

Knowledge Sharing on Post-Harvest Product from Industrial Tree for Business

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ABSTRACT

The village economic development based on some factors such as the circumstances and potential of natural resources, human resources, especially their knowledge and skill, and information, communication technology (ICT) available in the village. Farmers recently need information about their potential plant/tree around their home. Since they only sell their plants or fruits, which will be very cheap, and not sell the potential products from the plant available in their land, which is more valuable. This information is available in the form of "Industrial Tree". But, farmers do not have or do not know this information. Therefore, the problems are to provide information and the media used for informing them. Local government should develop a knowledge sharing forum such as website. With this website local government can share information about any post harvest be more valuable. By accessing or know this information, farmers will develop business in the village.

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1. INTRODUCTION

Indonesia is known as a fertile and prosperous country, since it has a large biodiversity. It has many plants, and species of fish that very useful not only for food, but also for many things, such as medicinal or raw material for pharmacy. But, farmers and fishermen do not aware or do not know about this information. It means that mostly the village people are living as farmers, who live from plants they planted or fish they caught. Some of them sometimes knew and sell herb medicine plants they planted near their home, but this herbal medicine is handed down from their ancestors. Recently, by the development and research, agricultural experts found many things that can be developed from a plant or agriculture. Then, they built an "Industrial Tree" which explain that from a certain plant can produce many valuable products that can be sell more higher price. Through this information, farmers and fishermen try to develop something that more valuable product and some of them built a village industry[1].

Actually, information and communication technology can enhance farmers knowledge and they can share this information to other farmers. But they do not have the infrastructure to built this information or knowledge sharing. It is easy if they have computer, but in the village the one that famous is mobile phone. To eliminate this barrier, the local government change the information to mobile phone through short message service (SMS) Gateway. Recently, the farmers can easily access the "Industrial Tree" through their mobile phone. A mobile device with text messaging, allows users to send and receive short text message on their mobile phone[2]. Text messaging services typically provide users with several options for ending and receiving messages. Village Forum that has been built in the village has responsibility for the SMS operation from a wireless network and they have the list of all village mobile phone of the village forum member. Since almost all farmers have mobile phone, they can use the SMS Gateway and they can operate it. This information is an output of cooperation between the Ministry of Home Affairs, Researchers from the university or Government Agency, and those Forum.

Through this SMS Gateway they will develop a knowledge sharing between the farmers. So, right know they know that from a certain plant they can develop a certain valuable products. Researcher build this "Industrial Tree" to identify the by-products or post harvest products from a certain plant or tree in the village to become valuable products that sometimes can become a village business. The information also inform technical and financial feasibility and market location that interest to this products. This information also include geographic information system which shows a map of Indonesian land and also shows specific land with potential products or tree/plants, such as a region or Province which show that has specific tree/plants such as cashew nut. By identifying cashew nut tree, we will know the farmer there can produce cashew nut shell liquid (CNSL), which can be produced into malem/a material for Batik and the price is more expensive. How to produce it or to produce many other products, this can be accessed from "Industrial Tree" which will be available in Local Government. Recently, the Batik industry do not make malem but they buy from the shop which originally come from China. By knowing that they can make it themselves, they try to make it themselves or try to sell it, since the price is more expensive rather if they sell the cashew nut only. The rest of this paper describe the following: section 2 describes related work, section 3 describe research method, section 4 describe result and analysis and closed by conclusion in section 5.

2. RELATED WORK

In order to develop the knowledge sharing on post harvest product from industrial tree for enhancing their products, we studied the related work approach knowledge sharing. This paper describes that there are many knowledge in the village that can be share between them The head of the village have to create a regular meeting with all groups of the village people. The meeting consists of the village young group, woman group, the craftsmen group, the farmer group, the trader group, the village NGO, the sport group, the counseling officers and the religion group, to discuss and sharing their knowledge [3]. Second, they developed a prototype of e-village web-base communication, in order to find market for their products. They found that by using e-village network they can communicate with all market, and found that the market is not only Cipulir and Tanah Abang market but all market which sell Batik, such as Pekalongan and Yogyakarta[4]. Third, by developing blog as an Online Consultation Media, the blog can be used for consultation, for instance, for biotechnological agriculture online or chili commodity information. The communication conducted through Admin Blog (admin) and experts, by using synchronous technology (such as a chat online) or asynchronous technology (such as comment and email) [5].

