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**The Role of Engineering of Appropriate Technology, Applications  
Management and Information Technology on Small and Medium Enterprises  
(SMEs) Claws Rambak (Traditional Snack) as Efforts Increase The  
Competitiveness of Small Industry**

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**ABSTRACT:** Small and Medium Enterprises (SMEs) have various problems, product quality, marketing and business sustainability. Based on the background of this survey has issues about improving the process and production claws rambak (traditional snack) that is not too long in the event of rainy weather making it more productive and effective, improving the quality of SMEs management, marketing strategies of production and seek opportunities to other product variations. The result is the production of tools for increasing productivity claws rambak dryer with drying presentase level 60% compared with manual drying, manufacturing of SMEs management strategy with the creation of training modules SMEs management, financial planning, the simple balance of SMEs and marketing through the internet, so it will be more easily recognized and extensive marketing network. For product variations opportunities through market research with the results of (1) the level of public confidence in the SMEs products is quite high, (2) the need for improvement in brand and packaging SMEs with proven products (a) the quality of SMEs products is not good, (b) no health insurance happens almost all food products from SMEs, besides it does not yet include any food ingredients daily intake and (c) the design of SMEs products. SMEs products have the potential to compete with products from non-SMEs, (3) need to improve the quality of products from a variety of marketing management, human resources and government support.

**KEYWORDS:** productivity, management, public perception—

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## INTRODUCTION

Small industry has position is very important in the economy. Small industrial give social benefits is important to Indonesian economy. Small and medium enterprises (SMEs) have an important role in the economic and industrial growth of a country [1], [2], [3]. Small businesses are vital to the role because it has examined crucial in economic growth on a national and regional scale. Almost 90% of the total business in the world is the contribution of SMEs [4]. *First benefit*, the benefits of small industries can create opportunities with endeavor of financing is relatively inexpensive. *Second benefit*, small industry also taking role in improving and mobilizing savings domestic. This is made possible by the fact that small industries tend to have or acquire capital from its own entrepreneurs, from family savings or of his associates. *Third benefit*, small industries have complementary position of medium to large industry, small industry producing the product because it is relatively inexpensive and simple which can be generated by medium to large industry.

In addition, SMEs have a contribution to the absorption of labor [3]. Empirical studies show that SMEs on an international scale is a source of job creation [5], [4], [6]. On the other hand, the conditions on the field is pretty much found the SMEs as technology users still need the support of science and technology to improve the quality and quantity of production, due to the lack of mastery of technology and the limited capital or funding. The example is a small industry in Klaten, Central Java, Indonesia has the role that claw rambak on local economy, in addition to the potential food community. The level of productivity of SMEs these partners in a day produces 20 kg/day claws rambak once production. Investment management system, capital and financial administration is simple and conventional.

To enhance a good marketing strategy, then the market share of the target is a region of Central Java, Indonesia needs to be: **First**, a marketing strategy that is carried out in the SMEs need to know consumer behavior is improved, and cooperation with the agency. **Second**, the improved quality of the production and control of quality of products remain a standalone system done by SMEs operational and production partners. For example in the rainy season production will drop dramatically, this is because the chicken claw takes solar heat directly to the drying process. Rainy weather takes a long time for the production. The problem that arises is the number of booking a product that takes a long time in the drying



process, during this processing are using manual system, subject to direct sunlight and human-powered. Rambak crabbed dryer benefits: assures continuity of production, save costs, accelerate the production process, production capacity increases, saving drying, quality-assured chicken rambak and longer shelf life. **Third**, the quality of enterprise development still conventional in nature and need for improvements in the field of management of SMEs-related products is produced, this is to compensate for the increasing number of consumers. Based on the background, then the problems occurred were: (1) how to improve the production process and the making of food in case of rainy weather that more productive and effective, (2) how to improve the quality of SMEs management and marketing strategies of production which is manual and (3) how to look for opportunities to other product variations.

## MATERIAL AND METHODS

Technology selected is the application of technology to the purpose potentially increase efficiency performance production, products the quality and productivity an undertaking, that in the long run expected to increase revenue partner person or a partner that participate in the program. This analysis using matériel analysis:

1. Material used in the technology is an iron plate, iron pipe, insulator, process of welding, process of cutting, glass, pipe of heat and instruments advocates engineering technique making a dryer.
2. Making practical management training module to SMEs with management, strategic literature, survey marketing and SMEs financial.
3. Make website as application of information technology to SMEs.
4. Make a survey quisionner associated with consumer perceptions in the SMEs product.

