

The Effect of Information and Communication Technology on Firm Performance in Indonesian Small Medium Enterprises

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ABSTRACT : *The purpose of this study is to determine how the influence of information and communication technology on the performance of companies in the scope of small and medium enterprises in Indonesia. Data from this research were obtained 41 questionnaires distributed to small and medium entrepreneurs under the auspices of the Department of Trade and Industry of East Java who often received training and socialization of information and communication technology to develop the business. The results of this study found that the information and communication technology capital under study has a positive impact on the process and product / service innovation. Limitations in this study are only using the scope of SMEs East Java as a sample of research, so less able to generalize the results of this finding.*

KEYWORDS: *Information, Communication Technology, Firm Performance, User Expertise, SME's.*

I. INTRODUCTION

In this era of globalization, information is one of the basic needs in addition to the need for clothing, food and shelter. Based on Venkatraman and Zaher (1990) research, globalization and increasing international competition are accelerating the movement towards increasing use of IT by companies. Along with that, information has changed shape into a commodity that can be traded. This situation is evidenced by the growing business of information services, such as television stations, newspapers, radio and internet that have entered the joints of human life. Rapid environmental changes, dynamic and widespread is supported by advances in information technology in all fields. This has led to the transformation of traditional society into an information society. In the global business era, the influence of information technology advances can't be avoided, such as the use of telephone, facsimile, computer, and satellite in various activities of corporate communications. Information technology allows people to obtain information from distant places in a short time and at a low cost.

Information technology emerges as a result of the increasing globalization in the life of the organization, the increasingly tough business competition, the shorter life cycle of goods and services offered, and the increasing demands of consumers' tastes on the products and services offered. To anticipate all of this, the company is looking for new breakthroughs by utilizing technology. Technology is expected to be a facilitator and interpreter. Originally used information technology is limited to data processing. With the development of information technology, almost all the current organizational activity has been entered by the application and automation of information technology. Information technology can be defined as a combination of computer technology and telecommunication with other technologies such as hardware, software, databases, network technology, and other telecommunications equipment. Furthermore, information technology is used in organizational information systems to provide information to users in the framework of decision making.

Information and communication technology has been recognized as having good potential not only in improving the efficiency of a company's business processes but also by facilitating companies in innovating through processes, products and services (Arvanitis, 2013). The use of information technology in enterprise activities such as value chains can result in several benefits, such as cost savings, time-spced operations, increased productivity, accelerated delivery of goods and services to customers, and increased value of goods and services to customers. Information and Communication Technology (ICT), such as the internet, for companies is used to expand markets at lower and easier costs, reduce transaction costs and coordination and develop and create new markets (Mann et al., 2000; Globerman et al., 2001 ; Williams et al., 2001; and Cavusgil, 2002). This paper focuses on theoretical review and practical analysis of intellectual capital utilization strategy and information technology as one of key or base in innovation that can improve company performance. As the background of the importance of an innovation for companies in Indonesia, especially Micro and Small Medium Enterprises in East Java. Brata (2003) says that Small and Medium Enterprises (SMEs) are one of the important parts of the economy of a country or region, not least in Indonesia.

II. LITERATURE REVIEW

2.1 Resource Based Theory

Resources based theory is widely used as a reference theory of IC management (Wernerfelt, 1984, Barney, 1991). According to the resource based theory (RBT), the company will acquire competitive advantages and superior performance through acquisition, acquisition and use of strategic assets essential to superior competitive advantage and superior financial performance (Wernerfelt, 1984; Barney, 1991). Both tangible and intangible assets are perceived as potential strategic assets. According to this theory, the benefits of these two assets are a positive outcome between company resources and performance measurement. Inclusion of intangible assets is derived from its ability to have all the characteristics of strategic assets. When most intangible assets do not qualify as strategic assets, the IC is generally considered an important strategic asset.

2.2 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is one of the models built to understand and analyze what factors affect the acceptability of the use of a computer technology (Davis, 1989); (Davis et al., 1989). TAM is adopted from the Theory of Reasoned Action (TRA) model on the basis of the theory of the reasonable action of a person in reaction, and the perception of something can determine the attitudes and behavior of the person.

Such reactions and perceptions of users of Information Technology (IT), can affect a person's attitude related to the acceptance of the information system. One of the factors that influence is the user's perception of the ease of use and the benefits that can be obtained from the IT. This may affect the actions or reactions of IT users as a benchmark of accepted technology acceptance.

The TAM model developed from psychological theory that explains the behavior of computer users is basically influenced by belief, intention, attitude, and user behavior relationship. The TAM model has the purpose of explaining what factors of user behavior can influence the acceptance of the technology. Two variables that describe user attitudes toward technology acceptance are ease of use and usefulness.

Ease of use and usefulness can be attributed to how users respond in using IT as well as in using the system. This model illustrates that user acceptance of a system is affected by ease of use and usefulness.

