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DIGITIZATION OF TRADITIONAL BARIO SALT MAKING BASED ON INTERDISCIPLINARY AND VISUAL EXPERIENCE APPROACH

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Abstract

This article describes the process of digitizing traditional methods of Bario salt extraction based on documentation and experiences during a field trip to Pa' Umor, Bario, Sarawak. The process of making salt is described in an orderly manner, beginning with the extraction of the salt water, and ending with the packing process. Bario salt is extracted from a salt spring by boiling the brine in a large pot until the salt forms a gray layer, and then collecting the salt from the bottom. This process is still practiced today. However, the production of Bario salt is not widely known because it is a lengthy and laborious process. Moreover, the conventional methods of information transfer are no longer relevant to current technological developments. Therefore, through an interdisciplinary and visual experience approach, all images are recorded in a digital documentation using the latest digital tools and then analyzed through the art of formalism. The result is a short video production and digital interactive poster called ID-Poster that uses the augmented reality application. It is hoped that this article will provide new ideas and visual insights that can help in promoting rural tourism.

Keywords*: Bario Salt; Visual Experience; Interdisciplinary; Digital Documentation; Rural Tourism*

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INTRODUCTION

Bario is a unique name composed of the two words "Ba" (rice field) and "Rio" (wind), spelled in Kelabit. The town is in the northeastern part of Sarawak at an altitude of more than 1150 meters. Bario has many unique features, especially the surrounding dense forests and mountains, with temperatures ranging from 16 to 25 degrees celsius. The study was conducted in Pa' Umor, Bario, where the Kelabit Highlanders have lived for generations. The Kelabit is an ethnic group in Sarawak with the smallest group population of about 6,600 people.

Figure 1 shows the Main Keramut, it can be said that the most popular tourist attraction in Pa' Umor is the salt spring (known as Lubang Garam or Main Keramut). It has a long history and tradition in Pa' Umor and its surroundings. Bario salt is not only highly regarded in the Kelabit community but is also becoming increasingly popular outside Bario. This salt is suitable for cooking vegetables as it preserves the bright colors of the vegetables during and after cooking. It is also very beneficial to health due to its high content of minerals and iodine.

This salt is used by the Kelabit community as a flavor enhancer in cooking. It is considered rich in nutrients such as iodine (to prevent thyroid disease) and is beneficial to health as it improves blood circulation, regulates, and balances electrolytes in the body, kills germs in the air and keeps the body healthy. To protect this precious natural resource, local salt production is currently still carried out in the traditional way on a small scale and with sustainable development in mind.

Figure 1: Main Keramut

However, the method and process of making the traditional Bario salt are not known to the public as it is only practiced by the locals on a part-time basis. The location of the salt pits deep in the forest and on muddy roads also makes it tedious as this salt can only be produced in limited quantities. It is also a lengthy and tedious process, so not many residents are willing to produce this salt. By using interdisciplinary methods and visual experience, all the collected images were taken with the latest digital documentation tools and introduced through the art of formalism. At the end of this study, an innovation combining video footage and posters using an augmented reality application called ID-Poster was introduced to provide information to the public about the production process of Bario salt.

Literature Review

With society's increasing importance to the diversity of global cultures, cultural heritage and cultural tourism are growing exponentially, especially in developing countries (Coccossis, 2016; Gravari-Barbas, 2018). However, in promoting cultural and heritage tourism, many countries face the difficulty of presenting the source of attraction

for this tourism. Creating a tourist-friendly image and tourist facilities can be considered impossible without proper preparation. (Cohen, 1988; MacCannell, 1999; Nguyen & Cheung, 2016). Therefore, the opportunity to highlight the salt of Bario should be fully utilized to develop the tourism sector, especially in Bario, Sarawak.

This study attempts to examine interdisciplinary research for such possibilities. Interdisciplinary research has become a trend since the late 20th century (Klein, 1990). According to Lawrence (2010), interdisciplinarity is defined as the collaboration and cooperation of researchers or practitioners from two or more disciplines who use their expertise in their respective fields to work on a single project with the same goal. The main characteristic of interdisciplinary methods is their aim to assimilate concepts, methods, and principles from different disciplines. Interdisciplinarity emerges as the world moves forward and researchers are confronted with problems that require them to address complex issues and recognize the need to move from a single discipline to interdisciplinary and transdisciplinary problem-solving methods. However, this shift requires clear definitions, goals, and methods to be effective, as each field has its own concepts, definitions, and methods that define its discipline.

