

Optimization Innovation System of Sme Sector in Order to Increase the Competitiveness of SME's (Assessment in the Food Industry Sector Sidoarjo Regency with Dynamic Systems Approach)

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Abstract

The position of SMEs is in the lowest position in the economic structure of the country, but a lot to contribute revenue to the state. The level of competition is very high in SMEs with intense competition. Many SMEs are emerging, but many who later went bankrupt. To increase the level of competition in a competitive SME it is necessary to look at the whole situation with the innovation system approach that involves all stakeholders, the involvement of government, private sector and universities in developing innovation competitiveness of SMEs in order to obtain good so that they can survive and earn sufficient profits or even create new markets. This study will be made within 3 (three) years with the achievements that have been determined each year of data collection, problematization, to creating simulations that try, represent the real world in the research data. Based on the research results, especially at the stage of problem recognition by researchers obtained several things: (1) at the stage of identifying problem situations that are not structured in the context of SME innovation in the food sector in general Sidoarjo have some problems, among others, (a) SMEs have the technological constraints namely the low uniformity of product quality and sanitation, (b) the limited capacity and the opportunity to innovate or try new technologies, (c) the issue of capital, infrastructure, transportation, distribution, quality control, standardization, economies of scale, promotion, market access, product image, the quality of products, availability of raw materials, no branding, about the quality, inadequate volume, authorization foodstuffs, contaminants delimitation, the complexity of import and export certification, standard labeling systems that are not consistent, production, product development, quality control, accounting, machinery, organization management, data processing, marketing techniques, market research. (2) at the stage of identifying situations/problems in a structured note that the main problems facing SMEs in the food sector in Sidoarjo district are as follows: (a) the difficulty of marketing; (b) financial constraints, (c) the limitations of the Human Resources (HR); (d) the problem of raw materials, and (e) the limitations of the technology. (3) the stage of defining the root of the problem situation is known that the main problems of innovation development of SMEs in the food sector Sidoarjo related to the following: (a) aspect of the organization, (b) institutional aspects; (c) aspects of function; (d) aspects of the functions activities, and (e) aspects of organizational dynamics, institutions, functions, and activities.

Keywords: SMEs, competitiveness, innovation systems, dynamic systems

1. Introduction

1.1. Research Background

Governments in various countries, in general, support SMEs. This is done considering the significant contribution on employment, innovation and growth. Support the government's aim to promote the SME sector, so passionate and growing dynamically. Usually, however, the government support for SMEs, not running optimally.

There are at least three things that cause unsatisfactory state's role in empowering SMEs. First, the relevance of coaching services based on a narrow view of the needs of SMEs, which are more determined than the provision of services (supply driven) and not because of knowledge of what it takes SMEs. Second, the target range is limited. This is caused by the dependence on subsidies and the provision of the type of government assistance to SMEs. As a result, the number of companies receiving assistance is particularly limited by the amount of funds budgeted government and the nature of aid delivery mechanisms, fatal consequences when funding stopped or often only valid for just once.

Reflecting the variety of the above, has now developed discourse practices (best practices) in the context of the development of SMEs which can be applied in various countries. Development of SMEs divided into two aspects of financial and non-financial.

Although Indonesia has long had a small business development program / small industry but they have yet effective and sustainable (sustain). For that there is an important requirement which we ignore, namely:

Focused, Strategic Approach and Collective. To allow approach Cost effective and Demand driven it can only be done when the " Cluster of Small Business " can operate within areas close to each other and have a strong relationship as a productive system. Clusters are generally a spontaneous tendency of similar efforts to carry out activities that are mutually approaching. Although there are various kinds of clusters were developed as Technology Incubation Center, Technological Park, Small Industrial Environment, bonded zones and others as well as the nature of embryonic industrial centers that focus is building a dynamic cluster so that the activities of SMEs is in it to progress.

In view of this research, for the advancement of SMEs should be assessed and a solution the solution by looking at the concept of the study and some empirical evidence of successful practical experience shows that the competitiveness and social cohesion of the country, region or community is strongly influenced by the development of " innovation system " countries, regions or communities concerned. Dynamics of innovation systems shows how a nation can master, harness and develop the knowledge, innovating and diffusing innovation, and proceeds in a variety of learning and adapting to change.