The methods used in the program are:

1. The occurrence of an agreement between academic and industry small counterpart covering productivity, in planning activities improvement of SMEs and searches opportunities products, that engages with a partner.
2. Hold cooperation and doing the calculations estimation costs, process of activities good mechning, management that is performed along in monitoring the planning that is good.

3. Evaluating and test to determine the level optimal performance production of good quality and quantity.
4. The monitoring of production used for the process and sustainability optimally to the sustainability of program remains developed between academic and partners.

## RESULTS AND DISCUSSION

### Production of dryers which are able to produce increased productivity

This activity is the manufacture of dryer later for small industry partner will be able to squeeze production costs and raises the efficiency of production processes, namely increased production, time reservations can be fulfilled and the production quality is maintained. Use of the system will change in the process of manual or transfer technology by using the help system on an ongoing basis, the relative use of quality maintained and easy. The process of claws rambak:



**Fig. 1 Several steps in the process of making claws rambak crabbed from crabbed, process, the separation between the skin and the bones and ripening**

The claw rambak dryers in principle can be used to process the product of the other. These dryers are expected performance will be more motivated, the utilization of results or product, customer service can be improved and the welfare of economically will be more promising for the development of the business will come.



**Fig. 2 Manufacturing process and Process Dryers**

Dryers work steps: (1) make sure the hose and regulator does not leak, plugged in the heater pipe as a conduit between the gas cylinders and LPG gas stove, (2) turn on the oven by pressing knob which is the ON/OFF button that is on the top left of the display until the oven on the oven, (3) temperature setting by pressing button simultaneously by turning the knob to the right to increase the temperature, and the temperature to lower, (4) air exchange settings in the oven with a water valve button shifts the way towards maximum for open air hole and towards the minimum to cover the air holes, (5) if the temperature display shows the set temperature already, enter the equipment which will be dried and sterilized in the oven, (6) to set of time the old use of the oven by pressing the button SET for three seconds, then release and turn the knob to the right/left, and (7) press knob to turn off oven, unplug pipe from the heat source.

**Table 1. Specifications instrument dryer**

No.	Specifications	Description	Indicator
1.	Type of Oven	The Oven Rack	Easy and practical
2.	Dimension	80 x 60 x 60 cm	Adjustable
3.	Size Baking Pan	60 x 40 cm	Adjustable
4.	Number of Tray	3 pieces	Adjustable
5.	The capacity	3 pieces	Adjustable
6.	Base material	Galvalum, stainless steel plate	Not corrosion
7.	Optional	Rockwool/secure heat	Factor of security operators
8.	Fuel	LPG 3 kg/ 12 kg	Adjustable
9.	Complement	Pipesfire managers, regulators, temperature	The control/supervision of hot
10.	Paint/Color	Brass	Can be repainted
11.	Wheel	Using breake	-
12.	Feet	Jengki	Portable



Based on the results of the test performance dryers made by implementing and using sample as follows:

**Table 2. Performance Test Results Of Dryers**

No.	Speciment	Weight (kg)	Weigh t of Bone (kg)	Weight Bone and Meat (kg)	Dryer Time (hour)	After Dryer (kg)	Percentac e (%)	Temperature (Celcius)
1.	I	0,25	0,15	0,10	1	0,06	66	100
2.	II	0,25	0,17	0,08	1	0,06	35	100
3.	III	0,25	0,18	0,09	1	0,05	80	100
<b>Mean</b>		<b>0,25</b>	<b>0,16</b>	<b>0,09</b>	<b>1</b>	<b>0,056</b>	<b>60</b>	<b>100</b>

In the table above, provide an explanation in average 0.25 kg of chicken claw consists of 0.16 kg weight bone and 0.09 kg weight of the skin as well as meat, chicken claw, after drying with the artificial dryers for 1 hour, without taking into account the initial process of heating with gas stove, then get ready to dry fried chicken claw is 0,056 kg, this means having about 60% of shrinkage is usually, with a stable temperature of about 100 degrees celsius. This can be compared to the manual with the warming rays of the sun beating down for 2-3 days. The explanation and analysis of the performance test results the dryer can be recommended are advantages and disadvantages as follows:

**Table 3. Advantages and disadvantages of Dryers**

Type	Advantages	Disadvantages	Recommendation
Manual System	Place without charge / more economical, capacity not limited / more	Hanging from sunlight not hygienic because infected flies and other.	Fixed used when clear weather.
Dryer System	More hygienic in drying, dry faster than manual system.	Timely limited capacity, need other energy, increased costs, maintenance, safety factor.	Used when weather overcast/rain.