There are several literatures that addressed the need for interdisciplinary research or dialog between the social sciences and the arts for the benefit of both disciplines (Schneider, 2008). The interpretations of knowledge that occur in interdisciplinary research from the perspective of both the social scientist and the artist provide a balanced critical view from both fields and provide access to our social worlds (O'Neill, 2008). However, Pink (2015) pointed out the importance of having a clear goal when conducting interdisciplinary artistic-ethnographic research. This is because research can be directed in two ways: to produce knowledge through artistic practice or how ethnographic knowledge can be accessed through artistic practice. Therefore, it is important to note that a small difference in the balance between the two research fields could distract the research from what was originally intended. Therefore, this study will combine the social science research approach with the visual arts so that the results obtained can be used to communicate knowledge more effectively about the traditional process of salt extraction in Bario.

Previous research on bario salt, such as that by Kessler, Jong, and Madon (2019), has focused on analysing upland salt deposits and related brine in northern Sarawak to better understand its composition and geochemical origin. Meanwhile, Gani (2012) and Egay (2012) talked about the Krayan community in east Kalimantan, which is similar to the Kelabit community in Bario, Sarawak, from the economic standpoint of hill salt. Although there have been multiple films of the hill salt production process on the YouTube channel in the past, the process and terms used in the production process are not properly stated.

METHODOLOGY

The collection of information in this study focused on visually based data collected through visual experiential and visual ethnography methodology. The approach of data collection in this research is a visually based qualitative mode and is implemented through systematic data collection and behavioral testing in the social setting of each case study. In order to collect information, a field study was conducted twice in Pa' Umor, Bario in 2018. This method also requires a high level of observational skills. Marshall and Rossman (2014) and Paterson et al. (2003) mentioned that effective observational methods expand confidence and deeper understanding of the case study in question because the participant must engage in direct interaction and self-awareness of the subject through critical observation, as the researcher did in this study. According to Rafee et al. (2015), the use of photographs, videos

and sketches as visual data in social science research has helped to provide information that is better compared to text-based data which is more complicated to extract and understand.

Visual methods have taken on the role of making the data approach more effective and securing the information obtained, which is used to support data information such as textual data or interview data. Moreover, the qualitative approaches that use effective methods such as visual methods serve to provide further documentation that cannot be presented based on participant observation alone because visual data is the concrete evidence in research and contributes to effective data collection. In fact, the information would also improve the validity of the researcher's interpretation of personal observations or assessments. Maying et al. (2019) argue that the use of visual data that appear with artistic sense contribute well to provide the public with cultural knowledge and raise awareness of the abandoned cultural practices.

As shown in Table 1, the methodology of this research focused on visual approaches with little reliance on qualitative methods to collect the research data. The process involved experimental methods to document traditional salt making in Bario. The method is essentially a visual experiential method based on a hands-on involvement and visual interaction with real-time and place. The combination of visual learning and experiential learning has been carried out in the research field and the researcher has gained an understanding of the process involved in both visual learning and experiential learning for data collection. Some processes were carried out to collect the data which mainly consisted of visual representation after completing the documentation in the field.

Table 1: Methodologies that were used in the research consisted of visual experiential and analysis involved.

VISUAL	EXPERIENTIAL	ANALYSIS
PROCESS	• Observation • Evaluation • Interview • Tracing • Visual Documentation	• Comparisons • Differences • Similarities • Dominance • Discussion
DATA COLLECTION	• Photography • Video • Sound • Sketches	• Historical Background • Folklores • Element & Principles of Art

It is known that the visual is a form of representation or record related to the interaction of scenes, and in the understanding of visual art, it is a form of visually captured uniqueness interpreted through the value of the elements and principles of art (Ocvirk et al., 2012). In this process, researchers have used, and practiced techniques based on the artist's understanding of documentation, observation, and visual reading. An artist will grasp a subject in a different way than the average observer who has no artistic foundation. An artist is usually more sensitive to the subjects that appear around their visual attention. The use of visual methods has improved the visual documentation mode and more interesting views have been successfully obtained as the data collected was very well executed and produced high-quality visuals. The processes involved in visual experience research are

observation, evaluation, interview, and visual documentation. The documentation focuses on recording each process involved in an orderly manner such as before, during and after Bario salt production.

The Process of Bario Salt Making

Bario salt comes from a saltwater spring called *'Main Keramut'* in Pa' Umor, Bario. Due to its relatively remote location, the salt farmers must cross hilly and muddy forest areas. Usually, the salt farmers process the salt in groups or put the family in a special barn for at least two weeks. During this time, they spend time processing salt before the barn is taken over by another group on a rotating basis. These salt wells are owned by the community, and everyone has the right to process the salt, but it is necessary to follow the established order.

The preparation of mountain salt is not easy, for it is quite complicated and takes days. Begin by boiling salt water taken from saltwater wells by burning firewood in a large drum. The wood used for burning is known by the locals as *'Belaban*' or by its scientific name *Tristania Atauanomela* (figure 2 & 3), a type of hardwood that is abundant around Bario. Furthermore, this wood is commonly used because it produces an ember that is more durable than other types of wood.