Innovation and diffusion of innovation as a source for the improvement of key words that no longer can be ignored. Innovation is no longer to be regarded as " goods " exclusively for a specific community or group of industrialized society. Innovate, and thus also diffuse the innovation should be a " tradition " in the country, region or community, who are willing to increasingly prosperous and powerful do not want to " marginalized " in the governance of international life today.

Build competitiveness and strengthen social cohesion requires a strong foundation and ability (capacity) to make it happen. Development / strengthening of innovation systems will increasingly determine the success of economic development at the national and regional level to improve social welfare, reduce poverty and face challenges in preparing people to enter the era of knowledge economy (knowledge economy) and knowledgeable society (knowledge society).

To obtain answers to the main problems is that this research study will assess the innovation system that is both descriptive theorizing. This is to get the answer to how the SME sector innovation system is mainly for SMEs engaged in the food industry. It becomes important to find a footing foundation theory enough to find an answer how innovation system should be able to improve the performance of the SME sector innovation. Both descriptive and prescriptive approaches in the study of the SME sector innovation system got a reasonable position in the Administration as thinking Riggs (1964) suggested that the descriptive and prescriptive epistemological understanding is relatively the same as in the definition of Public Administration approach is then used to capture the existence of SMEs as an important part of the Administration.

1.2. Research Problems

Based on the research background, the researcher has made some research problems as follow:

- 1) What aspects of the organization as a component of the innovation system that can affect whether learning sector and the capacity of SMEs?
- 2) What aspects of the institution as a component of the innovation system that can affect whether learning and the capacity of the SME sector?
- 3) What aspects of the innovation system functions as a component of what can impact learning and the capacity of the SME sector?
- 4) What aspects of the activity as a function of whether the innovation system components that can impact learning and the capacity of the SME sector?
- 5) How do the dynamics of organizations, institutions, functions, and activities interrelated and interact in the SME sector innovation system that enhances the competitiveness of SMEs?

2. Review Of Literature

2.1. Innovation System

Innovation system is basically a system (a unit) which consists of a set of actors, institutions, networks, partnerships, interaction and productive processes that influence the direction and speed of the development and diffusion of innovation (including technology and good practices / best), and the learning process. Thus the actual innovation system includes a base of science and technology (including educational activities and research activities, development and engineering), the production base (including value-added activities to meet the needs of business and non-business as well as the general public), and the utilization and diffusion in the community and growing the learning process. At the national level, system innovation called the national innovation system. While at the level of the territory that is more narrow (regional / local), often called the innovation system of regional innovation system / local. Moreover, in the particular contexts such as sector or industry, the innovation systems approach often uses the term sectoral innovation systems / industrial.

In principle there are 5 (five) terms / pressure attention is generally given to a discussion of the innovation system, ie (see Taufik, 2005c) :

