tool for management associated with the monitoring functions. This function includes four things, namely planning, measurement, comparison, and evaluation (Kadocsa 2006). According to Budi Hermana (2005), the condition of information technology in Indonesia still relatively lagging compared with other countries. More specifically Fathful and Linda (2007) argue that the adoption of IT by SMEs is still low compared to large companies. Being lack of understanding the strategic role of IT related to new marketing approaches, dealing with customers, or even the development of products and services is believed to be the cause of the low adoption of IT by SMEs.

Ghobakhloo et al. (2011) stated that IT can provide to SMEs competitiveness through integration between supply chain partners and functions across the organization, as well as through the provision of critical information. However, IT literature has previously shown that there are a small number of researches focusing on the adoption and use of IT in SMEs. Furthermore, it was found that despite the growth of IT in SMEs is exponential, the degree of adoption by businesses is also still relatively low.

Some industries of bags and suitcases such as the icons Tanggulangin Sidoarjo are considered to have experienced travel slump caused by several things, including the financial crisis, a flood of Chinese products, and the indirect effects of the Lapindo mudflow disaster. A study of IT adoption models is therefore, required for improving the ability of SMEs to adopt the IT. By doing so, they can enhance the competitive advantage.

THEORETICAL FRAMEWORK

Micro, Small and Medium Enterprises

According to the Law of the Republic of Indonesia Number 20 Year 2008 on Micro, Small and Medium Enterprises (MSME), the criteria for MSME are as the following.

Micro Criteria are as follows: (1) They have a net worth of at most Rp50,000,000.00 (fifty million rupiahs) excluding land and buildings, or (2) They have annual sales Rp300,000,000.00 (three hundred million rupiahs).

Small criteria are as follows: (1) They have a net worth of more than Rp50,000,000.00 (fifty million rupiahs) to the most widely Rp500,000,000.00 (five hundred million rupiahs) excluding land and buildings, or (2) They have annual sales of more than Rp300,000,000.00 (three hundred million rupiahs) through most Rp2,500,000,000.00 (two billion five hundred million rupiahs)

Medium Criteria are as follows: (1) They have a net worth of more than Rp500,000,000.00 (five hundred million rupiahs) to the most widely 10,000,000,000.00 (ten billion dollars) not including land and buildings, or (2) They have annual sales of more than Rp2,500,000,000.00 (two billion five hundred million rupiahs) to the most widely Rp50,000,000,000.00.

The Use of IT

As described by Ferrer (2009), Information and Communication Technology (ICT) has been considered a vital part of economic growth and social development. Like Ferrer, other researchers in the field of ICT development also have the same opinion. For example, Mira Kartiwi (2006) found that IT has a very important role in an organization.

More specifically the role of IT is also proposed by Chen and Tsou (2007) arguing

Table 1
Number of Businesses in Indonesia based on Business Scale 2006 and 2007

No	Scale	2006	2007
1	MSME	48,779,151	49,840,489
2	Large Business	4,398	4,527
	Total	48,783,549	49,845,016

Source: BPS (2008).

that today, more companies have invested their fund in IT development to suit the business strategy. This is due to the fact that IT allows the operation of the company's innovation and provides a wider corporate network.

The above mentioned companies have done efforts to accelerate the adoption of IT in managing customer relationships change, manufacturing, supply, supply chain, and other major events, as well as to increase their competitive advantage. Other proponents, Alamro and Tarawneh (2011) asserted that the implementation of cutting-edge technology, the use of ICT and E-Commerce in SMEs operating atmosphere has provided organizations with more opportunities.

Thus, IT and technological innovation has become a complex but cost and risk as the reciprocal business process changes. It is due to the high competitive pressures and the drastic and rapid changes of the technology itself. In this case, technology is an essential resource and is a sub-system of the organization. Thus, technology has critical implications for competitiveness and long-term profitability. To survive and excel in the competitive market, companies need to pay attention and be able to gain the advantage of the technological opportunities to support business strategies and improve operations and services. In this case, the success of an organization or company is partly determined by the responsiveness and adaptability to technological innovation (Higa et al. 1997).

