Implementation of Information and Communication Technology to Improve Product Quality and Partnerships with The Quadruple Helix Method Approach

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Abstract. The purpose of this study was to determine the window of application of Information and Communication Technology in improving the quality of micro, small and medium enterprises (MSME) products. This research method uses a qualitative approach to the quadruple helix concept. Quadruple Helix is a development model of the triple helix with the addition of community involvement, the triple helix concept which is one solution to the constraints faced by business people and accommodates the creation of mutual collaboration between the three parties involved, namely the government, universities and the private sector (industry). The result of this research is that the application of Information and Communication Technology in 5 (five) Districts in East Java is the highest value there is the existence of e-business development with a value of 2.575 and the lowest value is in the existence of incubator technology for MSMEs attribute with a value of 2.276. Based on the results, it can be concluded that the application of information and communication technology to MSMEs is at the level of partnership both because the average value is in the value of 2.1-3.0. The contribution of information and information about the implementation rate of information technology and communication at Micro, Small and Medium Enterprises (MSME) in East Java.

Keywords: Information Technology and Communication, Micro, Small and Medium Enterprises, Product Quality, Quadruple Helix Method.

1 Introduction

Small Medium Enterprises (SMEs) in Indonesia has an important role for its great contribution to the Indonesian economy [1]. This is evident when the monetary crisis was able to survive in carrying out the production process. UKM has contributed to the employment absorption of 99.74% of the total national absorption and contributed GDP of 1.1013.5 trillion or 56.73%. %. Technology becomes one of the essential things in the development of Small and Medium Enterprises (SMEs) [2].

Information and Communication Technology is one aspect that must be considered in improving partnerships and improving product quality. In measuring the information and communication technology variables, there are three indicators, namely the existence of incubator technology for MSMEs, the existence of e-business development and the existence

of information technology training. From the samples taken, only 10% have made partnerships with the Government in East Java and Regency Provinces so that this study aims to determine the level of application of information and communication technology to improve product quality and partnership of MSMEs. By using the quadruple helix method, it will be known as the level of application of information and communication technology. Quadruple helix concept brings together four sectorial perspectives with a focus on the institutional, regional and operational functionalities and complementarities of these sectors in the context of the knowledge economy [3]. Quadruple Helix Innovation Theory (QHIT) has been discussed I relate with the economic growth in the regional level and national level, the economic growth could be encouraged by the interconnection of four sectors: industry or private sectors, government, academia, and civil society or public sectors [4].

2 Methods

The method of research is a qualitative method with a quadruple helix approach — the study of the level of implementation of information technology and communication in Micro Small and Medium Enterprises (MSME). Data were collected using a questionnaire that had close-ended and open-ended. The object is MSME in East Java Province, especially in the five regencies of Malang Regency, Pasuruan Regency, Mojokerto Regency, Sidoarjo Regency, and Surabaya city. The research uses a Quadruple Helix approach method. Quadruple helix mode is a conceptual framework of collaboration between universities, industry and government and community [5]. The Quadruple helix, in this, context, means "fourth helix" of Government, University, and Industry "fourth helix" that we identify as the media-based and culture-based public [6]. There are several stages of data collection, including interviews and observations through the spread of closed and open questionnaires. Data processing next step is including validation and reliability testing. Then the fourth stage of the results of the calculation of service quality has been given to consumers.

3 Results

The stages in conducting this research are the identification of variables, data collection, data processing and analysis of result and discussion.

3.1 Variable Identification Stage

In this study, there are variables of information and communication technology using 3 (three) indicators, namely the existence of incubator technology for MSMEs, the existence of e-business development and the existence of information technology training. With samples of MSMEs in East Java Province by sampling Sidoarjo Regency, Malang city, Pasuruan Regency, Mojokerto Regency, and Surabaya city with 50 respondents (Actors of SMEs both food and non-food drinks).

3.2 Data Collection Stage

Data collection stage by spreading questionnaire to MSME. The questionnaire in the section 3 section: the demography of the respondent, the level of partnership and the open-

ended question. Using 4 points of assessment, namely: point 1 is nothing of partnership, 2 is a partnership is not good; 3 is a partnership that is good, and 4 is a partnership is very good. The variable and attribute are in table 1.