3. RESEARCH METHOD

Indonesian technologies can support knowledge management through the creation of database in storing the tacit and explicit knowledge exists within an organization/village. This kind of database is known as universal database, because it manage data in many different forms (letters, documents, spreadsheets, images, videoclips, etc.). Therefore, in this village forum a database should also be developed to save all explicit and tacit knowledge of "industrial Tree" and its by-products. Methodology of knowledge sharing, first, built in this village a forum, consists of farmers and fisherman who live in this village. The forum will discuss the information on indutrial tree and its by products that can be built as village business. It means that industrial tree information should contain not only the product of tree/plant they planted, but also the by-products and post harvest of the plant they planted or the fish they caught, and if possible the potential market of these products. The industrial tree information in Forum database will describe about specific tree/plants in a specific land. Therefore, we should find information of database which describe specific tree/plants in a specific land, by using the geographic information system (GIS) with a map which is already available in the Ministry of Agriculture. From this map we know the potential plants for each land in the map. If this potential tree/plants has already been built as industrial tree/plant, it should be put in the database of the village forum and each people of this village will easily track or even unawaitingly, they receive the information through their mobile phone. Therefore, the information on industrial tree of a specific tree/plant available in database should be transferred to all farmers' mobile phone, which was equipped by SMS Gateway.

A mobile device with text messaging, also called short message service (SMS), allows users to send and receive short messages on a phone or other mobile device or computer. Text messaging services typically provide users with several options for sending and receiving messages [6]. Village Forum for knowledge sharing is responsible for the SMS operation from wireless network and they have the list of all village mobile phone number of the village forum member. Since, almost all farmers have mobile phone, they can use the SMS gateway and they can operate it. This information should become an output of cooperation between researchers, Central Government, Ministry of Home Affairs, Local Govrnment, and provider of mobile phone. This coopertaion will be used for sending the information to Farmers Forum in the form of an advertisement in their mobile phone. The information is not only the "Industrial Tree", but also how to make,

produce, and if possible the potential market location of the products they want to produce from the potential plants or fish in this land or island.

In order the village business reaches their added value of their productivity, they have to change their products which become innovation product. Therefore, they have to place research, development and engineering as part of integral village economic development. It means that the activities should be integrated between research, development done by University, or Research Institute and society. The synergy of those actors called triple Helix. The triple helix is shown in Figure 1,

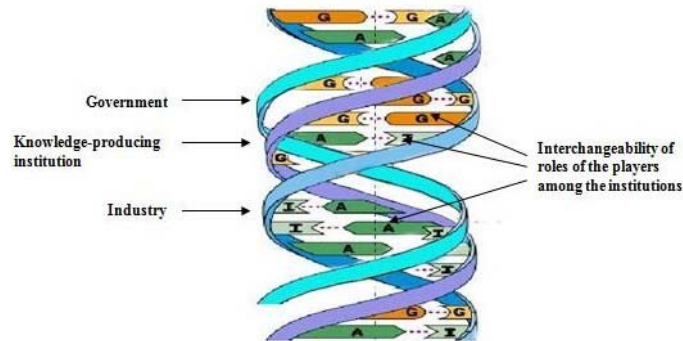


Figure 1. The triple helix

In triple helix method, the activities is shown as follows: academic world will be as provider and offender of innovation, the society will be as offender of knowledge, the farmer as village planter of the tree/plant and also as business entrepreneur. The farmer will be as beneficiaries of knowledge that will be transformed by science and technology into products and services through production process. Innovation itself, growth and develop as a cause of encouragement of science and technology progress. This process will be focus to the linkages between design activities and production preparation with various research aspects and laboratorial testing (up-stream linkages) with marketing aspects (downstream linkages) [7]. In order this synergy can be realized, a web-based communication Forum should be developed to discuss or access information of the new product innovation from the industrial tree. The member of this forum should consist: Researchers from University or Research Agency who provide innovative products or a valuable products that can be produce in this village. 2 Local Government, customer of products and 4. The Farmers.