2.3 The Role of Information and Communication Technology to Innovation

Information technology is a combination of computer technology and telecommunications with other technologies such as hardware, software, databases, network technology, and other telecommunications equipment. Furthermore, information technology is used in organizational information systems to provide information to users in the framework of decision making. There are a variety of information systems using emerging information technologies, including Electronic Data Processing Systems, Data Processing Systems (DPS), Decision Support Systems (DSS), Management Information Systems (MIS), Executive Information Systems (EIS), Expert System (ES) and Accounting Information System (AIS) (Bodnar, 1998).

Mastery of 3 information and communication technology becomes a very important factor. While the mastery of this type of technology is closely related to the development of human resources as the main actors in its implementation. Unfortunately, Indonesia's Human Resources Development Index in 2003 was in position 110 of 177 countries.

ICTs can improve business processes and work practices, resulting in large productivity improvements, by reducing costs and improving yield quality; after which they can encourage the design of new products / services, and significant improvements of the intangible aspects of important existing products / services, such as convenience, timeliness, quality, personalization, etc. ICTs can be an enabler of new, unfeasible, or too expensive, new products and services. ICTs can change the way human work is done, controlled and coordinated, and enables significant restructuring of work practices, through the allocation of well-defined routine tasks related to the processing of symbols to computers, and the transformation of tasks that require human skills; also, it could change the geographic allocation of the task, which in some cases leads to more centralization and in some others for more decentralization, according to the specific characteristics of each task and its context.

III. MODEL AND HYPOTHESIS

The main hypothesis of this research is the provision of ICT training for the perpetrators of MSME positively affect the performance of innovation. Providing sufficient training for ICT personnel not only produces innovative ideas, but also their implementation: enables ICT personnel to create more efficient, more efficient pilot innovative applications on ICT within the enterprise, enabling better demonstration of their usefulness and value to other business departments; also, this training enables ICT personnel to plan, implement, and manage large-scale innovative exploits of this technology in the company.

At the same time, the provision of sufficient training on new ICTs for appropriate non-ICT personnel (potential future users) results in better cooperation with ICT personnel to design processes, product and service innovations based on this technology, as well as more again efficient use as part of the implementation of further

innovation, and less resistance to this innovation. In general, the transfer of new external knowledge through various mechanisms has traditionally been recognized as an important impetus for innovation, in combination with relevant internal knowledge (Cassiman and Veugelers, 2006).

H1: ICT training for MSEs has an effect on business innovation.

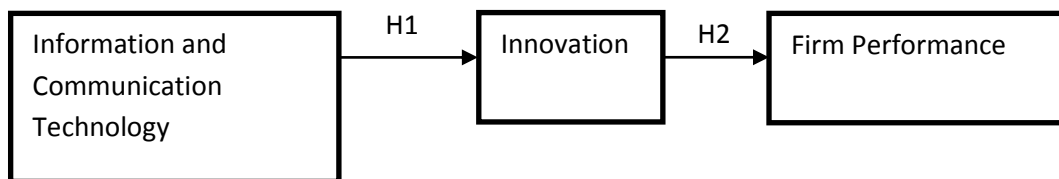
In this era of open economy, SME actors are required to prepare unique and rare resources that are not owned by competitors. The unique resources are expected to produce a product or process that can't be imitated by competitors. The company strives to utilize its resources in order to innovate.

Han, Kim, and Srivastava (1998) said that innovation positively and significantly affect the company performance. Innovation has an important role in influencing the performance of the company because it relates to activities or activities related to basic products / processes. Therefore, the company is required to be able to create new ideas by offering innovative products and enhancement services that can satisfy customers.

H2: innovation positively affects the company's performance.

Figure 1 below presents this research model. This study focuses on examining the role of innovation in mediating the influence between ICT and firm performance.

Figure 1



IV. RESEARCH METHODOLOGY

Data from this research were obtained from questionnaires distributed to SME business actors included in the Department of Industry and Trade of East Java. The entrepreneurs of SME are chosen because they are the parties to be considered in this open economy era. SMEs are required to continue to innovate in order to compete in this competitive business. This research focuses on improving company performance through information and communication technology supported by innovation to achieve optimal company performance. The sampling procedure is done by convenience sampling, is a technique of determining the sample that is done not randomly, but appoint the company that is expected to provide information related to this research. A total of 40 responses were obtained for this study.

There are no studies or literature that examines the influence of information and communication technology on the performance of the company, especially in SME entrepreneurs in East Java. And there are only a few studies that examine the relationship between the variables that exist in this study with information systems. Therefore, the results of this study may be new findings in academia.

V. RESULTS

Reliability, factor analysis, and average value

Table I shows how and standard deviations of responses to items that measure ICT, innovation, and firm performance.

