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Mapping Potential Technology Appropriate Small And Medium Enterprises As Efforts To Improve Technology Preparation Leadership In Region Of Ponorogo

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A B S T R A C T

Research Objectives "Mapping the Potential of Appropriate Technology for Small and Medium Enterprises as an Effort to Improve the Capability of Technology Readiness in Ponorogo District" is to describe the profile of small and medium enterprises (SMEs), evaluate and measure the level of technological readiness ability (TK2T) of SMEs in Ponorogo District. The analytical tool used is a technometer that serves to measure the level of technological readiness capability used for the production of SMEs divided into three stages, basic (level 1 to level 3), medium (level 4 to level 6) and ready (Level 7 to With Level 9). By using teknometer is expected to provide basic information about mapping the potential needs and the use of appropriate technology (TTG) both tools, processes and production results in Ponorogo regency. SMEs in Ponorogo Regency are dominated in the field of food, handicraft and textile fields. The SME food business unit still requires major government intervention on production process issues. The majority of SMEs business unit in the field of food still use technology (tools) simple and potluck. The production process of SMEs business still neglects the hygienic side of both the production and production. The results of the evaluation and measurement of SME TK2T in Ponorogo District indicate that all samples have passed measurements at level 1 to level 3. Less than 50% pass the middle level ie level 4 to level 6, while less than 10% have passed the top level measurement , Which is level 7 to level 9. This explains that the production of SMEs in Ponorogo Regency still need government intervention both in the use of appropriate technology, as well as supporting indicators such as management, hygiene in production, human resources.

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Introduction

Background

Characteristics of SMEs in Indonesia is to have the endurance to live and have the ability to improve its performance during the economic crisis (Rahmana, 2009). This is due to the flexibility of SMEs in adjusting their production process, able to develop their own capital, able to return the loan with high interest and not too involved in bureaucracy (Prasetyo, 2013).

According to the Central Bureau of Statistics of Ponorogo Regency 2015, the number of formal and registered SME units in Ponorogo regency as much as 619 units and absorb 6452 workers with a production value of 734.38 billion rupiah. The business units are spread over 21 sub-districts, and can be described in Table 1 as follows:

In its development to run the production of small industries, home industries and SMEs rely heavily on the availability of existing technology, of course with the ability and financial capacity in using the technology. But production continues to run because it is a source of income for small industries, home industries and SMEs with existing technology that has not been able to penetrate markets outside the region or export, further impact is less developed so that the goal to be more prosperous to less than the maximum results. Basically the use of technology is not solely to be with advanced technology, but using technology-based innovation frugal able to answer the situation.

One of the efforts in creating business climate with optimum condition and

Tabel 1.
Distribution of Formal SME Unit of Ponorogo Regency

No	Regency	Unit	Labour
1	Ngrayun	6	31
2	Slahung	23	192
3	Bungkal	33	274
4	Sambit	19	207
5	Sawoo	10	64
6	Sooko	8	58
7	Pudak	4	25
8	Pulung	12	207
9	Mlarak	14	128
10	Siman	28	251
11	Jetis	15	197
12	Balong	26	455
13	Kauman	30	292
14	Jambon	13	72
15	Badegan	7	22
16	Sampung	14	169
17	Sukorejo	31	235
18	Ponorogo	208	1.983
19	Babadan	84	1.291
20	Jenangan	28	267
21	Ngebel	6	32
	Total	619	6452

Source: Ponorogo In Figures 2015, processed.

high competitive product result is analyzed technological readiness level (TK2T). This analysis supports government programs that recognize the importance of rural development. Various forms and programs to encourage the acceleration of rural development have been undertaken by the government, but the results are still not significant in improving the quality of life and welfare of the community. Besides, the analysis of technological readiness level (TK2T) in line with the spirit of village law in giving birth to an advanced and independent village can not be done partially. The challenge of building a village will certainly be part of the dynamics of the community in guarding the change in which if the village previously only thought about its own village without much thought and synergy-coordination and communication with other villages or neighboring villages that are geographically close together.