- a. Base system as the foundation for the process of innovation and its diffusion of innovation . This relates for example to the terms / following aspects (which are generally linked to one another) :
- Levels of analysis : micro , meso and macro .
 - Aspects / territorial aspects and / or administrative : eg innovation system at a supranational level (several countries) , national and sub - national (or regional) .
 - Aspects areas or sectors : sectoral innovation systems / industrial and clustering .
 - Base main activities : for example, the system of science and technology (including R & D) and production systems .
- b. Actors and / or organization (institution) that is relevant to the development of innovation (and diffusion) . The actor can run any or combination of the following roles :
- actors involved are " direct " : are those whose roles relate " directly " in the value chain process innovation , utilization and / or diffusion . His organization can be a provider , user , and / or intermediaries , such as actors / business organizations , universities , R & D institutions , business organizations , professional organizations , or institutional forms collaborative such alliances / consortia , and others .
 - actors involved are " indirect " : those whose role is important but does not engage in " direct " in the value chain process innovation , utilization and / or diffusion . Perpetrators " support / support " is to contribute through the provision of resources for innovation (eg funding and specialized human resources) , support functions such as information , products and / or services of a particular expertise supporting both technical , business , legal or otherwise) .
 - Critical / policy makers : that the government (or government) is pure and / or organization / organization in the form of a quasi - public authority acting as policy makers , both regulatory and non - regulatory .
 - Supporting innovation in the policy process : their role is to support the policy process , both to provide services research / policy assessment , advisory (advisory body) and / or the role of the control (supervision) .
 - In practice the system of innovation , an organization (or organization) generally perform multiple roles , except for the determination / or regulatory policy making . Good policy (good policy governance) need to avoid / minimize distortion for example by " separating " its role as the policy-makers of his involvement in the " technical activity " directly in the realm of its authority and avoid / minimize the possibility of the role of moral hazard
 - Basically , change growing increasingly pushing / demanding a paradigm shift how the actors play a better role in the innovation system . Universities for example , no longer " just " need to produce well-educated human resources quality , but also increasingly able to answer the real issues in society . His ability to be a research and entrepreneurial university is now considered increasingly important to the success of innovation in a country / region . R & D institutions no longer enough just carrying out technical R & D activities or produce findings / inventions that more is his self - interest , but produce contextual solutions to the growing problem in society and is considered important for the promotion of development in the future .
- c. Institutional , relationships / linkages , networks and interactions between parties that affect innovation and its diffusion . Pressure is usually given to the discussion of institutional issues / institutional (in the broad sense) as norms / values , the basic framework of policy , organization and organizing and / or relationships , networks and interactions in the value chain (including transaction mechanism) in the innovation system , both business and non - business . In this case study is considered more important because it is related to issues of market failure and systemic failures that greatly affect the success of the innovation system .
- d. Functionality , namely concerning the main functions of innovation systems (of elements , interactions and processes of innovation and diffusion) . Related to this is the issue of the learning process Yeng occurs in the system, which is increasingly prominent in discussions about innovation system .
- e. Activity , which involves effort / process or action of the process of innovation and diffusion . Penadbiran innovation (innovation governance) are both considered increasingly important to develop a comprehensive yet focused activity , which increasingly coordinated , and developed gradually in line with the development and context , as well as improved continuously .
- In developing / strengthening the innovation system , to realize that the system of science and technology (science) is an integral part of a very important . In this respect and learn from the experience of successful countries , it can be concluded that several factors determine the success of a country to build / develop or strengthen its innovation system .

2.2. Competitiveness

Competitiveness of the sector / region (corporate) in contrast to the nation's competitiveness, which will have a competitive edge or competitive advantage (competitive advantage) when the company has something that no competitor, doing something is better than any other company, or be able to do something that is not able to be done by another company.

By using the concept of competitiveness, Man et al. (2002) created a conceptual model to link the characteristics of the managers or owners of SMEs and long-term company performance. Conceptual model for the competitiveness of SMEs consists of four (4) elements: the scope of the company's competitiveness, organizational capability of the firm, the competence of entrepreneurs / business owners, and performance.

According to this study, the competitiveness has three (3) characteristics, namely potential, process. In addition to these three characteristics, competitiveness is also characterized by long-term orientation, control, relativity, and dynamics. In addition, this study shows that there are three important aspects that affect the competitiveness of SMEs, namely: (1) internal factors, (2) the external environment, and (3) the influence of the entrepreneur / business owner.

Furthermore, in this study, the influence of these entrepreneurs are handled with competence approach from the perspective of a process or behavior. By using the results of the study as one of the inputs, this paper developed a framework of thinking about the competitiveness of an SME as follows (Figure 1). The competitiveness of a company is reflected in the competitiveness of the products produced by the company. In turn, the competitiveness of a company is determined by many factors, seven of which are very important are: skill or education level of workers, entrepreneurial skills, availability of capital, organization and management system are good (according to business requirements), availability of technology, the availability of information, and the availability of other inputs such as energy, raw materials, etc.

In this study, the focus of research in improving the competitiveness of the innovation system is viewed from organizations, institutions, functions, and activities such as the innovation system that has been on constituent innovation system.