### Improving the management of SMES with the development of technology marketing strategy

That has been a lot of change in the various sides of human life, including the pattern of behavior of the market, business, economy, structure and strategy that is executed on a





company [7]. The technology also has a fairly large role in affecting the structure of the market and have a competitive advantage in an industry [8]. Technology and industry now and the future will increase developments good quality and quantity, where the development of business and technology in real always tried to adapt, engineer and apply technological progress current for the sake of the value of competitiveness in the market work, application of technology in the fields of industry will require a lot of human resources able to manage every aspect of era development exists, good analyzes and less advanced optimally [11].



**Fig. 3 Profile view of marketing through www.griyaukmrakyat.blogspot.com**

To provide ease and cultivate the look as well as news or information marketing materials then takes user's profile to make it more easy and unable to give optimal results in supporting marketing, better if in a company there are special employees who handle marketing issues on the website so that the data is always up-to-date deals. In the operational activities carried out by the implementing Team, as the table below:

**Table 4. Specification of Marketing via the Internet**

No.	Profile	Explanation	Indicator
1.	Profile of user	Griyaukmrakyat	Memorable
2.	Operator	Team implementer	
3.	Product	Product all SMEs products and marketing in general marketing	More practical and effective

**Tabel 5. Marketing Indicator of SMEs**

No.	Indicator	
	Before	After
1.	Marketing manual	Using media information technology
2.	Manual transaction	Utilization transaction e-commerce collaboration between teams and SMEs
3.	The SMEs website are no containers	Already have the SMEs website



The small businesses provide social benefits crucial for the economy, especially with the internet, primarily in: (1) small businesses could create vast opportunities with a relatively cheap financing, (2) small business also took a role in increasing domestic savings and mobility and (3) small businesses have complementary position of large and medium industries, because small businesses produce products that are relatively cheap and simple, which is usually not produced by large and medium enterprises [9].

Besides the resulting benefits in the context of SMEs management apparently occurred a condition of weakness of small industrial enterprises in general, namely: (1) educational level is generally low, education efforts are generally obtained from his parents, therefore they are traditional, (2) low levels of education fosters a weakness in the company's organization and management attitudes, (3) usually die of his business depends on one's self, (4) the financial weakness that resulted in the limited ability of motion company, (5) lack of knowledge plus a weak capital basis, the technical ability to produce good quality improved and difficult in terms of volume, (6) business locations spread throughout the country, city, district, subdistrict and village site that became the facilities help ease bank acquired are not the same. This is a decisive obstacle and (7) the attitude of traditional businesses are generally less attention to documents which can help provide security against the possibility of the development of this business [9].

Some weakness on also owned by small industry, among other capital problems but by means of a proposed capital loan or funds from other parties and industry is able to handle it. Weakness other faces is the attitude of traditional business and little regard for the documents that can provide security assistance to the development possible effort, but by following training of small industrial of an institution or related institutions and they are able to overcome it and can improve the welfare of his life so as to be fixed urviving the crisis conditions though. Similarly happens to the SMES, the need to improve the quality of management performance-based SMES due to competition and the increasing necessities of life [11].





**Table 6. SME Management Activities**

No.	Product	Aims
1.	Management training of SMEs	To motivate SMEs and provide the knowledge, the discourse about the SMEs management training global.
2.	Module training SMEs finance	To motivate and give the knowledge, the discourse about the SMEs financial management in a simple and practical
3.	Training/Workshop	Training module applications

**The variation other products being in demand by people through market research**

Business extension to development small industry. While reasons support the importance of industry development small-scale is first, problems flexibility and adaptabilitasnya in obtaining a raw material and equipment. Second, its relevance with the process of decentralization economic activity to support the creation of integration activity on the economy sectors another. Third, roles in long-term as the base for the creation of independence of economic development as the industry small-scale is generally sought by businessmen by using content import low [9].