Identification

Consistent implementation of significant standards by means of good production to produce quality products is the key to entry to local and global markets and in line with the Master Plan for the Acceleration of Expansion of Indonesia's Economic Development (MP3EI). By utilizing good production method, it is expected that small and medium enterprises (SMEs) can build creativity to produce innovative products of quality that can compete in the market, and protected their intellectual property. One of the instruments that can be used in this research is measuring the ability of small and medium enterprises to adopt technology by using technological readiness level (TK2T) in Ponorogo Regency.

Research Purposes

Analysis of technological readiness level (TK2T) is basically an "indicator" that shows how ready or mature a technology can be applied and adopted by users or potential users. Thus, the purpose of this study is: (1) Describe the profile of small and medium enterprises (SMEs) in Ponorogo District, (2) Evaluate and measure the level of technological readiness ability (TK2T) of small and medium enterprises (SMEs) in Ponorogo District.

Usefulness Research

The usefulness of this research, among others: (1) As reference or reference materials information about the level of readiness of basic resources science and technology measuring TK2T SMEs in Ponorogo regency especially for policy formulator, (2) As an input for business actors to evaluate the level of readiness of basic science and technology resources measuring TK2T SMEs in Ponorogo District in order to carry out the production so as to increase security guarantee for consumers and able to compete.

Literature Review

Understanding SMEs according to the rules and institutions directly related to SMEs, among others, in the Law Number 20 Year 2008 SMEs have criteria that are independent productive economic enterprises undertaken by individuals or business entities that are not subsidiaries or non- Owned, controlled or become part directly or indirectly from a medium-sized or large-scale business that meets the criteria. Medium-sized enterprises, which are stand-alone productive economic enterprises, carried out by individuals or business entities that are not subsidiaries or branches of a company owned, controlled, or become part of, directly or indirectly, by a small business or a large enterprise.

Most of the Indonesian people with the diversity of science and technology (IPTEK) can be positioned, not only as supporters, but also as a pioneer of road passengers towards the realization of a prosperous society justice for all levels of society in Indonesia located in various cor-

ners of the country with the level of technological mastery And a limited economy. Appropriate technology means technology compatible with cultural conditions, and economic conditions and their use must be environmentally friendly.

Technological readiness (technology readiness) can be defined as how ready or mature a technology to be applied. The notion of "readiness" suggests a possible difference between "ready", "unprepared" and "not ready" a technology "or" technological readiness level "difference to be utilized or applied for its usefulness TK2T is basically an" indicator " How ready or mature a technology can be applied and adopted by users / prospective users TK2T can support the assessment of the maturity or readiness of a particular technology and the comparison of maturity or readiness between different types of technology systematically (BPPT, 2010).

Research Methods

The analysis of technological readiness ability level (TK2T) for Ponorogo Regency SME is sourced from Ponorogo Central Bureau of Statistics database and synchronized with SME companion report on planning activities, coordination and development of SME Kabupaten Ponorogo for budget year 2016, conducted by Industry, Trade, Cooperative And SME Ponorogo Regency. From the source obtained population. SME actors are divided into several categories to facilitate the process of survey of SMEs in the district Ponorogo. Research Location in general is Ponorogo District which consists of 21 districts.

Data collection methods obtained from primary data and secondary data. For primary data, the sampling process is done by survey, observation and interview. To get the sample is done by One stage Cluster with respondents of SME business actors in Ponorogo District. Sample size on One stage Cluster uses sample size formula as follows:

$$n' = n \times def$$

$$n = \frac{n_o}{1+\left(\frac{n_o}{N}\right)} \qquad deff = \frac{V}{\left(\frac{p.q}{n}\right)}$$

$$n_o = \frac{t^2(p.q)}{d^2} \qquad V = \left(\frac{d}{t}\right)^2$$

Keterangan :
n' = Sampel untuk tahap pertama (one-stage cluster)
n = Sample for the primary unit
no = Sample assumptions
d = Sampling error
t = Koefisien Kepercayaan (Coefficient of-Confidence)
p & q = Parameters of binomial proportions
deff = design effect
N = Population for primary units