4. RESULTS AND ANALYSIS

The information is not only for enhancing the capability of farmers into better quality of life, but it will create togetherness, creativity and innovation that come from “Industrial Tree” of their land or island. Then, the Government program “one product for one village” can be realized. So each village relatively will not compete with each other or even with neighboring village. The village will focused on the most valuable products produce in their specific land or island. But, the fact shows that they still produce traditional products. It shows that until recently available and continuous agro industries developments in the village is the utilization of processed cassava for snack or animal/fish feed and coconut for coconut sugar. Right now, village small and medium enterprises will focus on the use of valuable products from tree/plant they planted in their village. Since the market tend to direct into the use of herbal medicine/materials. But, it is difficult for many users to choose the appropriate plants for business. We have to calculate the business factors, such as the return on investment. Rumizen mentions that this is hard –to-measure business advantage such as the benefit of this by-product [8]. It will be hard also for government officer in the village (officer of Agriculture Extension) who responsible to inform the real valuable tree/plant or fish that can be developed into village business. The analysis about cashew nut change into cashew nut shell liquid show in Figure 2 below:

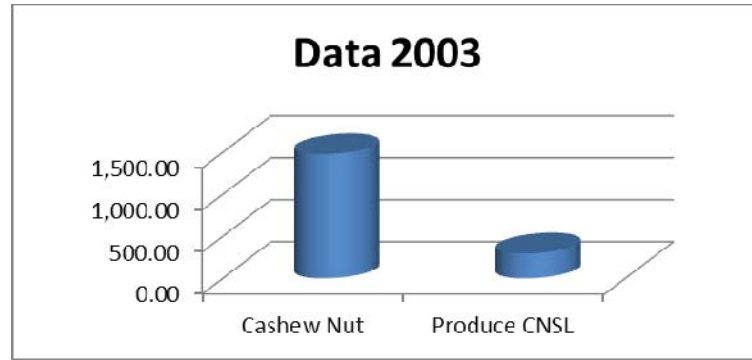


Figure 2. Produce of cashew Nut to CNSL

Bases on figure 2 from 1.477,67 ton cashew nut shell will produce 210, 60 to 295, 20 ton CNSL with a value of Rp. 378.989.570 per/year. But not all cashew nut farmers know about these valuable products that can be produced from cashew nut shell, they still assume that these shells are waste. The problem faced by the potential region that produces this cashew nut shell is that the farmers do not have the information or even do not know about the use of this cashew nut shell liquid or how to make this cashew nut liquid to become valuable business products. This cashew nut shell liquid is used for many by-products, but the farmers do not know. Therefore, the information should be available for farmers. But, the farmers do not have the ability to access this information. Even though, LIPI (Indonesian Research Institute) had already sent the information about "Industrial Tree" (13 plants) to all office of Regional and Provincial Agricultural Sections or Divisions or Agencies, but they never realize that this information is very important for enhancing farmer's quality of life, so they put this information in the filling cabinet and never be analyzed. The example of industrial tree can be seen in figure 3 below :

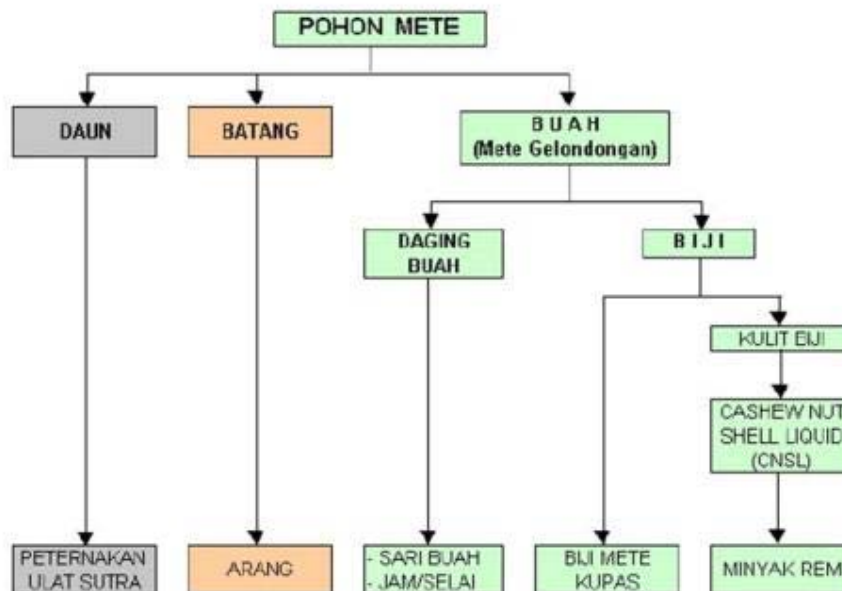


Figure 3. Industrial tree of cashew nut

The farmers do not think and maybe they do not know the more valuable products that can be produced from their surroundings plants, because they lack of information and never build a knowledge sharing forum. Then in each it should be built a Forum of researchers, Higher Education lecturers, Local Government and farmers. Actually, there are still many plants that can be produced or be used for many products that more valuable rather than from the original plants. Therefore, his effort, the most remarkable