Table 1. Variable and attribute of Quadruple Helix

NO	Variable and Attribute	NO	Variable and Attribute
1	**BUSINESS MANAGEMENT**	3	**INFORMATION TECHNOLOGY AND COMMUNICATION**
	There is training to increase business management knowledge		The existence of incubator technology for MSMEs
	There is training for increasing knowledge about consumers		The existence of e-business development
	There is training for increasing knowledge about effective promotions		Information technology training
	There is training to increase knowledge about the formulation of marketing strategies	4	**RESOURCES DEVELOPMENT**
	There is training to improve administrative skills		There is a center for developing the skills of MSME actors
	There is training to improve innovation capabilities		The existence of MSME development courses / training
	Monitoring the progress of MSMEs		There is a government or private apprenticeship program
2	**RULES AND POLICIES**	5	**INCREASING of COOPERATION**
	There are policies to improve employee skills (labor)		The existence of cluster development
	The existence of policies in the fields of formal and informal education for employees (labor)		The existence of industrial area development
	There is a policy in developing clusters for MSMEs		The development of business development services
	There is a policy in promoting cooperation between government-private-tertiary institutions		The development of relations between MSMEs-Private-Government-Universities
	There are policies in the ease of business licensing for MSMEs		Network development and market penetration
	There is a policy in providing incentives (subsidies, tax payments)		
	There is a policy in the ease of obtaining credit for MSME business development		

3.3 Data Processing Stage

At the stage of data processing done by testing the validation and reliability. A data is said to be valid if the corrected value of total correlation is greater than 0.3. If less than 0.3 the data is invalid. Then the data is reliable if the value of Cronbach's alpha> 0.6. Based on

validation and reliability testing shows that all valid data and reliable. So it can be forwarded for further calculation and analysis.

3.4 Analyze and Discussion

Based on the calculation that indicators of information technology and communication in the level of the partnership are so good. It can be seen that the value of indicator 1 is the incubator technology for MSMEs with a value of 2,276, indicator 2, namely the development of e-business with a value of 5,575 and training in information technology with a value of 2,300.

Table 2. The values of each variable and attribute

Variable	Attributte	Value	Variable	Attributte	Value
Business Management	BM1	2.72056	Information technology and communication	ITC2	2.2764
	BM2	2.66		ITC2	2.57536
	BM3	2.69224		ITC3	2.30064
	BM4	2.64384	Resources Development	RD1	2.82976
	BM5	2.31656		RD2	2.63176
	BM6	2.35696		RD3	2.47824
	BM7	2.15504	Increased of Cooperation	IC1	2.61168
Rules and Policy	RP1	2.51456		IC2	2.84576
	RP2	2.55504		IC3	3.01552
	RP3	2.4744		IC4	2.97912
	RP4	2.6076		IC5	2.93864
	RP5	2.68024			
	RP6	2.29352			
	RP7	2.26016			

Based on the results of calculations, it can be known that the existence of partnerships with the government through the Cooperation, Small and Medium Enterprises Department, the existence of e-business development through social media and cooperation can enhance partnerships among MSME, industry and government actors. With the large demand for MSME products, MSME actors will indirectly improve product quality. Improving product quality is not only on the product, but the legality of the product and business and packaging and production processes are also considered by making work operating standards, besides making it easier to equalize product quality. While incubator technology helps MSME players in developing businesses and increasing their business products and enhancing partnerships with the formation of communal patterns (communities) and cooperation with the government and academics, in addition, information technology also provides an understanding that publications to mass media or social media will increase the quantity and quality of MSME actors. This research is in accordance with the research carried out by Porlezza, C and Colapinto, C (2012) with tittle "Innovation in Creative Industries: from the Quadruple Helix

model to the system theory" within society, that is its function within society, but also for production of knowledge use with media, production in modern societies [7].

With the incubator technology for MSME players, eating will lead to creative ideas and innovations in the products of MSME entrepreneurs. With the existence of certain communities as a forum for MSME product incubators can be a coordinator of partnerships between the government and the community, universities with communities and industry players, for example, the souvenir center as a market place for MSME products, it can become a media for coordination. Also, the community can be formed into several clusters according to the type of product and expertise and use of technology, so that it will develop into clusters which in the future become one of the foundations for the sustainability of MSME actors through developing ideas of creativity and innovation by promoting local potential and culture. - One area. This is by the research of Parveen, S. et al. (2015) with the title of Organization Culture and Open Innovation: A Quadruple Helix Open Innovation Model Approach ". Stating that the impact of the organization of quadruple helix open innovation is a model and moderating role of organizational commitment to open innovation [8].

4 Conclusion

The result of this research is that the application of Information and Communication Technology in 5 (five) Districts in East Java is the highest value there is the existence of e-business development with a value of 2.575 and the lowest value is in the existence of incubator technology for MSMEs attribute with a value of 2.276. Based on the results, it can be concluded that the application of information and communication technology to MSMEs is at the level of partnership both because the average value is in the value of 2.1-3.0. The contribution of information and information about the implementation rate of information technology and communication at Micro, Small and Medium Enterprises (MSME) in East Java.

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