From the above formula then it can be determined the sample to be surveyed with the following calculation :
N = 619 business unit (primary)
d = 0,064
t = 1,96 (95 %)
p & q = (50%: 50%)

$$n_0 = \frac{(1,96)^2(0,5x0,5)}{(0,64)^2} = \frac{(3,8416)(0,25)}{0,004523} = 234,4727$$

$$n = \frac{234,4727}{1+\left(\frac{234,4727}{619}\right)} = 170,0679$$

$$V = \left(\frac{0,064}{1,96}\right)^2 = 0,001066$$

$$deff = \frac{0,001066}{\left(\frac{0,50x0,50}{170,0679}\right)} = 0,72517$$

$$n' = 170,0679\ x\ 0,72517 \approx 123,3281 = 123$$

So from the population of 619 units of sample business to be surveyed as much as 123 business units using one stage cluster. As for secondary data comes from other supporting documents that can be referred legally.

Discussion

The determination of technological field consists of five categories by looking at the basic materials used and or the result of the production conducted by the UMKM business unit. Five categories are building materials, in this category produced products in the form of bricks, lis plafond and various matters related to building materials as the base material. The second category is handicraft, in which there are products in the form of pillowcases, bird cage knee, reyog, ganongan, tong and the like. The third category is food, which includes products such as onion chips, soy milk, tempe, salted egg, hotcakes, chips and brown sugar. The next category is the fourth category is textile and included in this category is the business unit of SMEs such as convection and the last is the category of metal, that is all units of SMEs businesses that have production with metal base materials, such as gamelan and the like.The distribution of each village in the field of technology can be seen in Table 2 below.

Table 2.
Sampling Distribution Based on Location of Sub-District According to Technology Field

Regency Name	Building material	Craft	Metal	Food	Textile	Total
Ngrayun				1		1
Slahung		1		4		5
Bungkal	1	4			2	7
Sambit	2			2		4
Sawoo		1		1		2
Sooko				2		2
Pudak				1		1
Pulung				2		2
Mlarak		1		2		3
Siman	1	1		4		6
Jetis		2		1		3
Balong		1		4		5
Kauman		4		1		5
Jambon	1	1				2
Badegan				1		1
Sampung	1			2		3
Sukorejo	2	1		3		6
Ponorogo	5	6	1	27	1	40
Babadan	3	3		11		17
Jenangan	1	1		1	3	6
Ngebel				1		1
Total	17	27	1	72	6	123

Source: Teknometer Result, 2017

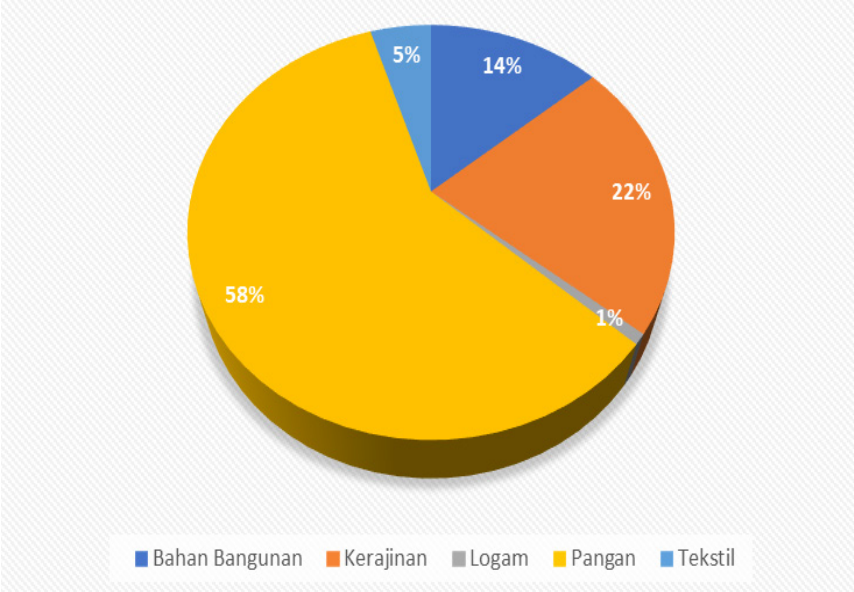
Then when viewed from the field of technology it can be seen the distribution of each field of technology used as samples in this study. For the field of technology tested most is for food, the next is the field of craft technology, building materials, textiles and metals. More details can be seen in Table 3 below.