Figure 2: Preparation of firewood and taking water from saltwater wells

Figure 3: Boiling saltwater in a large drum

After a period of more than 24 hours the brine will undergo a process of crystallization before fine grains of salt are formed. At this stage, it should be stirred constantly to prevent the salt from burning and affecting its

quality. The supply of firewood must also not be interrupted and must always be burning so as not to affect the boiling process. The evaporated salt is put into a container and allowed to cool before being put into a 30 cm bamboo (figure 4). Putting the salt into the bamboo also requires expertise. After filling the salt, the bamboo is tapped slowly so that the salt is arranged tightly and neatly for the next process. A small hole is then drilled in the bottom of the bamboo to allow excess water to escape to ensure the salt is completely dry (figure 5).

Figure 4: The brine dries, and salt was formed in the drum. The salt is then transferred into the bamboo.

Figure 5: A small hole is drilled in the bottom of the bamboo to remove excess brine before it is dried again on the edge of the embers.

The bamboo is then piled on embers, so that the salt may harden in it. The burning is repeated until the bamboo burns and finally breaks to produce salt in the form of hard lumps (figure 6). The blackish outer part of the salt is then carefully scraped off with a knife to remove the effects of the burning.

Figure 6: The bottom of the bamboo is perforated to remove excess saltwater and then placed on the edge of the fire for the next drying process.

For the packing process, the lumps of salt are first wrapped in clear plastic before being wrapped in a type of sheet known as *'daun ilat'* and tied tightly with a rattan rope (figure 7). A lump of salt is usually sold at a price between RM10 and RM 15, with the price increasing up to three times when marketed outside Miri and Kuching.

Figure 7: The Bario salt packaging process uses '*daun il*at' and rattan rope.

RESULTS AND DISCUSSION

Id-Poster and Short Video

The data analysis in this project aims to select relevant images based on a formalistic analysis. As a result, data reduction is performed to sharpen, categorize, direct, and reduce data that is not the subject of the study until the decision point is reached. Subsequently, the data will be revealed in the following order, by sub-theme, in the form of presentations in the form of narrative prose, images and others as explained below:

1. Selection of Subtopics- The visual data are divided into subtopics, such as the process before, during and after salt extraction. This approach will also consider the equipment used to collect the visual data and the shooting angles used by the researcher during the study process.
2. Image Selection - Filtering photos and video footage based on the appropriateness of the Bario salt production process as recorded for the creation of digital posters and short videos.
3. Image Manipulation Process - The process of altering visual data captured through image capture to create a digital poster and short video.

In data analysis, the researcher focuses on weeding out images that are not needed for the research by analyzing the visual content and visual representation. For example, images that do not meet the standard specifications are removed. The visual data is also sorted according to their respective categories based on the research method chosen. The researchers can use this technique to explain the visual elements of the Bario salt

manufacturing process based on actual observations in the field study. The researchers also underline the importance of using an artistic visual method to depict and understand the process of salt manufacture using a visual ethnographic approach.

Based on a combination of experience and digital documentation, an improved version of the interactive digital poster was designed for this project. The interactive digital poster, also known as ID-Poster, will combine digital and multimedia technology with an innovative and creative visual arts approach to provide information about the process of salt production in Bario and promote the development of the rural tourism sector. ID-Poster is a highly informative digital map that uses digital documentation and augmented reality (AR) to illustrate each stage and process of salt production in Bario (figure 8). Retrieving the desired information is possible with a smartphone equipped with the selected AR application. ID-Poster features artistic photos and videos taken from different angles and with documentation tools such as drones, DSLRs and action cams.

Figure 8: ID-Poster

A short video on the Bario salt production process was also produced (figure 9), based on data and information collected during the field study. The video is accessible via https://www.youtube.com/watch?v=AKbRi16qSuc

Figure 9: Short Video interface

CONCLUSION

Capturing this visual impression through various media is important to protect local heritage while promoting local tourism. Based on the results of this visual study, a short video on the process of Bario salt extraction and an interactive poster (ID-Poster) focusing on the process of Bario salt extraction in the Kelabit Highlands were developed to help visitors understand the process and provide brief information on the production of mountain salt.

The results of this research have also proved useful in promoting rural tourism in digital format. It is hoped, therefore, that in the future more visual arts researchers will be interested in conducting in-depth studies of culture and heritage as an alternative technique of visual research so that it can be used as an attraction for rural tourism. Since experience plays the most important role in any form of tourism, especially in rural areas, as Louriero (2014) states, visual research on rural attractions will help to highlight the reality of visual researchers at the end of the study. The experience and understanding of local culture can be used as evidence and can also be used as marketing material for rural tourism.

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