2.3. SME

Definition of MSME (Micro, Small and Medium Enterprises). Micro, Small and Medium Enterprises in fact many who defines an assortment, but demkian according to Law No. 20 of 2008 SMEs have the following criteria:

1. Micro businesses are owned by people earning individuals and / or entities owned by individuals who meet the following criteria:
 - a. Has a maximum net worth 50,000,000,00 (fifty million dollars), excluding land and buildings, or Have annual sales turnover of Rp300.000.000,00 (three hundred million rupiahs).
 - b. Small Business that is economically productive activities that stand alone, which is conducted by an individual / business entity that is not a subsidiary / branch companies not owned, controlled, or a part, either directly or indirectly from medium or large businesses that meet criteria:
 - Has a net worth of more than 50,000,000,00 (fifty million dollars) to the Rp500.000.000,00 (five hundred million rupiah) excluding land and buildings, or
 - Has annual sales of more than Rp300.000.000,00 (three hundred million rupiahs) up to the Rp2.500.000.000,00 (two billion five hundred million rupiah).
2. Medium Enterprises which productive economic activities that stand alone, which is conducted by an individual or business entity that is not a subsidiary or branch company owned, controlled, or a part, either directly or indirectly with a small business or a large business that meets the criteria:
 - a. Net worth of more than Rp500.000.000,00 (five hundred million rupiah) up to at most 10,000,000,000,00 (ten billion dollars) excluding land and buildings, or
 - b. Has annual sales of more than Rp2.500.000.000,00 (two billion five hundred million rupiah) up to at most Rp50.000.000.000,00 (fifty billion dollars).

Form of Micro, Small and Medium Enterprises (SMEs) can be a proprietorship, partnership, such as firms and CV, as well as a limited liability company. Currently, in Indonesia there are 41,301,263 small businesses (UK) and 361,052 medium-sized enterprises (UM). Both of these efforts, otherwise known as the Small and Medium Enterprises (SMEs), which amounted to 99.9% of the total number of businesses in Indonesia. SMEs are engaged in various economic sectors (agriculture, fisheries, animal husbandry, industry, trade and services). SMEs can also be classified on the classification of pre-business, enterprise and effort goes forward.

Innovation is defined as new creations of economic significance, mainly carried out by the company. All companies have the approach and methods of each to develop new ideas or innovative that create value (value). In many technology companies, innovation is a process of research and development activities (R & D). Service companies often have kreatifitas department while others still rely on

workers in producing innovative ideas . Growth is closely related to the company's ability to innovate . This involves continuous change to product , process and organizational and managerial practice .

3. Research Method

This study is a mixed method approach, which is a combination of qualitative and quantitative approaches to dynamic systems perspective and take the object of research is the system of SME innovation and increase the competitiveness of SMEs (multiple case). With the approach of dynamic systems, and policy decisions are made as well as the reaction of the environment will be represented in the causal-loop diagrams, using a stock-flow models that eventually can be simulated by computer.

In accordance with what was presented by Coyle in dynamic systems approach, it is necessary to conduct research in the process of operationalization of the dynamic systems approach. And operationalization of the dynamic system can be described in the table below.

Table 1. Operationalization process of Dynamic Systems

Dynamic System Level	Decriptions	data collection techniques	Level/Years
<i>Problem Recognition</i>	An introduction to the problem stage by researchers through the collection of information related to the problematic situation through primary and secondary data.	In-depth interviews, focus group discussions and literature studies.	1
<i>Problem Understanding and system Description</i>	Result of the introduction of the problem at an earlier stage will help researchers understand the issues and patterns of relationship problems in a dynamic system. Where then by the researchers will be described a model / diagram of the dynamic system in the form of stock flow diagram (SFD).	Processing of secondary data in the previous stage, interviews, and focus group discussions	1
<i>Qualitative Analysis</i>	Qualitative analysis is a qualitative analysis of the phase diagram of the dynamic system that has been created previously. This can be done in two ways, namely by inviting experts to get a new idea or to conduct in-depth discussions with the relevant stakeholders. However, in this study, the qualitative analysis is done with the discussion.	FGD, and the study of literature	2
<i>Simulation Modeling</i>	Having made his stock flow diagram (SFD) and qualitative analysis, then the next step is to create a model of a dynamic system through the creation of causal loops diagram (CLD) are then simulated the model.	Processing of secondary data in the previous stage, and FGD	2
<i>Policy Testing and Design</i>	At this stage the model system that has been created in the previous stage, tested again with some policy scenarios that are an alternative to solve the problems that are the focus of this study. And at this stage we will get a model of policy scenarios that are most relevant to the policy scenario simulations done beforehand.	rocessing of secondary data in the previous stage, and FGD	3