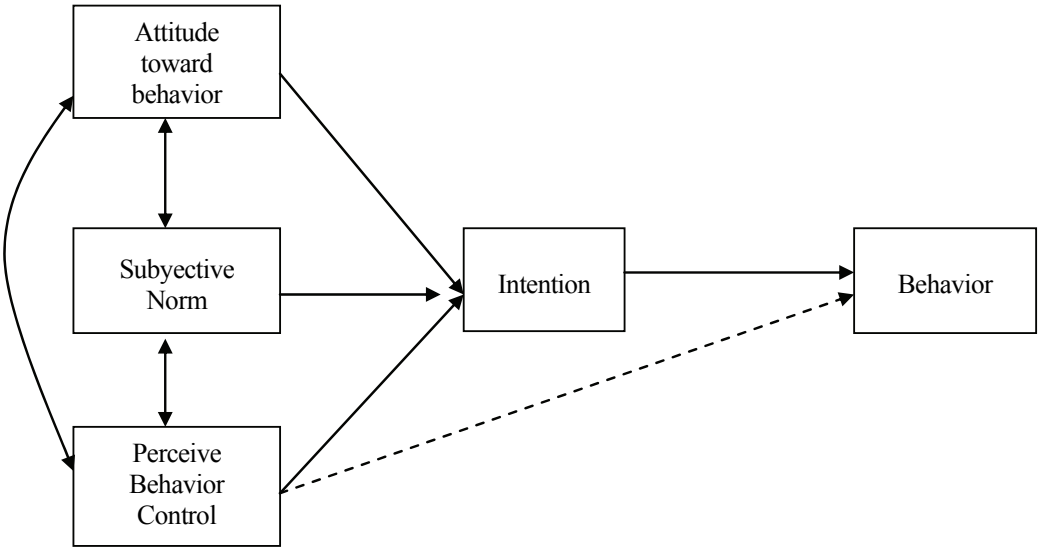
Marthandan and Chun (2010) stated that while advancing the IT dramatically, the companies have progressed through a variety of capacities and facilities, from the era of data processing shifts to the era of strategic information systems efficiency. These are still no longer sufficient to describe the true business value of IT. Maguire and Magrys (2007) also assert that in the current business environment, the use of information systems and IT can effectively provide opportunities for SMEs to take advantage of information processing.

The above arguments are also supported by Khong et al. (2009) that, in the long run, IT and information system can provide tremendous benefits for the company. Apulu and Latham (2011) assert that in the current knowledge-based economy, it is important for SMEs to adopt a process that allows SMEs to provide a service that will bring competitive advantage. It is due to the fact that ICT has a significant positive impact on the performance of the organization and is vital for SMEs. It is impossible for modern businesses to not use ICT, as ICT has a significant impact on the operations of SMEs and is claimed to be very important for the survival and growth of the economy in general. ICT provides opportunities for business transformation and give SMEs the opportunity to do business anywhere.

Factors Enhancing the Use of IT

Some factors affect companies to adopt an IT. Nguyen (2008) cited the most common reason for the adoption of IT is to provide a means for survival and/or enhance growth, and improve competitiveness. In addition on Alam and Noor (2009), ICT adoption is considered a way of enabling the business to compete on a global scale with better efficiency and relationships with customers and suppliers more closely. In this effort, SMEs should consider the ICT as an important approach in their business to gain a competi-

Figure 1
Theory of Planned Behavior



Source: Ajzen (1991).

tive advantage in the global marketplace. Moreover, ICT is an SME resource that can help them to access and contribute to improving competitiveness.

The reasons why some SMEs might not use IT according Fathful and Linda (2007) is that they think it cannot provide to them. This is consistent with the Innovation Diffusion Theory states that the compatibility of IT to the needs of SMEs to be one determinant of adoption. Other reasons were raised with regard to cost constraints and human resource capacity needs attention. In this context, the company became one of the evident complexity barriers of IT adoption by SMEs in Indonesia.

Although the price is getting cheaper and affordable for the majority of SMEs, it is still an expensive item. Khasawneh and Huda (2008) revealed that in the country is growing, underdeveloped economies, limited resources and infrastructure are some of the factors that contributed to the slow adoption of the technology.

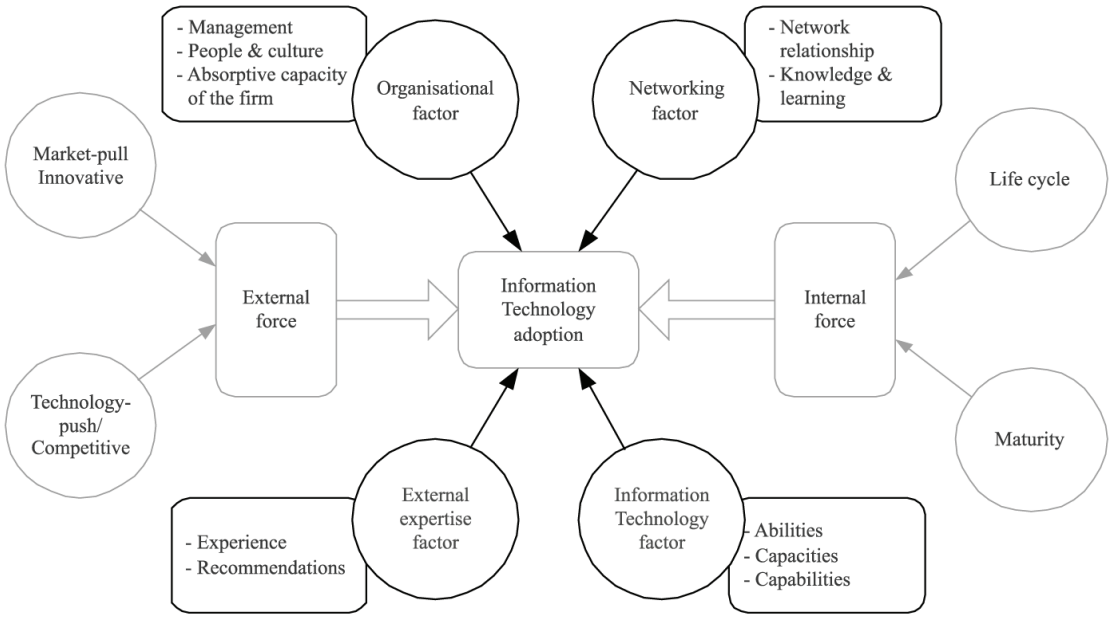
Theory of Planned Behavior (TPB)

In this theory, it is argued by Ajzen (1991) as shown in Figure 1, that Theory of Planned Behavior (TPB) is an extension of the Theory of Reason Action (TRA) as introduced by Fishbein & Ajzen, due to the limitations of the original model associated with the behavior in which people have control of the will. As in the original TRA, a central factor in the theory of planned behavior is the individual's intention to produce a certain behavior.

