Daily Activities Management Information System of Koglam-Sangaram Village: The Self-Sufficiency Economy Village Model of Pid-Thong-Lang-Pha Project

SAMAWAN THANASRIPANITCHAI*

Udon Thani Rajabhat University, Udon Thani, Thailand

Abstract: The objectives of this research were to study daily activities and information needs of a self-sufficiency economy village named Koglam-Sangaram, which leads to system analysis to design and develop management information system. This research was the participatory action research of the local community. The sampling technique used in the research was purposive sampling. The participants were two heads of village, staff of Pid-thong-lang-pha project, and 22 agents from 11 occupational groups. The data collection techniques used were an in-depth interview, community-based forum, project documents, information system analysis and development approach. The collected data were analyzed by content analysis and conversation analysis, then the problems found were prioritized and designed data schema for system development. The results of the research showed that Koglam-Sangaram village was the self-sufficiency economy village model of Pid-thong-lang-pha project as part of the Royal development project. The village was the prototype village of water management for self-sufficiency economy capability with each occupation group, for example, a local rice seeding group, a local silk weaving group, livestock farming, and a fertilization production group. The daily activities included providing short course, demonstration, and practice of each occupational group to other communities. All activities had to be reported to the Pid-thong-lang-pha project office. The reports consisted of daily courses, course experts, course attendees, incomes and expenses of each course. These reports had to provide detailed information according to the specified date and time, and specified period of time such as on daily or monthly basis. The current reports were prepared by presentation software with images and description. These reports took time to be prepared and were hard to backtrack past activities. Moreover, the course expert was the local wisdom in each occupational group. Their knowledge and specialization were not properly recorded and organized. The findings indicated the need of information system which can record the daily activities and generate reports according to the requirements. The information system's purpose was the web-based information to provide data management for each occupational group and report for project officers. The developed website could manage daily course data, course expert data, course attendee data, incomes and expenses data. Moreover, it could provide query functions according to specified period of time. Other parts of the system were expert management, and expert knowledge management function. As a result, the users of the system can access the up-to-date information.

Keywords: System development, Information management, Self-sufficiency economy village

Received: 09 October 2016 / Accepted: 04 December 2016 / Published: 28 February 2017
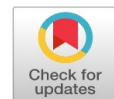
INTRODUCTION

The Pid-Thong-Lang-Pha Project is a part of The Royal Initiative Discovery Projects, under the supervision of The Royal Initiative Discovery Foundation. The project operation is based on the concept of sufficiency economy in which villagers can learn and gain direct experience from the royal project and be able to apply to everyday life. The objectives of this project are to promote learning of sufficiency economy in order to raise their well-being and to promote the occupation as well as, public awareness on the conservation of natural resources, environment and culture of Thailand. The Royal Initiative Discovery Foundation was evolved from the Royal Initiative Discovery Project (Royal Initiative Discovery Foundation, n.d.).

Baan Kok Lam and Baan Saeng Aram are villages in Gud Mak Fai subdistrict, Nong Wua Soe district, Udon Thani province, Thailand. These two villages are the location of Huay Klai Reservoir Royal Initiative Sustainable Water Management Project. They were selected by the foundation as a

---

*Corresponding author: Samawan Thanasripanitchai
†Email: samawan@gmail.com

pilot project to re-develop the water grid by expanding the reservoir capacity and adding pipelines for better water distribution, in order to provide an all-year-round supply of water for the villages. Three small dykes were repaired and Huay Gan Luang reservoir's water pipelines and water distribution system were improved. In addition to water management, the improvement of farming was also reconstructed. Two farms in the area were selected as pilot projects. The Royal Initiative Discovery Foundation was established as a center to integrate Knowledge for the villagers. The following changes were made. First, nutrients were added to the soil. Then, an integrated farming technique was introduced with three categories of plants multi-cellular (top-tier) plants, edible or fuel plants (mid-tier) and root & tuberous vegetables, as well as short-term crops. Moreover, fast-growing pigs, ducks and pond fish were also raised.

After the start of the project, the new water management system could provide water to the villages throughout the year, which was resulting in the ability to do the farming without depending on the rainfall. Within one year, the villagers' farming productivities had been significantly increased, which also led to the increase in household income. Nowadays Kok Lam village and Saeng Aram village consist of 11 occupational groups focused on operations in the form of economic self-sufficiency. Resulting from the success of this pilot project in these two villages, the foundation collected the knowledge learned and formed a training center.

