

# Tacit Knowledge Preservation: Case Study Param as a Traditional Medicine in Indonesia

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## **ABSTRACT**

*This study aims to examine and assist the process of preservation of tacit knowledge from a param maker in the Bogor City, West Java, Indonesia in accordance with the basics of the science of preservation of knowledge that is commonly done. Param is a traditional medicine to treat bruising and swelling and is used as an external medicine. The method in this research is descriptive qualitative method using a case study approach. The data collection method used in this study uses observation, interviews and documentation studies. The results of this study indicate that param makers have not carried out the process of preservation of knowledge in accordance with applicable standards. Therefore the authors try to help preserve knowledge about how to make param as appropriate so that knowledge not lost in the community and can be used by the next generation. The activity of preservation of knowledge based on Romhardt was chosen by the authors in this study. The processes are selecting, collecting, storing, actualizing, protection and accessing.*

**Keywords:** Knowledge Preservation; Tacit Knowledge; Param as Traditional Medicine; Indonesia

## **INTRODUCTION**

Indonesia is a fertile country that so many produce abundant natural wealth. Among the natural wealth is in the form of plants and spices that are useful for use as medicine by the community. Indonesian people in ancient times often used natural ingredients to make all kinds of medicines. Among the medicines made there is one type of medicine commonly referred to as param. Param serves as a medicine to treat bruising and swelling and is used as an external medicine.

At present there are several manufacturers of herbal medicine that sell param as their products. But it is certain that the producer will not want to open a method for making param to be known to the public. No one can guarantee the continuity of the herbal medicine maker making the param. It could be that one day a bankruptcy and param products are gone from circulation. Besides that, the traditional param making process is not many people know about it. In addition, this factory-made param product is felt too hot in the skin when used so it is not suitable for use in some types of consumers such as children and postpartum women. At present there are still some people who can

make param traditionally. Even people who can make it are no longer young. Therefore this paper is intended to preserve the knowledge of the param making process as traditional knowledge so that this knowledge is not lost and can be utilized by the next generation.

Param is included in the class of traditional medicine. The definition of traditional medicine according to the Regulation of the Minister of Health of the Republic of Indonesia Number 006 of 2012 concerning Traditional Medicine Industry and Business is ingredients in the form of plant materials, animal ingredients, mineral materials, preparations, or mixtures of ingredients has been used for treatment, and can be applied in accordance with applicable norms in the community.

Information is data that has been organized in context and translated into forms that have structure and meaning. While knowledge is the capacity for effective action; obtain, understand and interpret information. Knowledge is divided into 2, namely explicit knowledge and tacit knowledge, explicit knowledge that is knowledge embedded in documents, images, calculations, designs, databases, procedures or manuals and tacit knowledge that is knowledge that is in someone's mind and usually has not been captured or transferred in a formal way (if it is then explicit knowledge).

Knowledge is largely determined by the transfer process and the preservation of knowledge. According to Mazour: "Knowledge transfers is the transfer of knowledge in a broad array of individuals, groups of individuals communities, organizations, or industries." (Mazour, 2010).

One way people get knowledge is from experience, experience that comes from someone who likes to develop routines to solve problems. Experience is tacit knowledge that is difficult to preserve.

## **LITERATURE REVIEW**

There are three type of knowledge according to Crowley (2001), namely explicit knowledge, implicit knowledge and tacit knowledge. Explicit Knowledge is the knowledge found in books, documents, databases, e-mail and the like. It is public knowledge rather than private. Implicit knowledge is private knowledge. It is personal knowledge stored in the mind of the individuals. Tacit knowledge is job or task specific and related to context.

Traditional knowledge is knowledge developed by indigenous communities or intellectual works based on tradition. Knowledge or work is used by a generation and passed on to the next generation and develops according to the needs of a particular region. Traditional knowledge includes methods of cultivation and processing of crops (agriculture), medication, medicines, food and beverage recipes, arts and so on (M. Hawin, 2009).

Knowledge preservation is an activity to protect, maintain and preserve the knowledge that exists in individuals or in organizations/communities so that information is not lost

with the passage of time and can be used for the next young generation in the future. Knowledge loss is caused by many factors, such as damage to knowledge storage media, the departure of individuals who master certain knowledge of the organization and other factors. The Preservation of Knowledge activity, which was presented by the Department of Arts and Culture Indicates, stated that, "The storage and documentation of indigenous knowledge can be used on safeguards of practices and cultural heritage for the future coming generations, which can be considered as a positive part of their identity and promote social cohesion" The Department of Arts and Culture indicates (2009). So that it can be seen that the activity of preservation of knowledge of tacit knowledge can help preserve cultural heritage for future generations to come, which can be considered a positive part of their identity and promote social cohesion. Knowledge preservation activities can be done one of them with exchange of indigenous knowledge activities.

