Triple Helix Synergy for Development and Enhancing Competitiveness of SMEs

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Abstract:
Micro, small, and medium enterprises (SMEs) is the work done by individuals in the form of economic enterprises that meet the criteria of SMEs as set out in(Act No. 20 of 2008, 2008)about SMEs. The human factor is the most important factor in the development of SMEs to improve product quality and improve the welfare of the community. The triple helix is an innovative model of students, researchers, and policymakers to improve the university's role in improving the economic and social development, improve the role of governments to develop innovation, enhance enterprise collaboration with governments and universities to boost innovation. This study aims to (1) show the relationship triple helix in the development of the competitiveness of SMEs. (2) The effectiveness of the application of triple helix in the development of the competitiveness of SMEs. This study is quasi experimental research with pretest-posttest results of the application of triple helix on SMEs in Banyuwangi.
Keywords:
triple helix; SMEs; community empowerment

I. Introduction

Micro, small, and medium enterprises (SMEs) is the work done by individuals in the form of economic enterprises that meet the criteria of SMEs as the (Act No. 20 of 2008, 2008)about SMEs. SMEs are an important part in the economic development of a country and regional economic development through job creation, increased investment, forming capital, and various potentials for the development of a more sustainable economy (Janda et al., 2013; Koudelková & Svobodová, 2014; Twelve et al., 2015; Simionescu et al., 2017 in(Ruchkina, Melnichuk, Frumina, & Mentel, 2017)). Therefore, support for the growth and development of the competitiveness of SMEs should be a priority in political decisions (Abrham et al., 2015; Barkhatov, 2016; Barkhatov et al., 2016; Varanavicius et al., 2017 in(Ruchkina et al., 2017)).

(Trisnawati, 2016) stating that the parameters and variables modeling in the analysis of the innovation system of SMEs is the limited technology, human resources to operate the new machines, in terms of organizational aspects of the limitations of human resources become a serious obstacle for SMEs, especially in management, production engineering, product development, and quality control of products , marketing techniques, and market research. One of the factors inhibiting the development of SMEs performance is low motivation and competence of human resources, lack of supervisory standards, limited marketing technology (Wahyuningrum, Sukmawati, and Kartika, 2016).

Human resource development as referred to in Article 16, paragraph (1) c of Law No. 20 of 2008 on SMEs can be done by empowering entrepreneurship, improve the technical and

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managerial skills, develop education and training institutions to conduct education, training, counseling, motivation, and creativity of the business and the creation of new entrepreneurs. The human factor is the most important factor in the development of SMEs to improve production quality and improve community (Act No. 20 of 2008, 2008), Ttriple helix Institutional connect various organizations such as the transfer of technology from universities, companies, and government laboratories and businesses, financial support from development agencies to increase capitalization. The triple helix is an innovative model of students, researchers, and policymakers to improve the university's role in improving the economic and social development, improve the role of governments to develop innovation, enhance enterprise collaboration with governments and universities to increase innovation (H Etzkowitz 2008 in(Fitriana, 2016)).

Improving the quality of production and the welfare of society based on Law No. 20 of 2008 on SMEs requires collaboration between universities, industry, and government known as the triple helix models. The triple helix is the key to innovation in improving the knowledge of society. Such as discovery, dissemination, and use of science in industry and government (Etzkowitz H 2008 in(Fitriana, 2016)).

One SMEs that require collaboration universities, government and industry are CV. Berkah Jaya Profita that one product is dough nuts. During this time the resulting pastry beans CV. Berkah Jaya Profita much the shape is not uniform, thick and uneven thin even layer on the pastry is not formed because in the process of thinning the dough is still fully using human power. Bean pastry dough just thinned using a wooden tube which is operated by human power. In one day the number of defective beans pastry as much as 4-5 kg, or approximately 15-20% of the total product produced. This study aims to (1) show the relationship triple helix in the development of the competitiveness of SMEs. (2) The effectiveness of the application of triple helix in the development of the competitiveness of SMEs.

II. Research Method

2.1 Research Design
This study is a quasi-experimental research with a pretest-posttest (Cresswell, 2012). Research carried out by implementing the triple helix collaboration on MSMEs. Employees in SMEs by training and formerly given a pretest to post-test to compare the results after being given training. Data were analyzed using SPSS 20.0 for obtaining results dab pretest-posttest analysis, to determine its effectiveness was examined by student test (t-test). Also, by the application of appropriate technology innovation of the university on the CV. Berkah Jaya Profita to reduce product defects generated.