The training center provides various training activities to the third parties who are interested in such knowledge. It's located within the village and organized by the villagers themselves. There is only one staff member from the foundation who acts as the coordinator between the training center and the foundation. The villager staff, from occupational groups in the training center, have to run various operations, including running the training activities, looking for trainers, catering food and beverages, providing accommodation, concluding the activities' performance, and preparing reports. In order to do this, the villager staff had to enter the same data or information every day with the repetitive data to prepare reports. Meanwhile all reports are gathered by the coordinator and sent to the foundation, where all reports are collected in file format in personal computer causing the inconvenience and is time consuming when inquiring information from past reports. While the training activities are effective, the report preparation and archival are inefficient. The preliminary study, by interviewing the coordinator, indicated that the information system facilitates the reports archival and retrieval is needed. The purpose of this study was to develop management information system of self-sufficiency economy village Koglam-Sangaram, to manage data of training center activities, including professional groups, trainers, and daily activities. The system should be able to facilitate information retrieval and report preparation. To gather the real system requirement the research conducted was participation action research since it was more appropriate to the village context. It gave the opportunity to the villagers to elaborate about their problems and requirements. While the research, as an information system specialist, helped facilitate their thinking processes and transform their requirements into system requirements, to ensure the alignment of villagers' requirements and operations with the system functions (Roeksiripat, 2016).

LITERATURE REVIEW

This study was based on the concept of public participation (Kasemsuk, 2011). The concept focused on the participation pattern in 4 forms, including 1) public Information) 2) public consultation 3) public meeting) and 4) decision making. The public meeting can be classified into 3 types, including community meeting, technical hearing, and public hearing. The important aspect of participation is the process, which has 4 stages. The 4 stages of participation process are 1) participation in thinking, studying, researching the problems and its causes, and community requirement 2) participation in policy, tasks, activities, and projects planning to reduce problems 3) participation in decision making of organizing and improving the efficiency of resource management process and goal achievement and 4) participation in controlling, monitoring, and evaluating of performance. Moreover, Burikul, (2008) stated that public participation meant the rights and duties of people in the community possessed by participating in their problem solving, their responsibility in exploring and monitoring various needs, local resource collecting, and suggestion of new possible problem solving methods, including local institution establishment and

preservation. Public participation should base on will of freedom in voluntarily participating. Civilian should have equal rights and have adequate proficiency to participate. Intaramanon (n.d.) also stated that participation is the crucial fundamental of sustainable development because it provides opportunities for people in the community to take part in definite community development direction, according to their problems and real needs, which is aligned to their specific community context. It also allows full potential of community in supporting local resources integration (Tangpornpaiboon & Puttanapong, 2016; Wibisono, Yani & Muhlisyah, 2016).

METHODOLOGY

This research was the participatory action research for developing the Daily activities Management Information System of Koglam-Sangaram Village.

The purposive sampling technique was used in selecting the target participants who participated in the research process. The participants were two heads of village, staff of Pid-thong-lang-pha project, and 22 agents from 11 occupational groups.

The data collection techniques used were an in-depth interview, community-based forum, project documents, information system analysis and development approach. The semi-structured questionnaire was used in assisting the in-depth interview of agents from 11 occupational groups. The system analysis and design model was used in designing the structure of the questionnaire.

The collected data were analyzed by content analysis and conversation analysis, then the problems found were prioritized and designed data schema for system development.

Data collection process consisted of following activities:

- Prepared community-based forum, invited the participants to explain the research objectives, process, and creating involvement; the role of participants, and problem suggestion throughout the research process.
- Researcher reflected on the preliminary collected data and defined community problems.
- Explored the overall issue of the operation problems from 11 occupational groups and project staff, based on community problems found, using in-depth interviews, focus group and individual interviews to gather problems of activity reports archival in the village.
- Researcher reflected on the collected data and summarized the overall community requirements.
- Confirmed the overall community requirements and inquired detailed system requirements using in-depth interviews with same group of stakeholders from previous process, together with focus group and individual interviews. The objective of this process was to gather the information needs of information systems to support the daily activities recording from operating activities in the village.
- Researcher reflected on collected data, performed content analysis, and formulated the first outline of system requirements and functions.
- Prepared second community-based forum to present the first outline of system requirements and functions. The research team, project staff and community representatives jointly analyzed and summarized the problems and specified the daily activities information system needs via a community forum.
- Researcher designed the detailed system analysis and design of the daily activities management information system based on the system development life cycle approach.