With the preservation of knowledge it is expected that loss of organizational memories does not occur, so that the organization is able to preserve its capacity for effectiveness. Knowledge preservation encompasses two main activities, which include capturing knowledge and storing knowledge into the knowledge reservoir.

Mazour argues that "Knowledge conservation is a process for maintaining knowledge important to an organization's mission that stores knowledge or information overtime and provides the possibility of recall for the future" (Mazour, 2010)

Tacit knowledge about how to make param to be able to continue the activities of knowledge preservation, because tacit knowledge is usually only stored in the mind of one individual or the local community itself, this was revealed by Suliman (2002) who stated, "Tacit knowledge is a type of knowledge that many people believe that can only exist in the human minds. It is a product of people interaction with each other and the people interaction with the environment around them."

The importance on how to preserve the tacit knowledge is because amont of the three type of knowledge, explicit knowledge, implicit knowledge and tacit knowledge, tacit knowledge is the most difficult for transfer (Faust 2010). Tacit knowledge contains experience based knowledge about topics such as how to ride a bike or how to talk. Tacit knowledge of an employee is for example the way how to persuade other people, how to behave in different situations or how to organize a meeting. Tacit knowledge cannot completely be explained, since it is wholly embodied in the individual, rooted in practice and experience for which cognitive schemata are required also being referred to as "mental models". It is expressed through skilful execution, and transmitted by apprenticeship and training through watching and doing forms of learning [1]. Whereas those technical elements, i.e. concrete know-how, crafts and skills, can be transferred by observation. The cognitive part of tacit knowledge, namely believes, intuition or personal values need special effort to be extracted.

The basic process of preservation of knowledge according to Romhardt (1997):

1. Selecting

The process of choosing from where or whom knowledge will be presented and what type will be preserved, after the knowledge has been selected and then mapped to be collected

2. Collecting

The process of gathering knowledge that has been selected, after it is collected, knowledge is stored

3. Storing

The process of storing knowledge that has been stored becomes a form that fits the needs, then actualized

4. Actualizing

Actualization activities can be carried out through mentoring from knowledge owners to mentoring participants. Then knowledge must be protected

5. Protection

Many deviations result in loss of knowledge, therefore activities to safeguard and protect knowledge need to be carried out.

6. Accessing

Knowledge that has been stored must be able to be used by the community or organization that stores it with easy access.

## **RESEARCH DESIGN**

Based on the problems to be examined, this study uses qualitative research methods with a case study approach. The author wants to get an idea of the knowledge of how to make param which is owned by one param maker in Bogor City, West Java and then documenting it in a paper form with the intention of to be disseminated and stored in library. According to Poerwandari in Afifudin and Saebani (2009) "*Qualitative research is research that produces and processes data that is descriptive in nature, such as transcription of interviews, field notes, images, photos, video recordings, and others.*"

Qualitative research with the type of case study research was chosen because researchers wanted to understand the preservation of knowledge about making param. According to Cresswell (2015) "Case study research is a qualitative approach in which researchers explore real life, limited contemporary systems (cases) or limited systems (various cases), through detailed and in-depth data collection involving various sources of information or multiple sources of information (for example, observations, interviews, audiovisual material, documents and various reports), and report case descriptions and case themes."

The objective of this study is the preservation of knowledge about making param. While the subject of the research in this study was an informant who still had knowledge about

how to make param. "The research subjects are people who are in a social situation that is defined as giving information in a study or known as an informant" (Mukhtar, 2012). The subject in this is the giver of information that needed for research.

Data collection techniques need to be done in order to obtain valid data in the study. To obtain an understanding of the preservation of knowledge about making param, the data collection process is carried out through:

### **Observation**

"Observation is a systematic surveillance and recording of the elements that appear in a symptoms in the object of research" (Nawawi & Martini in Afifuddin and Saebani, 2009). The researcher collects data through the internet, online journals and other related research. The type of observation used by researchers in this study was non-participant observation. "Non-participant observation is an observation that does not involve the researcher in the activities under study, the researcher is separate from the observed activity, the researcher only observes and records what happens in the field." (Sulistyo-Basuki, 2006)

Observations were made on the behavior and activities of the traditional owner community, including the procedures for implementation, the transfer process from the older generation to the next generation, and other activities in the research location related to the making of param. Observation is the earliest data collection technique carried out in research. However, observations continue to be made throughout the study because data through interviews need to be supported by data obtained through direct observation or surveillance in the field.