4. Research Result And Discussion

4.1. Overview of SME in Sidoarjo

Sidoarjo regency is one of the cities in East Java who earned the nickname as the " City of Sidoarjo SMEs " . Where is the Sidoarjo district has more than 15,000 SMEs are scattered in 18 sub-districts , and is the district

with the highest number of SMEs in Indonesia. Sidoarjo mud Lapindo is not famous for his course , but also have a flagship product that has been well-known at home and abroad.

Sidoarjo is known as the city and shrimp paste , also has another excellent product which sustains the economy of East Java and Indonesia . Sidoarjo SMEs have such diverse crafts Bags , Luggage, Accessories , Sandals , Shoes , Handicraft , Garments , Food , Fashion , Technology , Kitchen Appliances , Batik .

SME development in the area of information and Surrounding Sidoarjo , Sidoarjo regency by the Government through the Department of Cooperatives , SMEs , Industry , Commerce and Energy and Mineral Resources , which aims to help the SMEs to be able to Survive in the face of a flood of foreign products with competitive price and quality . Here's flagship product Sidoarjo :

- Industrial centers Bags and Suitcases (INTAKO) located in the village district Kedensari Tanggulangin.
- Embroidery Industry located in the village district Kludan Tanggulangin .
- Industrial centers Sayangan, located in the village district Kesambi Porong
- Industrial centers Hats, located in the village district Punggul Gedangan .
- Metal Industries (electric , telephone , agricultural implements , bicycles etc.) located in the village of Waru district Ngingas
- Industrial centers Sandal located in the village Widoro
- Salted fish industry located in the village Gisik , Cemandi , sub Sedati
- Production of Vegetable Soup Suko is located in the village of Sidoarjo district
- Centers Industry Know located in the village Tropodo Krian district
- Industry Centers Tempe district is located in the village of Candi Sepande
- Industry Sentra Fish Crackers located in the village district Kedung rejo Jabon
- Industrial centers Crackers Kupang , Kupang Kupang Petis district is located in the village of Candi Balongdowo

4.2. Result

Based on the research roadmap plan in the first year is focused on :

1 . Problem Recognition

An introduction to the problem stage by researchers through the collection of information related to the problematic situation through primary and secondary data . In this context recognition problem decomposes in the following steps :

a. Stage 1 Identify the problem situation unstructured

In the context of SMEs in the food industry in general Sidoarjo has several problems namely :

- 1) technological constraints that SMEs have the low uniformity of product quality and sanitation .
- 2) Lack of capacity and opportunity to innovate or try new technologies .
- 3) The problem of capital
- 4) The problem of infrastructure
- 5) transportation issue
- 6) Problems distribution
- 7) The problem of quality control
- 8) The problem of standardization
- 9) The issue of scale economies
- 10) Problems promotion
- 11) issue of market access .
- 12) product image problem
- 13) product quality issues
- 14) The problem of raw material availability
- 15) no problem branding
- 16) Concerning the quality
- 17) The problem is inadequate volume
- 18) authorizing issue of food
- 19) issue contaminant delimitation
- 20) The problem complexity of import and export certification
- 21) issue standard labeling system inconsistent .
- 22) The problem of production
- 23) The problem of product development
- 24) The problem of quality control
- 25) The problem of accounting
- 26) Problems machines

- 27) the management of organizational problems
- 28) The problem of data processing
- 29) The problem of marketing techniques
- 30) Market research problem .

b . Phase 2 Identify situations / problems in a structured

1) The difficulty of marketing

Results of a study conducted concluded that one of the aspects related to the common marketing problems faced by SMEs are competitive pressures , both in the domestic market of similar products made big businessmen and imports , as well as export market .

2) Lack of financial

SMEs in Sidoarjo face two major problems in the financial aspects , among others : capital (both initial capital and working capital) and long-term financial investment required for long-term output growth .