The detailed system analysis and design of the daily activities management information system are this study's findings. After obtaining the findings, the following processes will take place hereafter:

- Researcher will organize the third community-based forum to present the conclusions from an analysis and design of the problems and information systems requirements to review and verify the needs of stakeholders.
- Researcher will develop the system.
- Testing and implementation of the system according to the design process will take palce.

FINDINGS

The context of Koglam-Sangaram training center

The training center is located within the villages and optimizes the local resources, including local expert in training. Its main activities are to provide the training, knowledge transfer to third parties and to support the activities of the Self-sufficiency economy village Model. Each group of occupations has its members, volunteering as trainers in each activity. There is also a project coordinator who handles and prepares reports of daily activities. The report consists of activities' trainers, activities information, within group activities, training activities, and daily performance. At present, the report is prepared using a presentation application (such as PowerPoint) and saved in the PDF file format. The daily reports, prepared by the coordinator are, then, reported to the foundation. The reports are collected weekly and delivered to the Foundation via e-mail. The preparation of the report will present comprehensive information as a quality performance indicator of each group, resulting in clearer operation directions of each occupational group.

Results from community-based forums, focus groups, in-depth interviews, and documents

The results are derived from data collections and analysis of two community-based forums, two focus groups, several in-depth interviews, and related documents in training center. The documents included in occupational groups are member documents and daily reports from each occupational group's performance. From the documents gathered and analysis it was found that the data flowed in all processes including trainer data, visitor data, group activities, group incomes, and group expenses. Currently, there is only one type of report delivered in the center. This report is the report of daily activities of each occupational group. The format of current report is PDF, prepared by presentation software, which makes it hard to edit the contents later. Reports are archived into two forms, hard copy and soft copy. There is no search or index provided for retrieving the past information.

The results from community-based forums, focus groups, in-depth interviews, and documents are summarized and shown in table 1.

Table 1: Daily data record's occupational groups and project staff

No.	The daily activity data needed to be recorded.	Problems on the recording.	Information system requirements
1.	Data of trainers, local wisdoms, who serve as a knowledge transfer medium.	1. Must repetitively enter the same data or information every day such as an occupational group, the name of trainers, village philosophers etc.	The system can: 1. Allow data importing.
2.	Data of occupational groups	2. No pattern of recording data.	2. Search and retrieve historical data.
3.	Data of visitors - Organization name - Number of persons. - Title attended	3. No formatting of recording data	3. Search with condition function customized to user need, such as trainer name, activity name and occupation etc.
4.	Data of the demonstration area. - Names of demonstration areas, classes, and subjects. - Locations. - Types of Demonstration.	4. If there are several visitor groups at once, the report preparation will be delayed.	4. Edit the data.
5.	Data of training activities	5. Checking back historical data and information takes longer times.	5. Authorize individual users with system rights.
6.	The photo of activities	6. Existing data can't be reported in any other format.	6. Report data in both hard copy and soft copy format.
7.	The results visitors obtained from the training class.		7. Build reports in various formats.
8.	The result occupational groups obtained from trainers or demonstration.		
9.	Members of volunteers and project assistants.		

Results of information system analysis and design

According to the result of the problems and information system's requirements from previous section, the results of system design are described in this section. The system design consists of 4 parts: 1) System structure chart 2) Workflow of system 3) Data flow diagram and 4) Entity-relationship diagram.

System structure chart shows a structure of the system in 3 modules, including master data management module, daily data transaction module, and report search module:

- Master data management module is the management of adding, searching, editing and deleting data within database. The master data include 5 sub-modules, data of trainers or local wisdoms (the personal data), occupational groups, visitors, demonstration and training classes.
- Daily data management module composes of data from master data files and includes daily data from the activities in each occupational group.
- Report search module is used in searching information recording in the system.

