# The Wisdom Cultural Heritage Information Systems of Suphan Buri

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*บทคัดย่อ*-งานวิจัยนี้นำเสนอการพัฒนาระบบระบบฐานข้อมูลสารสนเทศมรดกภูมิปัญญาวัฒนธรรมท้องถิ่น จังหวัดสุพรรณบุรี (WIS) และหาความพึงพอใจของผู้ใช้ต่อการใช้งานระบบ ประชากรในการวิจัย เป็นประชากร และนักท่องเที่ยวในจังหวัดสุพรรณบุรี กลุ่มตัวอย่างที่ใช้ในการวิจัยครั้งนี้ คือกลุ่มนักท่องเที่ยวที่เข้ามาเที่ยวในสุพรรณบุรี สถานที่ที่ใช้ในการศึกษาวิจัยคือ พิพิธภัณฑ์สถานแห่งชาติ จังหวัดสุพรรณบุรี

ซึ่งผู้วิจัยได้ทำการพัฒนางานวิจัยในรูปแบบบูรณาการ โดยอาศัยเทคโนโลยีสารสนเทศ เครือข่ายคอมพิวเตอร์ มาประยุกต์ใช้ในการพัฒนาด้านศิลปวัฒนธรรมของประเทศ มีวัตถุประสงค์เพื่อพัฒนาระบบ ภายใต้กรอบการดำเนินการเพื่อจัดเก็บข้อมูลภายในพิพิธภัณฑ์ให้อยู่ในรูปแบบดิจิตอล สนับสนุนการสร้างองค์ความรู้มรดกภูมิปัญญาวัฒนธรรมท้องถิ่นที่กำลังจะสูญหายให้คงอยู่ตลอดไป ด้วยการสำรวจสอบถามและสัมภาษณ์ถ่ายทำองค์ความรู้ด้านผ้าทอท้องถิ่นในรูปแบบวีดีทัศน์ และหาความพึงพอใจของผู้ใช้ต่อการใช้งานระบบพบว่า มีค่าเฉลี่ยอยู่ในระดับ สูงมาก ตรงตามความต้องการของผู้ใช้ โดยระบบสามารถสนับสนุนการจัดการ ซึ่งงานวิจัยนี้จะนำไปใช้งานกับพิพิธภัณฑสถานแห่งชาติ จังหวัดสุพรรณบุรี นอกจากนั้นยังช่วยลดภาระในการจัดเก็บข้อมูล เผยแพร่องค์ความรู้ ภูมิปัญญาท้องถิ่น ประชาสัมพันธ์ศิลปวัฒนธรรมชาติ และเป็นประโยชน์ต่อสังคมอย่างยั่งยืน

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*Abstract*— This research proposed the development of the Wisdom Cultural Heritage Information Systems of Suphanburi and finds the users' satisfaction of the system. The population in the research are the people and tourists in Suphanburi province. The samples of the research are the tourists in Suphanburi. The research was taken place in National Museum of Suphanburi.

The approach we use to perform the research is integration of information technology, computer network to apply and develop the arts and cultures of the country. The system was created under the operational framework that converts the information into a digital form. The information was taken from many sources including interviews. As the result, the system can reduce the work process and perpetually conserve the information. After deployment of the system, the user satisfaction was surveyed. The result showed that the users were satisfied with the system in an excellent level.

*Keywords-The Cultural Information Systems, The Wisdom of Suphan Buri, Cultural of Thailand*

## I. INTRODUCTION

Computer Technology is one of the innovations that make changes in Thai society. Prosperity makes juvenile, society, community, and locals to forget the goodness of traditional cultures. As a result, people concerns less on tradition wisdom in local. While traditional lifestyle of Thais still inherits from suburbs or urban areas. This is important that inheritance of the local wisdom and cultures still exist.

Suphanburi is the province that has its cultures, local traditions, local wisdom, and local races. In the central area of the province, the National Museum of Suphanburi province was established to outreach those cultures and traditions. However, there are the shortcoming on technology usage to help the officers to maintain, publish, and broadcast the knowledge.

This main objective of this research is to develop the database management system of the local wisdom in Suphanburi called The Wisdom Cultural Heritage Information Systems of Suphanburi (WIS). The system will systematically build the knowledge base on heritage wisdom and the goodness of local traditions in Suphanburi, which allow the publics to access the information.

## II. LITERATURE REVIEW

To develop the WIS system, many pieces of knowledge on geographies, histories, societies and cultures, arts, applied statistical mathematics, and computer programming are required to build the system to achieve the objectives and the scope of this research. We have studied the existing works like the following. First, we study cultural, traditional, and local wisdom data of Suphanburi from the National Museum of Suphanburi and many cultural spots in Suphanburi. Then the WIS is designed by which the web site and the system structure could be achieved to research goals. Finally, the knowledge base and the information system is built using standardized tools such as SQL, MySQL, JavaScript, image retouching software, web browser, multimedia authoring software.