In the instances above, intentions are assumed to capture the motivational factors that influence a behavior. It also indicates the way individual tries hard to try and exert efforts in order to implement a behavior. As a general rule, the stronger the intention to engage in the behavior, the more likely an individual enhances his performance. Thus, it is clear behavioral intention can find expression in behavior only if the behavior in question is under the control of the will, that is, whether a person can decide to do or not do the behavior.

Even though some behavior is actually good to do, the results might be strongly influenced by non-motivational factors such as the availability of the necessary opportunities and resources (e.g. time, money, skills, and cooperation of others). All these factors represent control over behavior someone, to the extent in which a person has the opportunity and the resources required and intend to perform the behavior, he will perform the behavior.

Figure 2
IT Adoption Model by SMEs



Source: Nguyen (2008).

Technology Adoption Model for SMEs

The model can be referred to Uwizeyemungu and Raymond (2011) stating that the successful implementation of a new IT depends on the capacity of the organization to implement the project implementation as well as integrate the changes associated with the new system, the readiness of the organization. Further, it is stated that, when some of these success factors identified, it can all be put into one of three categories of framework-Technology-Environment Organization (TOE). Therefore, the process of adoption and implementation of technological innovations made by the company is affected by the context of technology, organization and environment.

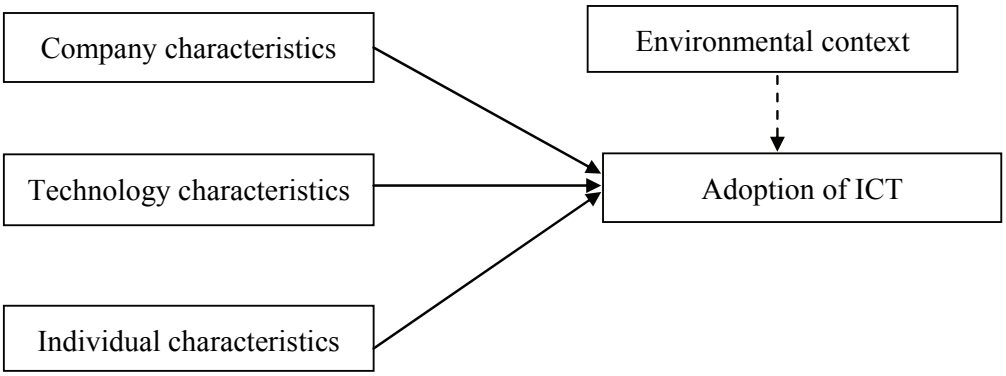
The above argument is supported by Skoko et al. (2006) suggesting that some factors of adoption of IT or ICT in the SMEs have helped in identifying the context that may affect adoption by SMEs. These factors can be categorized into factors associated with; a. context of technology, b. organization, c. environment, and d. individuals. Tektas et al. (2008) revealed that most SMEs face challenges in the adoption and use of innovations. The capacity of ICT adoption provides a starting point for SMEs to take advantage of innovation. A unified model of a study about the adoption of IT for SMEs was also developed by Nguyen (2008) as shown in Figure 2.

In general, it can be asserted that the adoption of IT by SMEs is affected by two forces: the internal forces and external forces. Internal strength is reflected in the position of the current lifecycle of SMEs and SME's as well as the level of their maturity. On the contrary, the degree of external force is determined by how big the market demands for innovative business activities as well as how big a boost in IT makes it easy to improve competitiveness. In addition to these two major powers, the four things that will determine the adoption of IT for SMEs are such as organizational factors, networking, external skills and information technology.

Conceptual Framework

Some theories as described earlier indicate that the adoption of IT for a business organization, especially the MSMEs is influenced by some factors as shown in Figure 3. These factors can be categorized into four factors, namely: a. Characteristics of the company,

Figure 3
Conceptual Framework



b. Characteristics of Technology, c. Individual Characteristics, and d. Environmental Context.

RESEARCH METHOD

Research Design

As stated in the objectives, this is a descriptive study, in which, the researchers attempt to test the hypothesis, but merely describes the phenomenon of IT adoption by the MSMEs. In addition, the researchers use exploratory approach as this study seeks to find early ICT information technology adoption among MSMEs.

Operational Definition and Measurement of Variables

The variables used in the testing include characteristics of the company. This variable describes the current condition of the company with several indicators, namely, firm age, total employment and sales turnover per year. The next is the characteristics of technology. This variable is a portrait of the suitability of IT for SMEs with several indicators such as the suitability of information technology in facilitating, accelerating and supporting the work.