### **Interview**

"Interviews are methods of retrieving data by asking something to someone who is an informant or respondent" (Afifuddin and Saebani, 2009). This study is using unstructured interviews. "Unstructured interviews are interviews conducted without a clear structure" (Sulistyo-Basuki, 2006). The researchers used the results of the interviews as the main data source in this study.

The researcher conducted a direct interview (face-to-face interview) with an in-depth interview technique. The researcher prepared a draft question that became a reference in conducting interviews with informants. Interviews were conducted in Indonesian and Sundanese. To avoid errors and loss of data, the interview process is written manually and accompanied by an interview recording process.

### **Literature Studies**

In addition to observations and interviews, data collection techniques in qualitative research can be done using the literature studies and documentation studies methods.

The researcher used a literature study, that is data collection by looking for literature related to research. Documents in research can be in the form of images, and other literature that can help the research process.

## **RESULTS**

### **Informant**

This study uses data collection techniques in the form of observations and interviews to one informant who is the maker of the param that is appropriate to the criteria of the informant. The informants in this study were Mrs. Euis who lives in Bogor City. Informants are known having knowledge about how to make param traditionally. This information is known through neighbors who live close to Mrs. Euis's house and often come to her home to get param.

Mrs Euis was born in Bogor in the 1920s. Actually the activity that became the main ability of Mrs. Euis was a massager. But massaging is also not a major profession. He began his massage activities after retiring from his main job. Mrs. Euis massages only if someone comes to her house. People who often come to Mrs. Euis's house consist of various ages, ranging from babies, children to adults. Knowledge of massage is obtained from his mother-in-law who also has the ability to assist the traditional birth process. Massaging knowledge was passed on to Mrs. Euis from her mother-in-laws through an oral tradition method. This is relevant with regard to Hart's theory that the oral tradition is a process of transitioning knowledge from one generation to the next by way of spoken communication (Prince of Wales Northern Heritage Centre & Wolfe, 1995). Mrs. Euis's husband also has massage skills, especially in handling fractures. But Mrs. Euis did not learn the knowledge of this massaging a broken bone from her husband.

In massaging Mrs. Euis use oil to avoid irritation to the skin that being massaged. The oil used by Mrs. Euis for massaging it in Sundanese is commonly called letik oil or oil made from heated coconut. Adults usually come with complaints of aches, sprains due to falls, women who are after childbirth and so on, except for a broken bone Mrs. Euis cannot treat it. Parents carrying their babies usually come monthly regularly with the aim that their baby bodies are not stiff, but also can come with complaints ranging from unwilling to often crying with a possible cause of a miscarriage due to a fall or other causes that their parents didn't know. Mrs. Euis could easily find out after the massage process began.

In addition to learning massage techniques, Mrs. Euis also learned how to make param from her mother-in-law. In addition to treating pain in muscles that are bruised due to falls and so on, param is also commonly used in women after childbirth. Param used to be smeared on the stomach of a postpartum woman as a warmer with the aim of alleviating the feeling of cramps that are often felt. Param, made by Mrs. Euis is warm and not hot because it is conditioned for various ranging age. The method of making param was the main topic and was discussed in this study.

At present Mrs. Euis has 7 children, 3 of whom are women. For this her three daughters the knowledge of making param had been revealed. But still, the method used in the transfer of knowledge is using oral tradition so that it is feared that one day this knowledge will be lost because it has not been well documented.

### **Param Making Process**

The way of Mrs. Euis making param is actually very simple and easy. The raw materials for making param are Rice (*Oryza sativa*), Kencur (*Kaempferia galanga*), Ginger (*Zingiber officinale*), Remek Daging (*Hemigraphis alternata*) leaves and Ki Urat (*Plantago major*) leaves.

All the ingredients pounded then formed lumps about the size of about 10 cm in diameter and then dried in the sun for one day. After drying, the param is ready to use.

How to use param is given water until it becomes thick and then applied to the skin of the body part that feels sick or wants to be warmed. Can be added with a massage so that the param can seep into the skin and muscles that are painful.

### **Analysis Results**

How to make param is one of the culture that is easily extinct. This is not only due to the diminishing of making param, but also the perception of the people who consider making param is only needed in the treatment process and is not a culture that needs to be preserved.