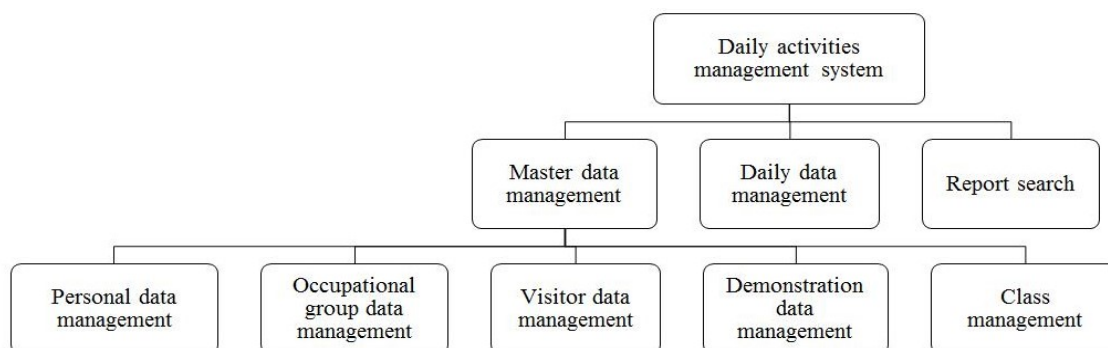The system structure is shown in figure 1:

Figure 1. System structure chart of the daily activities management information system

Flowchart shows the workflow design explaining each process in the system. In this case, figure 2 shows a sample of the master data management module in personal data management process and figure 3 shows workflow of the daily data management process.
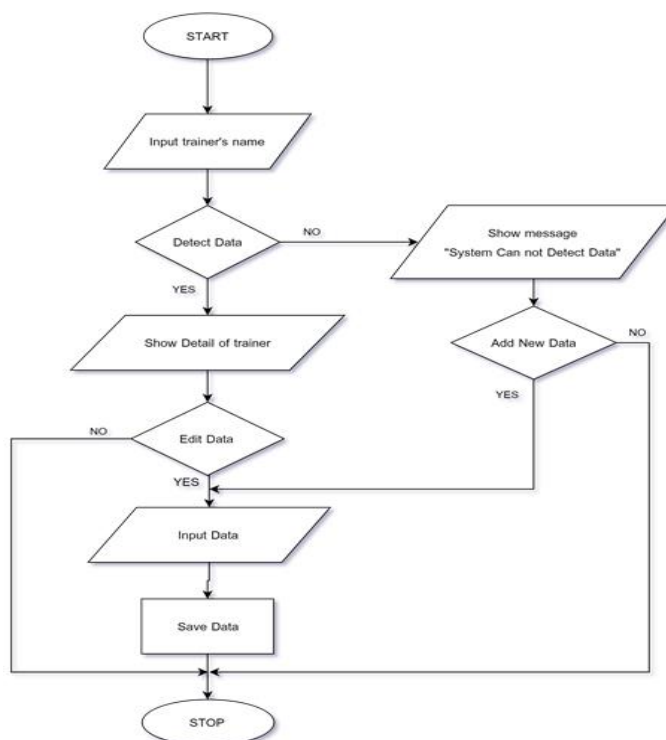

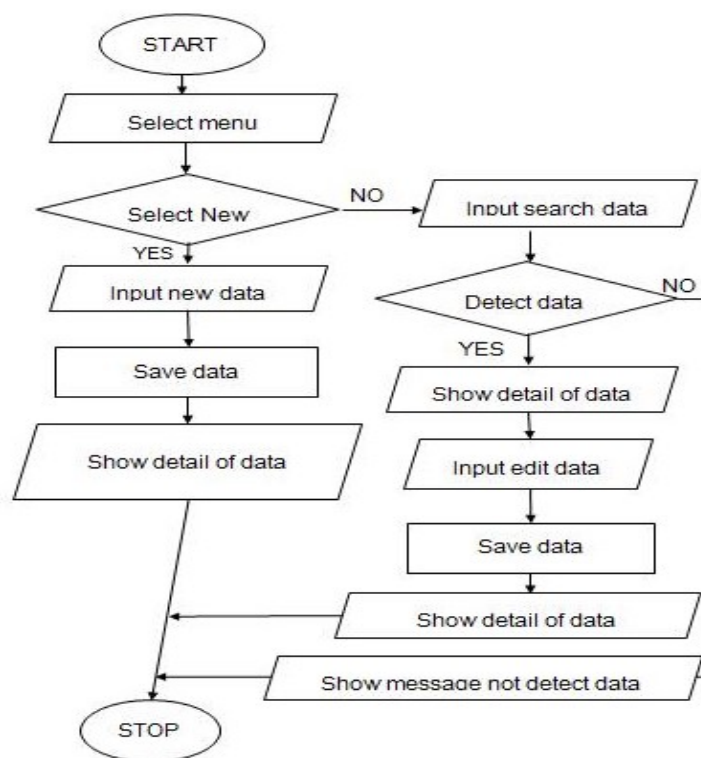Figure 2. Flow chart of master data management process