The field of food technology has the largest sample portion of 72 samples or 58 percent, then craft of 27 samples or 22 percent, building materials 14 percent or 17 samples, 5 percent textile or 6 samples and 1 sample or 1 percent in the field of metal technology .

Table 3.
Category of Respondents Surveyed by Field of Technology

No.	Field of technology	Number of Villages
1	Building material	17
2	Craft	27
3	Metal	1
4	Food	72
5	Textile	6
	Total	123

Source: Data processed, 2017



Source: Primary data processed, 2017

Graph 2.
Category of Respondents Surveyed by Technology Sector

Furthermore, for each area of technology can be explained in detail the following variance. For the field of building materials technology, a sample of 17 business units with the details as in Table 4 below:

Next is the field of craft technology with a total sample of 27 respondents from the total sample surveyed can be seen in Table 5 below.

Table 4.
Field of Building Materials Technology SMEs In Ponorogo Regency

No.	Building material	Sample
1	Brick	4
2	Grobak Ayam, *Meubel*	1
3	Hargo *Gypsum*	4
4	Kusen/door	1
5	*List* Semen/*Plavon*	2
6	Mebelair	5
	Total	17

Source: Teknometer Result, 2017

Table 5.
SME Craft Technology Field In Ponorogo District

No.	Craft	Sample
1	Anyaman	3
2	Box/Kandang Ayam	1
3	Cepon	1
4	Reyog	6
5	Ganongan	5
6	kerajinan kain perca	1
7	Kerajinan Kayu dan Kulit	2
8	Kurungan Burung	1
9	Parut	1
10	Pengrajin Tampah	1
11	Home furnishings	1
12	Singo Barong	4
	Total	27

Source: Teknometer Result, 2017

Then the metal technology field of 1 sample can be seen in Table 6 below.

Next is the field of food technology can be seen business units that become the sample of 72 respondents in Table 7 below.

Table 6.
Field of SME Metal Technology In Ponorogo District

No.	Metal	Sample
1	Gamelan	1
	Total	1

Source: Teknometer Result, 2017

Table 7.
Field of Food Technology of SMEs In Ponorogo District

No.	Food	Sample
1	Abon	1
2	Risoles	3
3	Emping	1
4	Getuk Lindri	4
5	Gula Merah	2
6	Jamur Tiram	1
7	Jipang	3
8	Kacang goreng dan lanting	3
9	Kacang Telur	3
10	Kripik Bawang	2
11	Kripik Singkong	1
12	Kripik Tempe	3
13	Krupuk	4
14	Krupuk Legendar	2
15	Kue, Klepon, Cucur	3
16	Roti Molen	2
17	Snacks	1
18	Opak	2
20	Peyek Kacang	2
21	Roti Kukis	3
22	Sagon	1
23	Sate Ayam	12
24	Sriping Pisang	3
25	Soy Milk	4
26	Telur Asin	2
27	Tempe	3
28	Rengginang Singkong/Dua Singkong	1
	Total	72

Source: Teknometer Result, 2017

Next is the field of textile technology can be seen business units that become the sample of six respondents in Table 8 below.

Then from the survey conducted on 123 samples in the next stage is to measure the survey results using TK2T.