The information is categorized into three groups: the local wisdom and cultures, knowledge base management, and the related research works.

A. *The Local Wisdom and Cultures*

The information on the local wisdom and cultures are used to create the knowledge base for the proposed system. We collected the information from 4 sources.

The first source is from the National Museum of Suphanburi. The National Museum of Suphanburi was established in 1995 to create the place to study Archeology and fulfill the thought of Her Royal Highness Princess Maha Chakri Sirindhorn. The Royal Highness Princess also has the Fine Arts department to include more sciences into this museum. The museum deliveries the historical lifestyle of the people in Suphanburi, the war, the minorities in Suphanburi, historic persons, literature, and folk music from the Thawarawadi era to present in Rattanakosin era.

The second source is from the permanent indoor exhibitions from historical evidence such as chronicles in the cities, the places of war, local minorities, historic persons, kiln place in Banpoon, Suphanburi literature, folk songs, and Suphanburi at present.

The third source is from the local knowledge base. The local knowledge base introduces the identity of the heritage wisdom and traditions in Suphanburi. They tell the stories on the human in the first era, the people in Thawarawadi at Uthong, traditional communities at Neantangpra, the people in Ayutthaya era, the races and the woven in Suphanburi. Not only from the secondary sources, but we also gather and deeply inspect the information from the primary sources such as interviews people in woven communities and create in multimedia such as video so as to be the electronic knowledge on the goodness of Thai traditional fabrics.

Finally, the values and the importance of the local wisdom. Thai wisdom is knowledge from abilities and skills of Thais that have been accumulated over the time through the learning, selection, garnishing, and inheritance processes. Local wisdom is the Thai wisdom that is used in the local areas [2]. The characteristics of wisdom are abstract that consists of ideas, knowledge, beliefs, values, opinions, abilities, and intelligence. Therefore, the components of wisdom also contribute to the dignities which are the basis of the living with karma and spirit. The wisdom is also the values that the people in the societies praise as the goodness and should be inherited over the generations [2].

Many savants and scholars also defined four importance of the wisdom. The first importance is knowledge and knowledge system. Because wisdom is not somewhat guessable but is the knowledge that systematically obtains through the observation. Therefore, the way of getting the wisdom is greater than the wisdom itself. Second importance is that the accumulation and spreading the knowledge. Once the knowledge is obtained, it is used to solve the problem. Third importance is knowledge transfer. The nature of the wisdom does not have any institutions to teach the good sense officially . However, it is a complex process of transferring the wisdoms over the generations that we also need to analyze. Finally, the creation and improvement the process in the wisdom is also important since the wisdoms will get learned and developed over time by the experience.

In addition, wisdoms can be categorized into 4 groups. The first group is the wisdoms about principles, ideas, beliefs, and concepts. Second group is the wisdoms on arts, cultures, and customs. Third type of wisdoms is related to the occupations in locals that are developed over time. The last group is the practice concepts and the new technologies that are influenced from the science and technology advancement and used in the community. [1]

B. *Knowledge base Management*

Knowledge is one of the most important resources in a group and organization (Nonaka 1995). Knowledge base Management is a tool that can be used to achieve three goals altogether. These goals are work goal, human development, learning organization development. Knowledge can be categorized into two groups which are explicit knowledge and tacit knowledge (Polanyi 1967). An explicit knowledge is a knowledge that is in the form of documents, books, or manuals. On the other hand, a tacit knowledge is a knowledge that is implicitly gained through the experiences and becomes wisdom. However, in a high context of culture, tacit knowledege can be difficultly extracted (Kivrak 2014).

This research collected the knowledge in both explicit knowledge and tacit knowledge. The explicit knowledge can be gathered from the interviews, and the tacit knowledge can also be extracted from the interviews.

Since the knowledge base system in the proposed system is related to art and cultures, Sackmann (1992) investigated the potential existence and formation of subcultures in organizations, using an inductive research methodology to study the extent to which four different types of knowledge were shared by organization members. Sackmann found that using knowledge base system could capture culture in a particular setting and each constituting culture in the system will form a new type of culture of the overall system. Ismail (2007) investigated the role of certain factors in organizational culture in the success of knowledge sharing and found that trust, communication, information systems, rewards and organization structure are positively related to knowledge sharing in organizations.

## C. Related Research Works

Gittinger (1992) has published a catalogue of Thai textile traditions. Most of the textiles in tradition are related to Theravada Buddhist. Patricia et al. (2000) studied the relationships between cultures and the development of weaving in Zinacantec Maya community of Chiapas, Mexico for 24 years. Since the Maya community implicitly transits from agriculture to commerce ecocultural. The study found that the apprenticeship over the generations becomes more independent style of learning and the textile. Wattana (2012) studied on Thai traditions' textile and the Thais' lifestyle. The study focuses on how people produce and choose the material to make each textile. Each local the has different way of combining producing method, resolution, niceness, beautiful which can result in different identity of each local. Songphol (2012) studied the Thai local wisdom in native fabrics focused on the ethnic Lao-Khrang in Suphanburi, Chainat, and Uthaithani provinces. The study selects the group of people who still have their traditional weaving to use the outstanding red color that has been passed through generations. Boonchuey and Samran (2013) studied the way to develop the teacher knowledge in Phetchabun province to Pamuk weaving wisdom to education reform sustainable teaching and learning process that complies with the lifestyle in local and conserve the local identity as well as the local wisdom.