Besides such variables, this study also tests the individual characteristics. This has several indicator variables, namely: gender, age and education level of the head. The environmental Context that is the variable related to the situation and environmental conditions outside the company to support SMEs to use information technology. These variables include the availability of information technology consultant, and the degree of government support in the process of technology adoption

The next one is technology adoption. This variable is the embodiment of all phases of the activities carried out by SMEs in using information technology. This variable has a single indicator, namely variability of IT utilization.

Population and Sampling Techniques

The MSMEs are all that have been registered as members of Industrial Cooperative Bags and Luggage (INTAKO) in industrial centers Tanggulangin bags and suitcases in Sidoarjo. The total number of MSMEs leather on Cooperative INTAKO was 307. The sampling technique used in this study purposive sampling techniques, taking into account the following requirements:

1. Employers who have employees' ≤ 99 people
2. It has a wealth of ≤ 10 billion, excluding land and buildings: or having an annual sales turnover ≤ 50.000.000.000.
3. Entrepreneurs act as the main manager that has responsibility for the success or failure of the business.

The sample determination is domne by using Slovin Formula as the following.

$$n = \frac{N}{N \cdot d^2 + 1}, \quad (1)$$

where:

n : sample number
N : population number

Table 2
Use of ICT by MSMEs in Business Operation (n=76)

Use of ICT		Percentage
Computers :		32.9%
1	Typing	10.5%
2	Counting	15.8%
3	Accounting application	7.9%
4	Design Process	18.4%
5	Sales transaction	13.2%
Internet		39.5%
1	Market information	23.7%
2	Design Information	28.9%
3	Promotion media	13.2%
4	Communication	10.5%
5	Online transaction	13.2%

Source: Processed data.

Table 3
IT Adoption based on MSMEs Characteristics (n = 76)

Company Characteristics		Percentage	
		Computer	Internet
Age of Company	< 5 years	35.3%	35.3%
	5 – 15 years	26.1%	34.8%
	> 15 years	36.1%	44.4%
Total Employees	< 5 people	17.0%	25.5%
	5 – 49 people	56.0%	60.0%
	≥ 50 people	75.0%	75.0%
Per year Turn Over	< 300 million	20.5%	28.2%
	300 million – 2.5 billion	40.9%	48.6%
	> 2.5 billion	100%	100%

Source: Processed data.

d : sampling error. (Husein Umar 2004)
Thus, the total of the sample is 76 MSMEs.

Data Collection and Analysis
The data were collected through some ways such as (1) Interview, (2) Questionnaire. These were analyzed using descriptive statistical analysis techniques.

DATA ANALYSIS AND DISCUSSION

Adoption of IT
The intensification of IT adoption by SMEs appears to be indicated by the percentage of use of computers and the Internet in the company's operations. Table 2 shows that the use of computers in business activities by SMEs involved only 32.9% of business units. Each of SMEs uses computers in the company operational activities. They mostly used it to aid the design process, the rest of them use computers to help sales transaction, typing, and accounting application purposes.

On the other side, the use of IT, especially the Internet by MSMEs is to support the company's operations a bit higher that is 39.5%. The use of internet is to support the company's activities in which it is not done using their own computers. They could rent in the internets cafe around them to save costs. In generally, they use internet to support the business operations in order they seek information about the product design, market information for promotion, for communication with customers or business partners.

Table 4
Reasons MSMEs to Adopt IT (n = 76)

	Reasons	Agree
Increasing Competitive Advantage		
1	Extend market segment	90.8%
2	Customer service improvement	92.1%
3	Accelerate Market response	75.0%
4	Increasing sale	78.9%
Performance Improvement		
1	Information quality	78.9%
2	To ease transaction process	72.4%
3	Customer relationship	68.4%
4	To make the marketing cost efficient	39.5%
External Driving Factors		
1	Business partners	65.5%
2	Competition demand	65.8%
3	Customer expectation	55.3%

Source: Processed data.

The distribution of IT adoption by SMEs characteristics is shown in Table 3. Although using internet is not identical to using computer, the distribution of internet usage by the companies characteristics show a pattern that is not much different from the distribution computer usage. The use of computers is increasing due to older companies, number of employees, and the turnover of the company.

The higher the number of employees is, the higher the resources owned is. As a result, the company has even greater capabilities. This finding is consistent with research on the use of ICT by SMEs conducted by Acar et al. (2005) which indicates that the size of the organization is one of the organizational characteristics that influence the adoption of IT.

Reasons for Adopting IT

IT application in a company can provide benefits to improving the competitiveness of enterprises. As shown in Table 4, the managers of the company in general realize that the use of IT can help increase their competitive advantage. The respondents mostly suggest that IT can increase the competitiveness of enterprises in the form of expanding market opportunities, improved customer service, increase market responsiveness and sales is the reason for SMEs to adopt IT.

The results of this study support the research by Budi Hermana (2005) who concluded that IT is viewed as a medium to obtain knowledge and information as well as tools to carry out business processes. IT adoption can drive the pace of innovation. The goal of the pace of innovation is increasing the performance as one indicator of the competitiveness of enterprises.