At this level there is no need for government intervention because the pattern in this level is the requirement of the SME business unit that should be implemented if it wants to warn its production. The results of these measurements by technological field can be seen in Table 9 below:

Table 8.
Bidang Teknologi Tekstil UKM di Kabupaten Ponorogo

No.	Textile	Sample
1	Bross Accessories	1
2	Dhika Collection/Konveksi	1
3	Perabotan rumah tangga	3
4	Varida Collection	1
	Total	6

Sumber : Hasil Teknometer, 2017

Table 9.
Measurement Results Level 1

Level 1	Building material	Craft	Metal	Logam	Textile
100%	17	27	1	72	6
Grand Total	17	27	1	72	6

Source: Teknometer, 2017

Measurements of TK2T per level
Measurement Results Level 1

In the 1st level measurement of 123 respondents all met, this shows the lowest level of technological readiness. In this level 1 measurement the indicator that basic assumptions and laws such as physics / chemistry used in technology have been determined. The study of literature (theory / empirical-research earlier) on the basic principles of technology to be developed indirectly already exists. The composition of the ingredients in each business unit already exists with the hereditary trends of its predecessor.

Level 1 for the field of building materials technology using technology that can be sufficient in the production process, the technology used tends to buy tools that are ready to use.

Measurement Results Level 2

Invention at this level has already been implemented. Indirectly the principles of technology have been implemented practical applications and can be explored / developed. But the application is still speculative and there is no detailed evidence or analysis that supports the assumptions of the technology used. The

results of these measurements by technological field can be seen in Table 10 below:

Table 10.
Measurement Results Level 2

Level 2	Building material	Craft	Metal	Logam	Textile
100%	17	27	1	72	6
Grand Total	17	27	1	72	6

Source: Teknometer, 2017

The equipment and systems used in the UMKM business unit in general have been identified, although simple. When viewed from the literature study (theoretical / empirical) technology to be developed allows to be applied. Theoretical and empirical designs have been identified. Limitation The basic elements of SMEs business units using technology are known and can be developed. Characterization of technological components used by UMKM business units to be developed has been mastered and understood.

In terms of performance of each constituent elements of technology to be developed has been predicted. Preliminary analysis indicates that the main function required can work well. Models and simulations to test the truth of the basic principle. Analytical research to test the truth of its basic principles. The technological components to be developed, separately can work well. The equipment used must be valid and reliable. Known experimental stages to be performed.

Measurement Results Level 3

Research and development are actively initiated although not realized by SMEs business units, but not at the level of analytical studies and laboratory studies to physically validate the analytical predictions about the separate elements of the technology. Examples such as components that have not been integrated or represented.

Analytical studies support the prediction of the performance of technological elements have been done by through production testing on SMEs business unit. Characteristics / nature and capacity of basic system performance has been identified and predicted, but laboratory experiments have not yet been conducted to test the feasibility of applying the technology, usually directly conducted its own trial. The test is done with model and simulation supporting prediction ability of technological elements by UMKM business unit. The results of these measurements by technological field can be seen in Table 11 below:

Table 11.
Measurement Results Level 3

Level 3	Building material	Craft	Metal	Logam	Textile
100%	17	27	1	72	6
Grand Total	17	27	1	72	6

Source : Teknometer, 2017

However, if the development of such technology with the first step using a mathematical model is very possible and can be simulated. Theoretically, empirical and experiments have been known components of the technology system can work well although not yet done research in the laboratory using dummy data Technically feasible technology (analytical studies, models / simulations, experiments).

Measurement Results Level 4

The fundamental technological components are integrated to ensure that they work together. This situation still has a relatively low reliability compared with the end system. The results of these measurements by technological field can be seen in Table 12 below:

design has been completed (low fidelity). Of the samples in this level 4 measurement, 68 samples have passed the measurement indicators, three from the field of building materials technology, five from handicrafts, fifty-eight from food and two from textiles.