Table I. Average and standard deviation of items

Items	Mean Value	Deviation
Product innovation is very important to be able to compete in environment of SME	4,15	0,48
Knowledge, experience and expertise in information technology are important in developing the company's innovative performance.	4,28	0,6
The interaction between education, experience, and technical skills in entrepreneurship orientation can improve the company's innovative performance.	3,95	0,68
Trade offices facilitate SME through training to further update information and communication technology.	4,08	0,73

Information technology and communication training is very useful in developing an innovation product.	4,35	0,62
I feel the training makes it easy for me to improve the company's innovative performance.	4,18	0,64
Knowledge of information and communication technology makes SMEs more productive in creating superior products.	4,03	0,77
Ambidexterity (the ability to exploit existing products while exploring new ones) is essential for improving business continuity both in the short and long term.	3,88	0,76
The company's ability to interact with more SMEs helps it to be innovative.	3,90	0,71
Increased entrepreneurial orientation affects the ability of SME to become more innovative.	4,03	0,73

While Table II is the result of factor analysis and reliability coefficient. Variable reliability testing using composite reliability technique. To see whether or not a reliable measuring instrument is done through the coefficient of reliability with the value of reliability coefficient must be greater than 0.7.

According to the reliability analysis results, items that have a total item correlation value lower than 0.40 should be eliminated. Nunnally (1978) states that the cut-off loading used is 0.40 assuming that all loading factors that have values above 0.54 are significant. Therefore, the result of composite reliability measurement in this research shows that all variables have composite reliability value greater than 0.70. It can be concluded that all the variables in this study are reliable and reliable for use in further analysis.

Table II. Factor analysis and reliability analysis

	Outer Loading	Reliability
Product innovation is very important to be able to compete in environment of SME	0,587	0,885
Knowledge, experience and expertise in information technology are important in developing the company's innovative performance.	0,875	
The interaction between education, experience, and technical skills in entrepreneurship orientation can improve the company's innovative performance.	0,863	
Trade offices facilitate SME through training to further update information and communication technology.	0,903	
Information technology and communication training is very useful in developing an innovation product.	0,627	
I feel the training makes it easy for me to improve the company's innovative performance.	0,746	0,934

Knowledge of information and communication technology makes SMEs more productive in creating superior products.	0,917
Ambidexterity (the ability to exploit existing products while exploring new ones) is essential for improving business continuity both in the short and long term.	0,862
The company's ability to interact with more SMEs helps it to be innovative.	0,908
Increased entrepreneurial orientation affects the ability of SME to become more innovative.	0,854

Hypothesis Testing

The proposed hypothesis will be tested using Structural Equation Model (SEM) model with Partial Least Square (PLS) analysis model. Partial least square analysis was tested using Warp PLS 5.0 for windows software to examine the effect of information and communication technology on company performance through innovation mediation effect. The results indicate that all proxies have an outer loading factor value greater than 0.5. It can be concluded that all indicators are eligible to be an indicator that can reflect each of the corresponding variables.

VI. DISCUSSION AND CONCLUSION

The result of testing hypothesis 1 states that the training of ICT application for the perpetrators of SMEs has an effect on business innovation. Basically, the training on information technology application and communication given to the perpetrators of SME is very important role in the business process of the business. In this era of globalization, SME actors are required to be ready to compete with ASEAN business actors. So in this fierce competition, a business must always innovate in order to survive in this increasingly competitive business competition.

Hypothesis 2 states that innovation positively affects the company's performance. The results showed a significant positive effect on company performance. The results of this study in line with research conducted Han, Kim, and Srivastava (1998) said that innovation positively and significantly affect the company's performance. Innovation has an important role in influencing the performance of the company because it relates to activities or activities related to basic products / processes. Therefore, the company is required to be able to create new ideas by offering innovative products and enhancement services that can satisfy customers. Hitt, Bierman, Shimizu, and Kochhar (2001), claim to achieve strategic competitiveness and produce above-average earnings, a company analyzes its external environment, identifies opportunities within it, determines competent resources, and chooses a strategy the right to implement it to produce a good output.

Conclusion of this research was arranged as an attempt to prove the test against several concepts about the influence of information technology and communication technology variable on company performance on small and medium micro enterprises in East Java. In this study significant support is strengthened to reinforce the concept that the level of ICT understanding, top management support, the availability of ICT investment and the support of government agencies have a positive and significant effect on innovation, and innovation have a positive and significant effect on the company's performance.

Thus, as previously discussed, it can be proved and accepted that the level of IT understanding, government agency support, the availability of IT investment and the support of government agencies have a positive and significant impact on innovation. While innovation will affect the company's performance. Based on the hypotheses that have been developed in this study, the proposed questioning problem can be estimated through SEM analysis.

From the above description can be concluded that to improve the performance of the company, especially in terms of efficiency and facilitate communication with customers, the perpetrators of SMEs need to make strategic steps. These strategic steps are ICT applications that can have a positive impact on innovation that will impact on company performance.

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