The highest percentage of the reason using IT is to improve the quality of customer service that is 92.1%.. They think that it is important factor in enhancing the competitiveness of enterprises. Such evidence supports the research by Arief Rahmana (2009) which states that the use of IT for SMEs is to increase productivity which ultimately leads to an increase in the competitiveness of enterprises. One strategy to improve the competitiveness of enterprises is the use of IT. With the utilization of IT, the companies can increase export opportunities. One of the main reasons for the company's use of IT is also to improve company performance. The managers of the company in general understand that the use of IT for the company is to help improve their business performance.

Most of the managers perceive that one of the reasons why companies need IT is due to the company's IT that improves the qual-

Table 5
Factors Hindering IT Adoption (n = 76)

	Hindering Factors	Agree
Cost Constraint		
1	Initial Investment Cost	60.5%
2	Maintenance Cost	56.6%
3	Limited Fund	68.4%
Human Resource		
1	Limited Knowledge	60.5%
2	Limited Technical Skill	57.9%
IT Complexity		
1	Program is difficult to learn	53.9%
2	Program is difficult to operate	56.6%
3	Limited manuals	60.5%

Source: Processed data.

ity of information for the leaders, to help process sales transactions and to improve relationships with customers. The empirical evidence reinforces research that one of the reasons that encourage the adoption of IT for SMEs is the perception of the benefits of IT (Kannabiran and Dharmalingam 2012).

Yet, only a small number of the respondents agree that the use of IT can reduce the cost of marketing. One of them is caused by the conventional offline sales which still dominates the sales process for almost all SMEs. Few of them do the business by sales online system. This finding is consistent with studies of adoption of e-commerce for SMEs in Vietnam that was done by Huy et al. (2012) who found that perceptions of the relative benefits of e-commerce for decreasing cost does not provide a significant role in the adoption of e-commerce for SMEs in Vietnam.

In this context, the process of IT adoption can not be separated from the external influence which provides inspiration for the managers of the company for using IT. Table 4 indicates that most respondents agree that some external factors are factors that can be a driving force for SMEs to adopt IT. Of the three factors, the demand of the competition is the driving factor that has the greatest percentage (68.1%) compared to other factors that boost a business partner and customer expectations, which is relatively lower.

The evidence above reinforces the results of research on the determinants of adoption of e-market for SMEs in Australia finding that external factors that boost business partner and competitor pressure are the factors which significantly influence the adoption of e-market for SMEs in Australia (Duan, Deng and Corbitt 2012).

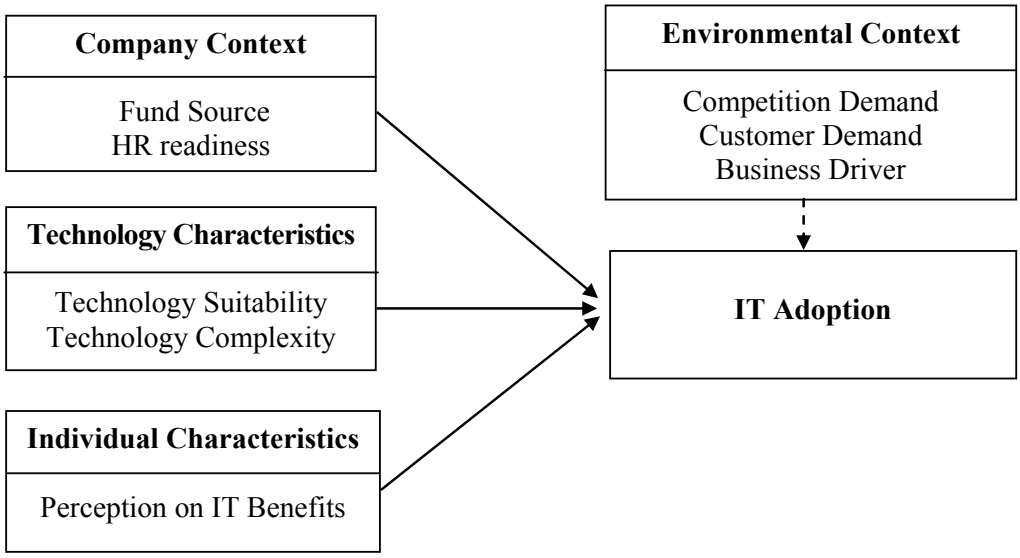
Factors Hindering IT by SMEs

One of the factors hindering the adoption of IT is cost constraints. Table 5 shows that, in general, cost constraints is a constraint for SMEs to implement IT. The cost constraint is considered as factor hindering the adoption of IT that is the limited amount of funds allocated by the company. This is the biggest factor by the number of respondents reaching by 68.4%.

The finding above reinforces the results of research on IT adoption obstacles of e-business in Pakistan by Syed (2012) which concludes that one of the obstacles to adopt IT is the lack of financing. The SMEs do not have sufficient funds to invest in information and communication technology.

IT is a tool that is used to assist people in fulfilling their job efficiently and effectively. Therefore, the adoption process depends heavily on human resources to operate or benefit the technologies. Table 5 shows that most respondents (60.5%) agreed that the lack of knowledge of employees is one of the factors hindering the IT adoption for SMEs. In addition, in terms of technical expertise, most of the respondents (57.9%) also

Figure 4
IT Adoption Pattern by MSMEs



agreed that the limitations of these skills can be the obstacle in IT adoption.