Measurement Results Level 5

The reliability of the integrated technology (breadboard technology) increased significantly. The fundamental technological components are integrated with realistic supporting elements so that the technology can be tested in an artificial / simulated environment. Examples include the integration of components in laboratories that already have high reliability ('high fidelity'). below:

Table 12.
Measurement Results Level 4

Level 4	Building material	Craft	Metal	Logam	Textile	Total
57,50%				1		1
60%	7	20	1	36	3	67
72,50%		1				1
90,00%				1		1
100%	10	6		34	3	53

Source : Teknometer, 2017

Complete laboratory test of components has been done, this test occurs because the business unit of SMEs using technology already available in the market so that the technology has been through the test phase by technology manufacturers (tools). System requirements for apps by user are known (adopter wish). The results of laboratory experiments on the components show that these components can operate. Experiment the main function of technology in the relevant environment. Laboratory-scale technological prototypes have been created. Component integration research has begun. The 'key' process for its manufacturing has been identified and reviewed in the laboratory. Integration of technology systems and laboratory scale

Preparation of hardware production has been done. Market research (marketing research) and laboratory research to select the fabrication process. The prototype has been made equipment and supporting machine has been tested in the laboratory The integration of the system is completed with high accuracy (high fidelity), ready to be tested in real environment / simulation. Accuracy / fidelity of the prototype system increases. Laboratory conditions are modified so that they are similar to the actual environment the production process has been reviewed by the manufacturing department. The results of these measurements by technological field can be seen in Table 13

Table 13.
Measurement Results Level 5

Level 5	Building material	Craft	Metal	Logam	Textile	Total
30%				1		1
58%				2		2
60%	7	20	1	36	3	67
63%				1		1
65%				1		1
73%		1				1
100%	10	6		31	3	50

Source : Teknometer, 2017

Measurement Results Level 6

Research and development are actively initiated. This may involve analytical studies and laboratory studies to physically validate the analytical predictions about the separate elements of the technology. The results of these measurements by technological field can be seen in Table 14 below:

Table 14.
Measurement Results Level 6

Level 6	Building material	Craft	Metal	Logam	Textile	Total
30%				1		1
47%				1		1
57%		11				11
60%	12	13	1	66	4	96
63%				1		1
73%	5	2		2		9
100%		1		1	2	4

Source : Teknometer, 2017

The actual operating environment conditions have been identified. Investment requirements for equipment and manufacturing processes are identified M & S for the performance of technology systems in the operating environment. The manufacturing / manufacturing department approves and accepts lab test results. The prototype has been tested with high accuracy / lab fidelity in simulated operational environments (which are actually outside the lab). Test results prove technically feasible (engineering feasibility).

Measurement Results Level 7

The prototype is approaching or in line with its operational system plan. This situation reflects the developmental step of TKT / TRL 6, requiring demonstrations

of real system prototypes in an operational environment. The results of these measurements by technological field can be seen in Table 15 below:

Measurement Results Level 8

Technology has proven to work / function in its final form and in the conditions as expected. In general, this TKT reflects the end of the actual system development.

Table 15.
Measurement Results Level 7

Level 7	Building material	Craft	Metal	Logam	Textile	Total
53,80%				1		1
56,70%	1	2		2		5
56,90%				1		1
60%	12	24	1	66	3	106
61,50%				1		1
100%	4	1		1	3	9

Source : Teknometer, 2017

Tools, processes, methods and engineering designs have been identified. The process and fabrication of equipment begins to be piloted. Test equipment and process equipment and equipment are tested in the production environment. Draft design drawings are complete. Tools, processes, methods and engineering designs have been developed and started to be piloted. Scale scale has been completed. The estimated cost estimate has been validated (design to cost). The fabrication process in general has been well understood. Almost all functions can run in the environment / operating conditions. Complete prototypes have been demonstrated in simulated operational environments. The system prototype has been tested on field trials. Ready for initial production (Low Rate Initial Production- LRIP).