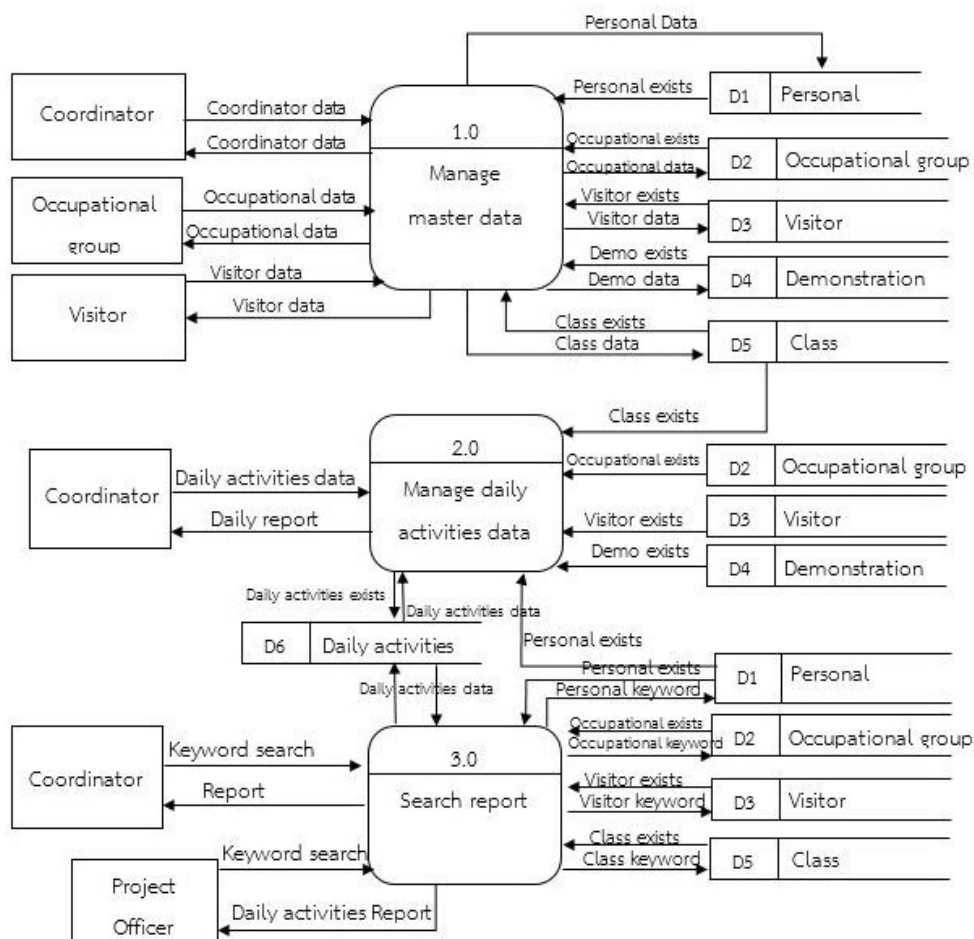Figure 3. Flow chart of daily data management process

Figure 4. Data flow diagram of the daily activities management information system

Data flow diagram shows the main functions carried out by the system including 3 main processes, as shown in figure 4:

- Process number 1.0 Manage master data process shows processes of master data management module that has coordinator, visitor, occupational groups as external entities, who provide input data flowing to database previously described in System structure chart.
- Process number 2.0 Manage daily activities data process shows processes of daily transaction activities. Coordinator provides input of daily data into this process, retrieves data from master files and records daily activities' data from daily activities file.
- Process number 3.0 Search report process shows processes of search function and creating reports, the project officer and coordinator can identify search condition and build daily report, weekly report, and specific-time duration report.