The evidence above supports the results of research in Nigeria which identified a lack of expertise of the employees as a factor that contributes to the obstacle in the process of IT adoption for SMEs in Nigeria (Apulu, Latham and Moreton 2011). The simplicity of the technology for users can therefore help to facilitate its operation. So, IT can also be a barrier for the companies when it is viewed as a complex tool to use.

Table 5 shows that the majority of respondents' complexity towards is a factor that could hinder the IT adoption. The limited manual book of IT is even the most crucial factor to be considered by the respondents with the percentage of 60.5%. The result supports the research about the determinants of adoption of e-commerce in SMEs in Vietnam by proving that the complexities of technological innovations negatively affect the adoption of e-commerce, means complexity of technology as a constraint for SMEs to adopt e-commerce (Huy et al. 2012).

IT Adoption Patterns for MSMEs

The IT adoption which is done in a company is a very complex process. In order to enhance the competitiveness of enterprises, the adoption of information technology in an SME based on several factors. Based on the analysis of data related to information technology adoption based on characteristics of SMEs, analyzes data on the reasons that drive the adoption of information technology as well as factors inhibiting the adoption of information technology for SMEs, so in this study identified several factors that determines the adoption of information technology is the individual characteristics, the characteristics of technology, corporate context, and environmental context. This pattern of IT adoption of MSMEs is shown in Figure 4.

From Figure 4, it is clear that the first factor is the characteristics of the individual, the individual's background as decision makers who determine whether the company needs to make the adoption of IT or not. The level of education provides better insights for leaders in assessing the role of IT to improve the competitive advantage. In addition, an individual perception about the benefits of IT determines their attitude towards the adoption of IT. The second factor is the characteristics of IT. Conformity with the functions of IT operations is an important factor in the decision of adopting IT. The company should select technologies that can support the smooth and efficient operation of the organization. Similarly, most people will favor technologies that are not too complicated.

The company context is related to human resource readiness and preparedness of budget or financial resources to support the process of IT adoption. Readiness of human resources, especially the employees to operate the information technology is a very important consideration for SMEs to determine whether or not to adopt IT. Thus the IT adoption requires no small a lot of money for the cost of the initial investment and operating costs. The readiness of the company's budget for the IT adoption allocation is one of the important factors in determining the decision to adopt such IT in SMEs.

In the competitive condition, external factors in the organization are also crucial factors. Therefore, in order to enhance the competitiveness of the organization, both in terms of operating efficiency to reduce the cost, the design of the product conformity and the needs of consumers as well as to improve the quality of service to our customers must also be paid attention by the company. Such environmental context in this study relates to the demands of competition, customer demand, and boost business partners.

Discussion

It is evident that IT adoption for SMEs is still very low. They adopt IT for supporting their operational activities of the company which is less than 40%. This evidence reinforces the research by Fathful and Linda (2007) who found that the degree of IT adoption for SMEs in Indonesia is still very low. The analysis also reveals that the degree of IT adoption is parallel with the number of employees and annual turnover generated by the company. As such, the more the number of employees is and the greater sales volume is. The degree of IT adoption in that condition also increases.

Another empirical data also provides evidence that there are three reasons that encourage SMEs to adopt IT, the perception of the benefits of technology to improve the competitiveness of enterprises, the perception of the benefits of IT in improving the performance of the company as well as external factors outside the company. Every company must try to implement IT in their companies. For SMEs, they can benefit it from the ability of IT to help improve competitiveness and improve company performance.

The above finding supports research on the determinants of adoption of e-market for SMEs in Australia conducted by Duan et al. (2012) concluded that the benefits of direct positive effect on the adoption of e-market for SMEs in Australia. In addition to internal factors, SMEs also received encouragement and pressure from outsiders, namely competitors, business partners, and customers who have contributed to the consideration for SMEs to adopt information technology.

This study supports previous research that the most common reason for the adoption of IT is to be able to survive, enhance growth, and improve competitiveness and innovation (Nguyen 2008). Even though internal factors and external factors the companies are very strong, the adoption of IT will not automatically be done by the company. There are several factors that can hinder the IT adoption for SMEs. At least two factors were a barrier for SMEs to adopt information technology.

Factors hindering IT adoption are mainly composed of cost constraints and human resource constraints. For SMEs, the costs for the initial investment, the cost of maintenance of information technology and the limited amount of funding are becoming dominant for most SMEs. These findings support the results of the study and Linda Fathful (2007) who state that another reason that a barrier to IT adoption for SMEs are cost and capacity constraints related to human resources. These require attention.

Other four factors are identified in IT adoption such as individual characteristics, characteristics of the technology, the company context, and environmental context. An individual characteristic is associated with an educational background as well as the leader of the leader's perception of the benefits offered by information technology for the company. Characteristics of technology

refer to technology compatibility for companies as well as an ease to operate. The company context relates to the availability of financial resources and readiness of human resources to support the implementation of information technology.