2.2 Population and Sample
The study population was all employee's CV. Berkah Jaya Profita totaling 10 people. The sample used was total sampling (census) in which members of the population across any study subject.

2.3 Research Instruments
Data were taken from the pretest and posttest to give the essay to all employee's CV. Berkah Jaya Profita before and after the implementation of quality control training. The pre-test and post-tested using paired sample t-test or paired-samples t-test with significance if the invalid provision <0.025. Paired sample t-test or paired-samples t-test was two measurement data on the same subject to any influence or specific treatment (Wiyono, 2011). To perform

the appropriate technology applications than the number of defects and increase production capacity before and after the application of appropriate technology diluting the pastry dough.

III. Discussion

3.1 Results
a. Results Descriptive Analysis Pre-Test and Post-Test Training Quality Control

Descriptive analysis of the pre-test and post-test training quality control by using SPSS 20 is shown in Table 1 below:

Table 1. Descriptive analysis of the pre-test and post-test quality control training

Descriptive Statistics

	N	Minimum	Maximum	mean	Std. deviation
Pre_test	10	42	72	57.80	10.042
Post_test	10	72	90	81,50	6,553
Valid N (listwise)	10				

Table 1 shows the results of the descriptive analysis of quality control training before and after training. The test results showed an average increase of the pre-test and post-test of 57.80 into 81.50.

b. Analysis Paired Sample T-Test Capability Improvement Average Statistical Quality Control Trainees

The results of the analysis of paired sample t-test were performed to determine differences in average test scores before and after quality control training. Results paired sample t-test can be seen in Table 2, 3, and 4 below.

Table 2. Paired Samples Statistics

Paired Samples Statistics

		mean	N	Std. deviation	Std. error Mean
pair 1	Pre_test	57.80	10	10.042	3.176
	Post_test	81,50	10	6,553	2,072

Table 3. Paired Samples Correlations

Paired Samples Correlations

	N	correlation	Sig.
pair 1 Pre_test & Post_test	10	, 885	.001

The value of the correlation between two variables is that the result of 0,885 means a strong and positive relationship. The significance level of 0.000 means the outcome relationship is significant at the 0.05 level

Table 4. Paired Samples Test

Paired Samples Test

	paired Differences	T	df	Sig. (2-tailed)

		mean	Std. deviation	Std. error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
pair 1	Pre_test - Post_test	-23.700	5.229	1,654	-27.441	-19.959	-14.332	9	, 000

Ho: There is no difference in average test scores between before and after training H1: There are differences in average test scores between before and after training If Significance <0.025 then Ho is rejected (Wiyono, 2011)

Based on Table 3 the value of significance0.00, so the significance <0.025 then Ho is rejected, it means that there are differences in average test scores between before and after training. Meaning it can be concluded that employees receive different quality control training that does not value his skills by training. Mean - 23,700 negative value means a trend towards increased capacity after training. The average increase was 23,700.

c. Results Application of Appropriate Technology Dough roller machine

To reduce the number of defective products and improve product quality resulting dough pastries, made the application of appropriate technology dough roller machine pastry on a CV. Berkah Jaya. After the application of the pastry dough roller machine, the number of defects generated was reduced from 15-20% to 2-3% of the total production of 76 kg in one day and in production capacity of up to 76 kg per day.

3.2 Discussion

Provide an interpretation of your results and make comparisons with other studies. The significance of the findings should be clearly described. If your results differ from your expectations, explain why that may have happened. The purpose of this study is to show the relationship triple helix in the development of the competitiveness of SMEs and the effectiveness of the application of triple helix in the development of the competitiveness of SMEs.

a. Triple helix interaction in the development of the competitiveness of SMEs

Triple helix interaction in the development of the competitiveness of SMEs are described as follows:
1. University

(Fitriana, 2016) stated that the main role of the university in the triple helix based tri dharma college are:
   a) In the field of education: the dissemination of knowledge, and to generate knowledge
   b) In the field of research: research and technology deployment
   c) In the field of community services: promoting and disseminating knowledge, and participates in the planning stage

Thus, in the development of the competitiveness of SMEs universities can play a role in:
   a) In the field of education to generate and disseminate new knowledge to help to solve problems faced by SMEs
   b) In the field of research to produce innovations to solve the problems faced by SMEs both in terms of management and technology. Provide alternative solutions in content were policies on SMEs(Arnkil, 2010),
   c) In the field of community service for the transfer of science and technology to

businesses (Etzkowitz, 2008), Participated in the planning, and problem-solving SMEs, consultant to overcome the problems of SMEs, and establish a business incubator (Fitriana, 2017).