Entity relationship diagram (ERD)

ERD Shows database design of the information system. The data are stored from DFD and transformed to entities in ERD. Preliminary ERD consists of 6 entities and has relationship, as shown in figure 5.
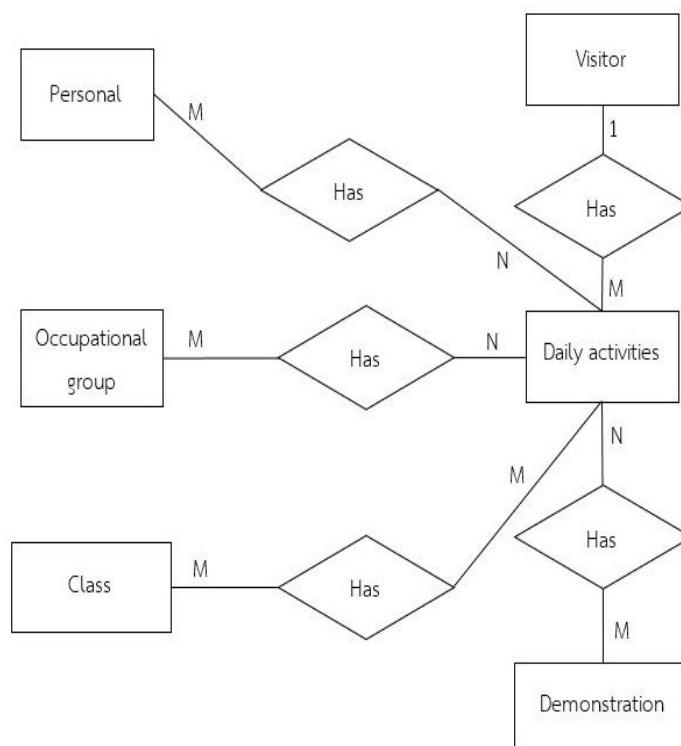

Figure 5. Entity relationship diagram of the daily activities management information system

As of the database design, the normalization of data by dividing data into separate tables will reduce data redundancy and provide better structured data organization. As a result, users will know current information and be able to prepare daily reports from activities of each occupational group.

DISCUSSION AND CONCLUSION

The study of Koglam-Sangaram training center context was to collect data to develop information system using Participatory Action Research (PAR). Conventional system requirement gathering techniques included one-on-one interview, questionnaires, group interview, and brainstorming, which are similar techniques to PAR. However, conventional techniques were designed to use in organization or business entities, whose key informants have some basic knowledge of information system. However, villagers mostly have limited knowledge about information system and require more support in pulling implicit knowledge and information. PAR facilitated communities in finding villagers' actual problems and needs.

The processes used were community-based forums, focus groups and in-depth interviews. The usage of PAR focused on the participation of key informants, representing the villagers. The villagers' participation was the important aspect of system analysis and design process. Participation activities motivated community in thinking, studying, researching the problems and its causes, and community requirement. Additional advantages of using PAR as a tool in information system analysis and design were that participation allowed the discussion in policy, tasks, activities, and projects planning amongst the key informants, which helped better communication within villagers, improved coordination, and eventually reduced future community problems. Participation in decision making also helped in designing formats of information system. The processes of participation lead to the real data for collection, analysis and design of information system appropriately for community. Data can be analyzed into the information system's requirements, which are used in developing information systems. The result of this study shows that PAR can be efficiently used as system requirement gathering technique in the context like villages or small communities.

The derived data represented real needs of user, which resulted in information system. The system will be easy to use and data processing is more accurate, clear and easy to understand message. After developing the system, suggestion for this research should bring the community to participate in controlling, monitoring, and evaluating of the information system performance (Kasemsuk, 2011).

REFERENCES

Burikul, T. (2008). *Participation: Concepts, theories and processes.* Bangkok, Thailand: King Prajadhipok's Institute.

Intaramanon, P. (n. d.). *Participation and sustainable development.* Retrieved from https://www.academia.edu

Kasemsuk, C. (2011). *Communication and social change.* Bangkok, Thailand: Chulalongkorn University Press.

Roeksiripat, K. (2016). Informal economy: Case study of street vendors in Bangkok. *International Journal of Business and Administrative Studies, 2*(2), 29-36.

Royal Initiative Discovery Foundation. (n.d.). *Promote the use of Royal Initiative project and integrate them to become the country's principal development approach.* Bangkok, Thailand: The Royal Initiative Discovery Foundation.

Tangpornpaiboon, S., & Puttanapong, N. (2016). Financial contagion of the global financial crisis from the US to other developed countries. *Journal of Administrative and Business Studies, 2*(1), 48-55.

Wibisono, A. B., Yani, A. R., & Muhlisyah, A. (2016). Developing the "classic" image branding of Madura Batik center as an effort to face AEC (ASEAN Economic Community) 2016. *International Journal of Business and Administrative Studies, 2*(6), 173-177.

— This article does not have any appendix. —