The environmental context is an external factor that consists of tight competition, customer demand, and business partners to adopt information technology. Industrial bags and shoes in leather craft centers in Tanggulangin are manifested by business unit, mostly micro businesses with limited manpower and funding. Though most SMEs have sufficient educational background, good perception of the benefits of IT, as well as be aware of the external factors largely boost MSMEs to have such constraints such as, this HR readiness funding limitations.

Such evidence is in line with the previous research conducted by Fathful and Linda (2007) that there are four factors that determine the IT adoption for SMEs, the SME characteristics, strategies and competencies of SMEs, the influence of internal and external parties, as well as the characteristics of the technology. This study also supports research by Huy et al. (2012) who found that the IT adoption in particular e-commerce is influenced by the characteristics of the technology, organizational characteristics, and environmental characteristics.

CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The IT adoption for SMEs in the bags and suitcases crafts centers in Tanggulangin is relatively low. The IT adoption is is mainly done to create, design, search the market, and find a new design. In addition, the main reason that encourages IT adoption in SMEs is due to the benefits of IT that is to improve competitiveness, their performance, and the encouragement of external factors.

On the contrary, the handicaps for SMEs to adopt IT are due to cost constraints, human resource, and IT complexity. There are four factors that determine the IT adoption for SMEs, such as individual characteristics, IT characteristics, company context, and environmental context. For SMEs in the bag and suitcase craft centers in Tanggulangin are still having obstacles related to HR expertise and financial resources limitations, as well as to lack of interviews of potential business owners of IT for the company.

It is perceived that the benefits of IT in helping to reduce the cost of marketing can affect the intensity of the behavior of SMEs in adopting IT to support marketing, specifically for the promotion, booking and online sales transactions. As a result of the IT adoption, there will not be significant benefits in improving marketing performance, specifically to penetrate the market beyond the local market which has been the target of their marketing.

Though the managers know the value of IT for SMEs to enhance the competitiveness of enterprises, they are still being lack of funding and human resources expertise. This makes them find difficulty to adopt IT. The limited funds, especially for micro and small-scale industries do not allow them to allocate adequate funds to adopt IT. However, the limited human resources skills and expertise among SMEs led to the use of IT but it can not be done optimally to support business operations.

This is a preliminary study revealing the portrait of IT adoption for SMEs. Therefore, it only analyzes ed descriptively to generate preliminary information such as the degree of adoption of information technology by SMEs characteristics, and describes factors driving and hindering factors as well as the IT adoption pattern for SMEs. As such it does not provide more information related to direct relationship among the variables. This study is limited in terms of the population, which is only done on SME manufacturing sectors, particularly in bag and suitcase craft centers in Tanggulangin. Therefore the evidence may not necessarily represent the phenomenon of IT adoption in other sectors.

It is required that the SMEs improve their ability of IT adoption. The program can include SME development by providing in-

sights for owners and managers related to the importance of the potential of IT. They should overcome the constraints of human resources for managers and employees by giving training and guidance of using IT. Similarly, they also need to design a network IT usage among the members by means of the cooperative facilities of INTAKO to cope with limited funds.

Further study needs to consider a wider scale of research involving several sub-sectors of manufacturing and others in order to provide a more comprehensive analysis. In addition, it is also necessary to involve other factors that influence the IT adoption and their effect on the competitiveness of MSMEs.

REFERENCES

Acar, E, Koçak, I, Sey, Y, and Arditi, D 2005, 'Use of information and communication technologies by small and medium-sized enterprises (SMEs) in building construction', *Construction Management and Economics*, Vol. 4 No. 7, pp. 713-722.

Ajzen, Icek, 1991, 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*, No. 50, pp. 179-211.

Alam, Syed Shah and Mohd. Kamal Mohammad Noor, 2009, 'ICT adoption in small and medium enterprises: an empirical evidence of service sectors in Malaysia', *International Journal of Business and Management*, Vol. 4 No. 2, pp. 112-125.

Alamro, Sattam and Sami A Tarawneh, 2011, 'Factors affecting e-commerce adoption in Jordanian SMEs*'*, *European Journal of Scientific Research*, Vol. 64 No. 4, pp. 497-506.

Apulu, Idisemi and Ann Latham, 2011, 'Drivers for information and communication technology adoption: a case study of Nigerian small and medium sized enterprises', *International Journal of Business and Management*, Vol. 6, No. 5, pp. 51-60.

Apulu, I, A Latham, and R Moreton, 2011, 'Factors affecting the effective utilization and adoption of sophisticated ICT solutions: Case studies of SMEs in Lagos, Nigeria', *Journal of Systems and Information Technology*, Vol. 13 No. 2, pp. 125 – 143.

Arief Rahmana, 2009, 'Peranan teknologi informasi dalam peningkatan daya saing usaha kecil dan menengah', *Seminar Nasional Aplikasi Teknologi Informasi*, Yogyakarta, 20 June 2009, pp. 11-15.

BPS, 2008, 'Perkembangan indikator makro UKM Tahun 2008', *Berita Resmi Statistik Badan Pusat Statistik,* No. 28/05/Th. XI, 30 May 2008.

Budi Hermana, 2005, 'Model penerimaan teknologi informasi dan komunikasi', *Prosiding Konferensi Nasional Teknologi Informasi dan Komunikasi Indonesia*, ITB, 3-4 May 2005.