Several problems that inhibits economic growth of small and medium enterprises in indonesia both in the internal and external, is an opportunity in enlarging the market capital structure, organization and management, the utilization of access and technology mastery, and business network and cooperation [10].



**Fig. 4 Market research about the public perception of SME products**

The result of the research which is that the public perception is related to the SME products rambak, consumption, preferences and beliefs of the community towards SMEs rambak product is 100%. This shows that the potential of SMEs products could be accepted by the community widely and has a good prospect for always developed by entrepreneurs or would-be entrepreneurs SMEs engaged in small industries.



The public perception of the design of SMEs products rambak was 74%, so needs to be improved because the design must be attractive and could become a brand marketing to be known by the public at large. The proposals of the improvement of SMEs products packaging design side rambak is variations and models packing product (30%), this suggests that almost all respondents assess that the level variations and models of lunches are not able to become the attraction of the buyer, because it is random, and need a touch more interesting technology.

Improving a brand of SMEs products rambak is a little (30%), brand packaging memorable (45%), improvement from side brand SMEs rambak now are name (33%) and form brand SMEs (26%), packaging SMEs products rambak produced is a little (30%), packaging SMEs still difficult taken and strong (30%) and packaging material was pretty much (30%). Improving brand yet to be evaluated and increased especially against planning brand SMEs products because search brand name not interesting, not marketable, not practical and impressed not reck from the marketing and the quality of the food.

To repair the packaging SMEs products is a model (43%) and packaging material (23%), to repair the packaging existing SMEs is a packaging material and models (30%). Increase from packing materials and model deserves consideration because almost all SMEs products yet noticing model, packaged concise easy and interesting moreover, still too thin packaging material plastic casual and yet noticing aesthetics and attractive tweaks buyer.

For the ability to products non competitiveness SMEs all respondents prepared by 66 % of the remaining 34 %, it had no ready. Problems readiness competition this shows that the existence of SMEs still potentially to be able to advance marketing- the quality of products that can competed a segment of the market higher. Reason has not been ready this competition because there were some of the major problems of SMEs rambak namely (1) the quality of the product of SMEs, has not been good (2) no health insurance occurring almost all food products of SMEs, besides not include the content of adequate nutrition every food (KKG ) and (3) a design SMEs products that impressed monotonous, and is not creative thereby precipitating the buyer not interested and boring.

Market research this can be concluded that a small to medium enterprises has an important role in the economy local area, especially in moving economic activity regional and provision of employment. Some that must be considered against perception people are: (1) Public



confidence in the SMEs high, (2) Need of repairs brands and packaging on SMEs products that is, (a) the quality of SMEs products not good, (b) no guarantee health occurring almost all food products of SMEs, besides not include content adequate nutrition every food (KKG) and (c) design a product SMEs, (3) SMEs products potency to ready compete with the product of non SMEs, (4) Need to improve product quality of various management marketing-human resources and support the government.

## **CONCLUSION**

1. Improve the production processes and making claws rambak so as not too long in case of rainy weather so that more productive and effective by creating a customized dryers with the needs in this respect is the tool dimensions 80 x 60 x 60 cm to make it easier to access the change.
2. Improve the quality of SMEs management and marketing strategies of production which is still done by manual compilation of SMEs management module and financial of SMEs that are practical and effective implementation, as well as the application of such activities.
3. Looking for chances to variation other products through market research related to the perception of people for SMEs products with the result that the need of repairs brands and packaging on SMEs products that is: (a) the quality of the product of SMEs, has not been good (b) no health insurance occurring almost all food products of SMEs, besides not include the content of adequate nutrition every food (KKG) and (c) small and medium enterprises, design a product (d) SMEs products potentially to be ready to compete with the product of non for SMEs and (e) need to improve the quality of the product of various management marketing- human resources and support the government.

## **SUGGESTION**

1. Need to continue the plan of activities not yet settled throughly to solve the problems more complex: a model marketing and design packaging that is attractive and the development of SMEs more healthy and hygienic in the implementation of health and occupational safety.
2. Need coordination and cooperation between the related parties, to facilitate the execution of activities.



3. Need improvement continued program to better in the management of small and medium enterprises in a professional manner.

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