2. Industry

The role of industry in the development of the competitiveness of SMEs is as a driver of growth in the industry to be able to high competitiveness (Izzati & Wilopo, 2018), based on(Fitriana, 2016) industry's role is as the creator of entrepreneurship, technology, products, and driving innovation. The industry also plays a role in shaping the community as a means of sharing ideas, mentoring, business coaching, management training (Fitriana, 2016).

3. Government

(Fitriana, 2016) explained that the role of government in the triple helix is:

a) The catalyst, facilitator, and advocate, stimulate, challenge and encouragement to improve business competencies.
b) As regulators that produce policies relating to people, industrial, institutional, intermediary, resources and technology
c) As consumers, investors, and entrepreneurs.

b. **The effective application of triple helix in the development of the competitiveness of SMEs**

Application of triple helix in the development of the competitiveness of SMEs can be seen in Figure 1 below:
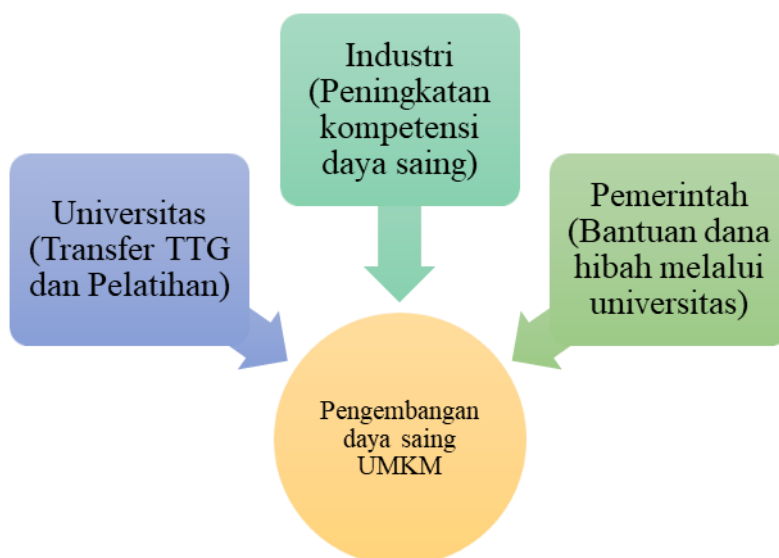
Figure 1. *Application of triple helix in the development of the competitiveness of SMEs*

1. University

One example of the application of the university's role in the development of the competitiveness of SMEs is the transfer of appropriate technologies dough roller machine from Universitas 17 Agustus 1945 Banyuwangi to CV. Berkah Jaya Profita and quality control training to all employee's CV. Berkah Jaya Profita . The activity is the implementation of one dharma college in the field of community service activities (Widaningrum it, Brian, and Susanti, 2019) to help reduce pastries pastry product defects generated in the CV. Berkah Jaya Profita.

2. Industry

One example of the industry's role in the development of the competitiveness of SMEs is CV. Berkah Jaya Profita is one of the members of the Business Association of Food and Beverage (Umami) in Banyuwangi. CV. Berkah Jaya Profita role in encouraging the growth of SMEs to afford highly competitive.

3. Government

The government's role in the development of the competitiveness of SMEs is one example by providing grants through the University. Grants provided through the Ministry of Research, Technology and Higher Education to the University through a program of Community Services. to overcome the problems faced by CV. Berkah Jaya Profita Ministry of Research, Technology and Higher Education provides grants to University Banyuwangi August 17, 1945, to carry out community service activities in the CV. Berkah Jaya Profita. The grants are used to transfer appropriate technologies dough roller machine pastry and quality control training for reducing product defects pastries pastry CV. Berkah Jaya Profita . Collaboration university, industry and government (triple helix) in the development of high competitiveness of SMEs so that one can be applied to CV. Berkah Jaya Profita then is able to:
a) Improving human resource capacity in the CV. Berkah Jaya Profita through quality control training
b) Reduce product defects generated
c) Increase sales turnover of SMEs

IV. Conclusion

1. For the development of the competitiveness of SMEs is necessary synergies university, industry and government (triple helix)
2. With the synergy of the university, industry and government (triple helix) can enhance human resource capabilities, improve the quality and competitiveness of products produced by SMEs.

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