3) Lack of Human Resources (HR)

Shortage of human resources is also one serious obstacle for SMEs in Sidoarjo regency , especially in the aspects of entrepreneurship , management , production engineering , product development , quality control , accounting , machinery , organization , data processing , marketing techniques , and research market . All of these skills is necessary to maintain or improve product quality , increase efficiency and productivity in the production , expand market share and penetrate new markets .

4) The problem of raw materials

Limitations of the raw materials and other inputs are also often become one of serious concern for the growth of output or production continuity for SMEs in Sidoarjo .

Especially during times of crisis , many centers Small and Medium Enterprises have trouble getting raw materials or other inputs because of the price in dollars to be very expensive due to the depreciation of the exchange rate against the U.S. dollar .

5) Lack of technology

In contrast to other regions , SMEs in Sidoarjo generally still using traditional technology in the form of old machines or the means of production that are manual . Technological backwardness is not only made a low number of production and efficiency in the production process , but also low quality products are made , and the capability for SMEs in Sidoarjo to be able to compete in the global marketplace .

Technological limitations caused by many factors such as lack of capital investment to buy new machines , lack of information about the development of technology , and human resource limitations that can operate the new machines .

c . Phase 3 Defining the root problem situation

Based on the root of the problem in the above situation , it can be said that the main problems of innovation development of SMEs in the food sector Sidoarjo related to the following :

- 1) organizational aspects
- 2) Aspects of institutions
- 3) Aspect function
- 4) Aspect function activity
- 5) Aspects of the dynamics of organizations , institutions , functions , and activities

2 . Problem Description Understanding and system

Result of the introduction of the problem at an earlier stage will help researchers understand the issues and patterns of relationship problems in a dynamic system . Where then by the researchers will be described a model / diagram of the dynamic system in the form of stock flow diagram (SFD) .

5. Suggestion And Conclusion

5.1. Conclusion

Based on the analysis and discussion above, several conclusions could be drawn as follow:

1 . In the identification stage unstructured problem situations in the context of innovation in the food sector SMEs Sidoarjo in general have some problems , namely :

- 1) technological constraints that SMEs have the low uniformity of product quality and sanitation .
- 2) Lack of capacity and opportunity to innovate or try new technologies .
- 3) The problem of capital
- 4) The problem of infrastructure
- 5) transportation issue
- 6) Problems distribution
- 7) The problem of quality control

- 8) The problem of standardization
- 9) The issue of scale economies
- 10) Problems promotion
- 11) issue of market access .
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- 21) issue standard labeling system inconsistent .
- 22) The problem of production
- 23) The problem of product development
- 24) The problem of quality control
- 25) The problem of accounting
- 26) Problems machines
- 27) the management of organizational problems
- 28) The problem of data processing
- 29) The problem of marketing techniques
- 30) Market research problem .

2 . At the stage of identifying situations / problems in a structured note that the main problems facing SMEs in the food sector, Sidoarjo regency is as follows:

- 1) The difficulty of marketing
- 2) Lack of financial
- 3) Lack of Human Resources (HR)
- 4) The problem of raw materials
- 5) Lack of technology

3 . At the root of the problem situation pendefinisikan stage is known that the main problems of innovation development of SMEs in the food sector Sidoarjo related to the following :

- 1) Aspects of the organization
- 2) institutional aspects
- 3) Aspect function
- 4) Aspect function activity
- 5) Aspects of the dynamics of organizations , institutions , functions , and activities

5.2. Suggestion

Based on those conclusions, researcher could propose some suggestions as follow:

1. Necessary improvements related organizational aspects of SMEs that co-operation and networking to support SME innovation. This is done by element SMEs, the government and the market.
2. Institutional aspects need to be improved SME is about collaboration and networking to support SME innovation. This is done by element SMEs, the government and the market.
3. Related aspects need improvement functions namely cooperation and networking of SMEs to support SME innovation. This is done by element SMEs, the government and the market.
4. Needs improvement activities related aspects of function, namely SME cooperation and networking to support SME innovation. This is done by element SMEs, the government and the market.
5. Related aspects need improvement organizations, institutions, functions, and activities of SMEs.

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