The most important problem in the way of making param is that the owner of this knowledge has become getting more older and the lack of regeneration activities. This is feared to overthrow these objects. The additional problem that becomes a problem for preservation of how to make param is the people perception of the making of param which is ancient and does not need to be preserved.

The lack of action to externalize knowledge has become a weakness of society in carrying out tacit knowledge that only certain people have.

To assess the preservation process for making param, researchers used measures to preserve knowledge according to Romhardt.

#### **(a) Selecting**

The first step in the process of preserving knowledge is selection. In the analysis of the selection of knowledge on how to make param, researchers are more focused on discussing the knowledge owner, what knowledge will be preserved and to whom the knowledge is given.

### 1) Knowledge Owner

The method of making param is the original knowledge that must be preserved before it is lost. In this study there was only one informant who possessed this knowledge. The owner of the knowledge on how to make param is Mrs. Euis, previously it was known that this knowledge was obtained from her mother-in-law. The transfer of knowledge was obtained by Mrs. Euis from her mother-in-law through oral tradition. There is no stored and accessible documentation regarding this knowledge.

### 2) Preserved Knowledge

In this study, the knowledge that is preserved is the method of making param. In preserving the method of making param, it can be done by Job Shadowing. How to make param need to be preserved because of the lack of government attention to the manufacture of traditional medicine in general.

### 3) Target of Knowledge Preservation

The knowledge owner carries out the preservation of knowledge to maintain the knowledge within the family and if possible to the community around the knowledge location.

Preservation of knowledge is carried out for cultural knowledge so that people understand the cultures around them, especially about how to make traditional medicines, especially param.

## **(b) Collecting**

Collecting is the second stage of preservation, knowledge is collected by knowing how to implement it in an effort to preserve the knowledge of making param. The community, especially the younger generation who want to learn how to make param, must have a high willingness, without a high willingness, this knowledge transfer process cannot run well. Will is the most important thing before learning about making param.

Actually learning how to make param requires relatively short time. Constraints may occur in obtaining the raw materials, but it can be dealt with by planting their own raw materials for making param on the home yards.

### 1) Preservation of Knowledge Efforts to Make Param

Forms of knowledge preservation activities that can be carried out in according with the preservation of knowledge on how to make param and the knowledge contained in it, such as:

- Reviving the culture of making param with home industry

People can try to revive the culture of how to make param by making it a home industry. The goal is to introduce and preserve the method of making param among the community, besides that it can also be used as an increase in family income.



- Documentation

Documentation of how to make param was made into an article in this paper. Writing into the form of a book will be done if it is deemed necessary and possible. This documentation activity is one form of knowledge externalization as stated by Nonaka. Documentation is an effort to preserve knowledge on how to make param.

- Job Shadowing Knowledge

Job shadowing activities began to be carried out considering the limited of these knowledge owners in the community. Generally job shadowing activities are carried out through one or two people who will inherit or the next generation of knowledge as a whole. The selection process is based on willingness and family members who want to continue the method of making this param.

- Introducing Param as a Traditional Medicine through the Level of Higher Education

University of Indonesia and Airlangga University are two higher education institutions in Indonesia that study traditional medicine / herbal medicine. At present the Faculty of Pharmacy of the University of Indonesia has a Masters in Herbal Sciences and the Vocational Faculty of Airlangga University has a Traditional Medicine Study Program.

By introducing param as traditional medicine through the higher education level, it is expected that there will be a lot of participation from the education community who make writing based on research on param and other traditional medicines. It is expected that with a lot of writing from traditional medicine education community, it will gain trust in the hearts of the Indonesian people concerning to traditional medicine.

In addition, the most important thing in the information era is the use of information technology in the process of acquiring, storing, and sharing information. The database that contains all matters relating to the way of making traditional medicines, especially making param in the form of the web and connected to the internet network, will provide greater opportunities in introducing the culture. Not only to the people of Indonesia but also to the world community.

## 2) Constraints in the Activity of Knowledge Preservation of Making Param Methods

Constraints that will be faced in the preservation of knowledge activities in making param are as follows:

- a. The people is accustomed to its customs which verbally without regulating matters relating to the transfer of knowledge. Not all things can be explicit in society. This resulted in the increasing number of knowledge owners.
- b. Traditional param making is considered to be less practical, so people prefer medicine that are sold freely in the market to treat their pain.