## III. METHODOLOGY

To develop the WIS system, we have gathered information from different sources mentioned in the previous section. We also interview many local fabric communities and record the videos on the weaving process. This includes Ban yanlao, Paeyoun maeprajak group, traditional fabric weaving group at Nongkratoom, the female cooperative at Banphosri Lao-Khrang, traditional fabric weaving group at Wanglumpong.

## IV. PROPOSED SYSTEM

The WIS system can connect to the main website of National Museum of Suphanburi in order to store the knowledge base and other local wisdoms. The WIS system contains 2 modules. The former module is called Local knowledge base which consists of the history of National Museum of Suphanburi, the wisdom of the locals in Suphanburi, knowledge base on locals such as races, fabrics, folk music, earthenware, wicker, bamboo, rattan, hammock, bead. The latter module is called knowledge community which consists of the knowledge base on fabric weaving in Suphanburi as shown in Figure 1, 2, 3.



Figure 1. The History of the Suphanburi National Museum



Figure 2. Woven Fabrics Thailand



Figure 3 Knowledge Communities

## V. SATISFACTION WITH THE WIS SYSTEM

According to the satisfaction survey on the WIS rated by the users who have used the system, this part of the analysis showed that it received the excellent feedbacks.
To find the satisfaction of the users, we use the survey approach. It is in the form of the rating scale and classified into five levels. In the interval scale that is used to measure the overall score, the 5-points indicates the excellent satisfaction while the 1-point indicates poor satisfaction.

Then we calculate the average of the score and compute the significant level of user satisfaction. The calculations for significant level of user satisfaction were shown as follow: [3]

$$
\begin{aligned}
\text{Range} &= \text{Maximum point} - \text{Minimum point} \\
&= 5 - 1 \\
&= 4 \quad\quad\quad\quad\quad\quad\quad\quad (1) \\
\text{Class interval} &= \text{Range/number of interval} \\
&= 4 / 5 \\
&= 0.8 \quad\quad\quad\quad\quad\quad\quad (2)
\end{aligned}
$$

The average points as follows:
4.21 – 5.00 mean the users have an excellent level of satisfaction with the system.
3.41 – 4.20 mean the users have a very good level of satisfaction with the system.

2.61 – 3.40 mean the users have a good level of satisfaction with the system.

1.81 – 2.60 mean the users have a fair level of satisfaction with the system.

1.00 – 1.80 mean the users have a poor level of satisfaction with the system.

The surveys were answered by 100 of all the users. The results, as shown in Table 1, indicates that the users feel the most in that the website is very useful to the community, the society, and the country economy as it scores 4.60. However, the user feels the least in that the website is finely and appropriately designed as the score is only 3.95. Finally, the total average was 4.31 which indicated and could be concluded that it was the highest level of satisfaction.

TABLE I.  Users' satisfaction on the usage of the WIS

| No. | Topics | Point Average | Meaning of Satisfaction |
|---|---|---|---|
| 1. | The website is finely and appropriately designed. | 3.95 | Very good |
| 2. | Data organization on the website is appropriate, easily understandable and convenient to use. | 4.14 | Very good |
| 3. | The information showed on the website is credible. | 4.35 | Excellent |
| 4. | Website processes and shows results speedily. | 4.23 | Excellent |
| 5. | The website is easy to use. | 4.18 | Very good |
| 6. | Users can add, delete and/or adjust an information filled on a website efficiently. | 4.50 | Excellent |
| 7. | Website supports country's efficiency in wisdom Cultural Heritage. | 4.38 | Excellent |
| 8. | An information provided on website is useful for National Museum and Social. | 4.45 | Excellent |
| 9. | Website is useful to community, society, and country's economy. | 4.60 | Excellent |
| 10. | You are overall satisfied with the WIS system. | 4.41 | Excellent |
| | Total average (10 questions) | 4.31 | Excellent |

## VI.  CONCLUSIONS AND FUTURE WORKS

This research is in an integrated research that combines the art and science on many fields in order to develop the art and culture of the country. The main objective of this research is to develop the Wisdom Cultural Heritage Information Systems of Suphanburi under the operational framework that converts the information into a digital form. The information was taken from many sources including interviews. As the result, the system can reduce the work process and perpetually conserve the information. After deployment of the system, the user satisfaction was surveyed. The result showed that the users were satisfied with the system in an excellent level.

We suggest the future works on this research as the following. First, the system should be able to add more information on another local or community. Second, the system should be able to be deployed and linked with another museum. Finally, we plan to collect more sources of information in order to make a complete information on local wisdom.

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