results are the cooperation will occur between the R & D, higher education and famers. For example, Dr. Adi Santoso from Biotechnology Research Centre, Indonesian Institute of Sciences, who did a research about this medicinal product. Dr. Adi founds a new product from plants which called erythropoietin (hEPO) in yeast and barley plants. This finding is a new in the world and will change the face of the medical world, especially for anemia. Therefore, before this finding, the prize of this hEPO is very expensive per milligram is about 80 million rupiah or almost 1 billion per gram. This makes an effect to the cost of dialysis or hEPO injection to patients with anemia soaring. In Indonesia, the cost of one injection is 2 million rupiah. For one week it needs to be injected three times. It means that for one month is about 24 million rupiah. The high cost of this hEPO as a cause of the origin material of this drug. Recently, material commonly used for hEPO injection is Chinese hamster ovary or baby hamster kidney. The cost for making the cultural cell needs hundred million rupiah. After the finding of barley by Dr. Adi Santoso the cost for producing this drug will be tenth of the price of original drug derived from hamster. It means that the information about this product is very important, even for barley farmers. Another example is about some areas in East Java, and at Depok, West Java which already developed foods that its raw materials from cheap plants, such as from cassava or corn which they process them into flour. Then from this flour they processed it into hamburger, pizza and everything that more expensive rather than if they sell the corn or cassava. These activities are introduced by nearby university lecturers, who access the information from a website and then he and she asked the village people gathered to produce those post harvest products.

If we send this information to officer in the Region or village, not all of them are aware of the important of this information. Therefore, we try to find a method for getting this information easy and fast straight to village forum database. Therefore, we have to find an ICT prototype for sending directly this important information to Forum database and then the Village Forum will be sent to farmers through a SMS Gateway system. Looking at above analysis, firstly, famers of each village should build a Village Forum for discussion or knowledge sharing on building the business industry from products that can be built from specific tree/plants in each village. The information in the form of industrial tree should be easy and fast to be accessed by appropriate farmers that received from forum database. Of course, we put the industrial tree of this specific tree/plant that can be utilized for valuable business products. This specific tree/plant in industrial tree grows in a specific land. Therefore, we have to build a map of the land. The map will be built through GIS and this information on the map will be redesigned again into information available in the mobile phone through SMS Gateway design. In this condition the Forum should have a list of all Forum members mobile phone. Therefore, they can send it to the appropriate farmers by cooperation with provider of mobile phone. Thus, farmers will inevitably get the information of the industrial tree of each plant (recently, the industrial tree is only 13 plants, 1 fish and 1 cow). From this industrial tree information, farmers will develop small or medium scale enterprise they choose from those post harvest products. Researcher from Research Centre or university lecturer will conduct research in producing innovative products from those industrial trees and also designing the ICT media for disseminating the information. Farmers will get their knowledge from universities and research centre and if the universities aware to this important activities, they will support to build a forum for knowledge sharing between them in the form of e-learning or discussion forum

5. CONCLUSION

In the future small and medium enterprise development will become a strategy for national economic development. The productivity improvement will be determined by innovative capability in utilizing a mix between resource-based and cultural-based owned by a village. Those resources should become information in the village Forum database. Therefore, first village forum should also be developed for discussion on how to the develop a village business from their own resources and knowledge. The village Foun will become a knowledge sharing between all members, which consists of farmer, or other society in the village , researcher, academic lecturers, existing village organization and village government staffs. The industrial tree and their products which are the output of researchers will be available in the database of village forum. The infrastructure for developing this information is support by Government and universities. And, farmers will access easily and fast the information and eagerly they will develop business in the village. Therefore, the ICT in the village is very important to enhance their quality of life.

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