Chen, JS and HT Tsou, 2007, 'Information technology adoption for service innovation practices and competitive advantage: the case of financial firms, *Information Research*, Vol. 12 No. 3. (Online) <http://informationr.net/ir/12-3/paper314.html>, viewed 11 December 2011.

Duan, X, H Deng, and B Corbitt, 2012, 'Evaluating the critical determinants for adopting e-market in Australian small-and-medium sized enterprises', *Management Research Review*, Vol. 35 No. 3, pp. 289 - 308

Dyerson, RG Harindranath, and D. Barnes, 2009, 'National survey of SMEs' use of IT in four sectors', *The Electronic Journal Information Systems Evaluation*, Vol. 12 No. 1, pp. 39 – 50.

Fathful Wahid and Linda Iswari, 2007, 'Adopsi teknologi informasi oleh us-saha kecil dan menengah di Indonesia', *Seminar Nasional Aplikasi Teknologi Informasi 2007 (SNATI 2007)*, Yogyakarta, 16 Juni 2007.

Ferrer, Edgar, 2009, 'ICT policy and perspectives of human development in Latin America: the Peruvian experi-

ence', *Journal of Information Management and Innovation*, Vol. 4 No. 4, pp. 161-170.

Ghobakhloo, Morteza, Mohammad Sadegh Sabouri, Tang Sai Hong and Norzima Zulkifli, 2011, 'Information technology adoption in small and medium-sized enterprises; an appraisal of two decades literature', *Interdisciplinary Journal of Research in Business,* Vol. 1, No. 7, pp.53-80.

Higa, K, PJ Hwa Hu, ORL Sheng, and G. Au (1997), 'Organizational adoption and diffusion of technological innovation: comparative case study on telemedicine in Hong Kong, *Proceedings of The Thirtieth Annual Hawaii International Conference on System Sciences,* ISBN 0-8186-7862, IEEE.

Huy, LV, Rowe, F, Truex D, and Huynh, MQ 2012, 'An empirical study of determinants of e-commerce adoption in SMEs in Vietnam an economy in transition', *Journal of Global Information Management*, Vol. 20 No. 3, pp. 23-54.

Husein Umar, 2004, *Metode Penelitian untuk Skripsi dan Tesis Bisnis,* PT Raja Grafindo Persada, Jakarta

Kadocsa, Gyorgy, 2006, 'Research of competitiveness factor of SME', Polytechnica Hungarica, Vol. 3, No. 4, pp. 71-84.

Kannabiran, G and Dharmalingam, P 2012, 'Enablers and inhibitors of advanced information technologies adoption by SMEs: An empirical study of auto ancillaries in India', *Journal of Enterprise Information Management*, Vol. 25 No. 2 pp. 186 – 209.

Khasawneh, Mohammad MF and Huda Bt Hj. Ibrahim, 2008, 'Toward an information and communication technology development in developing countries, *Comunication of the* IBIMA, No. 4, pp 135-140.

Khong, Sin Tan, Siong Choi Chong, Binshan Lin and Uchenna Chryl Eze, 2009, 'Internet based ICT adoption: evidence from Malaysian SMEs', *Industrial Management and Data Systems*, Vol. 109 No. 2, pp. 224 – 244.

Maguire, S, SCL Koh and A. Magrys, 2007, 'The adoption of e-business and knowledge management in SMEs', *Benchmarking: an International Journal*, Vol. 14 No. 1, pp. 37-58.

Marthandan, Govindan and Chun Meng Tang, 2010, Information technology evaluation: issues and challenges', *Journal of Systems and Information Technology,* Vol. 12 No.1, pp. 37-55.

Mira Kartiwi, 2006, 'Case studies of e-commerce adoption in Indonesian SMEs: the evaluation of strategic use', *Australasian Journal of Information Systems*, Vol. 14 No. 1, pp. 69-80.

Nguyen, Thuiuyen H 2008, 'Information technology adoption in SMEs: an integrated framework', *IJBR*, Vol 15 No 2 pp 162 – 186.

Skoko, Hazbo, Branka Krivokapic-Skoko, Marinko Škare and Arnela Ceric, 2006, 'ICT adoption policy of Australian and Croatians SMEs', *Managing Global Transition*, Vol. 4 No. 1, pp. 25-40.

Syed, AASG 2012, 'Barriers in implementation of e-business technologies in small and medium enterprises (SMEs) in Pakistan', *Romanian Statistical Review*, Vol. 23 No. 4, pp. 65-72.

Tektas, Arzu, Emine Nur Gunay, Abdulmecit Karatas and Asli D Helvacioglu Kuyucu, 2008, 'ICT capability and innovation utilization in Turkish SMEs: the case of machinery industry, *Communication of the IBIMA*, No. 4, pp. 34-41.

Undang Undang Republik Indonesia Nomor 20 Tahun 2008 tentang Usaha Mikro, Kecil dan Menengah, Lembar Negara Indonesia, 2008.

Uwizeyemungu, Sylvestre and Louis Raymond, 2011, 'Information technology adoption and assimilation: towards a research framework for service sector SMEs, *Journal of Service Science and Management*, No. 4, 141-157.