The shape, suitability and functionality of components are compatible with the operating system. Machinery and equipment have been tested in a production environment. Final chart completed. The fabrication process is pilot-tested (pilot-line or LRIP). The fabrication process test shows acceptable results and levels of productivity. The test of all functions is done in the simulation of the operating environment. All materials and equipment are available for use in production. System qualified through test and evaluation (DT & E completed). Ready for full scale production (full capacity). The results of these measurements by technological field can be seen in Table 16 below:

Table 16.
Measurement Results Level 8

Level 8	Building material	Craft	Metal	Logam	Textile	Total
60,00%	17	26	1	71	6	121
100,00%		1		1		2

Source : Teknometer, 2017

Measurement Results Level 9

Technological application (application) of technology in its final form and under intended conditions (planned) as in operational testing and evaluation. In general, this is the last part / aspect of the bug fixing in the development of the actual system. Examples include for example the utilization of the system under operational mission conditions. The results of these measurements by technological field can be seen in Table 17 below:

in the production process. This community technology exists because of the ability and capacity of people in finding solutions to technological problems, although simple, aimed at efficiency and effectiveness of production.

The government's attention in improving the production capability of the SME business unit is still indispensable, when referring to the measurement results. As an illustration of the sample surveyed for the production of brown sugar,

Table 15.
Measurement Results Level 7

Nilai Level 9	Building material	Craft	Metal	Logam	Textile	Total
60,00%	17	26	1	71	6	121
100,00%		1		1		2

Source : Teknometer, 2017

The operational concept has been perfectly applicable. Estimated technology investments have made no significant design changes. Technology has been tested on the actual conditions of productivity at a stable level all documentation has complete estimates of production prices compared to known technology competitors. In the measurement of TK2T to business units up to level 4 is already below 50 percent of the total sample of SMEs that are not eligible. From this measurement can be explained that the average unit of SME business is still on the use of appropriate technology based on experience in producing it can be seen in the field of food technology.

Most SMEs basically have the technology used to increase their production capacity, such as the production process of emping using rectangular and flat stone, and emping-forming hammer. Such technology is not a category of appropriate technology but included in the category of community technology, the tool used is a tool that is created or modified in such a way that has a function to facilitate SMEs

this sample is discussed because Ponorogo Regency has abundant natural resource potential and one of the dominant business units is the sugar business unit.

Conclusion

Although in the measurement of business units of SMEs have reached the basic stage but there needs to be follow-up in improving the results of its production so that in the process of measurement get a good value. Follow-up from level 1 to 3 measurements is (1) The need for identification of the type of technology applied both to raw materials, production equipment, production processes or production results whether in the category of community technology or appropriate technology. These efforts can be done by establishing partnerships with relevant stakeholders to build synergistic SME products, (2) In the form of community technology, it can still be used because the technology is part of local wisdom, which departs with the ability and capacity of SMEs in increasing production through the creation of the technology they own, (3) Appropriate tech-

nology needed in accordance with the needs of SMEs business unit can be done in coordination with Ministry of Research and Development institutions and Non-Ministry, SOEs, Higher Education, so that technology can really be utilized, (4) Implement the function of "partnership implementation activities" (implementing partners) with the sharing of organizational resources, because in the measurement there is the same technological field but the measurement results there are better, so it is possible to transfer technology that is used with mediated and facilitated by the government.

Then some SME business unit that has passed the intermediate level between levels 4 to level 6, it is necessary to do follow-up in order to produce maximum value in the measurement that can then continue up to the last measurement level. Follow-up from level 4 to 6 measurements are: (1) Technical and economic considerations, whether the appropriate technology products or that have been produced by R & D can be made by fulfilling the balance / equality between the technical requirements required by economic terms or simply by using community technology already available, if the community technology is sufficient Need to be done is coaching on the level of supporters, such as management, post-production and human resources, (2) Establish partnerships that can be categorized into two groups: (2A) Partnership implementation activities (implementing partners), still needed a closer collaboration to build the synergy of product creation to the advanced level of technological maturity, (2B) Partnership use of litbangyasa products (user partners):, (3) In support of innovation development in order to be utilized, it is necessary to prepare / initiate incubation programs on prototyping litbangyasa products that work in harmony to support the partnership from the side of the user partners facilitated by related Stakeholders.

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