- c. The raw material for making param which consists of many medicinal plants at this time is relatively difficult to obtain in the market. Only a few people are now cultivating medicinal plants in their home yards.
- d. Lack of public awareness about the importance of culture, especially how to make param. Making param is considered an old-fashioned and outdated thing
- e. The absence of a knowledge database in connection with how to make param that can be accessed by the community
- f. Knowledge of the community that making param is only a medicine not as part of traditional culture
- g. Lack of marketing and promotion in the scope of traditional medicine

### **Tacit Knowledge Preservation Implication to the Library Services**

The implications of tacit knowledge preservation on library services can be applied by serve a collection of books in the library on tacit knowledge preservation for example in this study is to preserve the knowledge on how to make param.

The library is a place where people find the information they need. As its development, libraries, especially the Regional Library, still function as the center of information sources in the form of text in the community, both texts originating from written culture and texts which are the result of externalizing the culture of traditional medicine, one of them is how to making param. Documentation in the form of books in writings containing knowledge about for example how to make param is only collected by the library. The library keeps saving it as part of the library collection. To maintain the existence and continuity of knowledge on how to make param born in the community, the function of the library must shift from a repository to a culture collection service.

The library is an organization that supports research, therefore libraries are obliged to store, manage and service all kinds of documentation whether explicit or tacit, because it is a very valuable asset for knowledge. Like the following statement "Universities and research organizations are knowledge reservoirs. These highly valued intellectual assets, regardless of whether they are explicit or tacit, should be inventoried, archived, indexed, frequently updated and made accessible in digital form (Kumar 2010)."

In addition, the use of tacit knowledge can be seen from the ability of service librarians, especially reference librarians, in their knowledge of serving users in their needs for library materials. Reference librarians have an incredible amount of tacit knowledge regarding library, community and online resources (Kille 2006). Stover (2004) claimed that much of the knowledge held by reference librarians is tacit knowledge that needs to be made explicit and formalized. He identified the web-based Ready Reference Database at San Diego State University as an example of the process of knowledge conversion in library reference services.

Gandhi has identified three reasons why knowledge preservation is needed in reference work. They are:

1. Reference librarians in libraries across the United States and the world answer thousands of questions every day.
2. Reference librarians manage to answer only 50-60 per cent of the questions correctly; therefore, there is immense potential to improve services and learn from each other by sharing correct answers.
3. It has long been recognized that librarians cannot remember all sources. Therefore, capturing the tacit knowledge of reference librarians – knowing how to find information, where information is available, how to select the right resources, when to use a certain resource, how to follow a trail of clues to get to the right information.

The preservation of knowledge models in this study can also be used to preserve the intelligence and methods of referral librarians in serving the needs of users.

## **CONCLUSION**

Based on the results of the analysis of the research on the answers to all the questions asked in the interviews that have been made to the informants about how to make param. Furthermore, it can be concluded that the preservation process and knowledge transfer method for making param have been going on since the method of making param was born. This happens because of the habits of the people who have oral traditions, so that all cultural knowledge is preserved by telling stories to the next generation.

Preservation of knowledge is done by means of selection, namely by knowing who owns the knowledge, the knowledge to be preserved and to whom knowledge will be preserved. Owner of knowledge on how to make param, namely Mrs. Euis. The knowledge that will be preserved is the method of making param, because this knowledge is less noticed by the community, while the preservation of this knowledge is carried out to the family and surrounding communities.

Besides selection, preservation of knowledge on how to make param is also carried out by collecting. In this collection stage, it can be seen how the knowledge transfer process about how to make param. The main thing is the willingness of the community to learn how to make param. Then the people do a shadowing job, follow and observe Mrs. Euis doing her work to be studied before being taught directly. After that, people who want to learn and help make it easy to understand. After understanding the way, the community will start making it directly.

The externalization of knowledge on making param has not been carried out in the form of documentation and rewriting it in writing or in books. Books can be a guideline for the community. The method for making param is also introduced in universities through a department or study program of traditional medicine / herbal sciences. Currently the

colleges that have the study program are the Faculty of Pharmacy, University of Indonesia in the Masters in Herbal Sciences and Faculty of Vocational at Airlangga University in the Traditional Medicine Study Program.

By introducing traditional medicine through the higher level of education, it is expected that there will be a lot of participation from education circles who make writing based on research on traditional medicine. It is expected that with a lot of writing from traditional medicine education circles, it will gain trust in the hearts of the Indonesian people concerning to traditional medicine especially param.

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