

THE DESIGN OF TRAVEL ROUTES IN WANG NAM KHIAO SUB-DISTINCT NAKHON RATCHASIMA PROVINCE BASED ON LOGISTICS PRINCIPLES AND TOURISTS' BEHAVIOR

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ABSTRACT - The objectives of this research project are to (1) support communities and natural resources in the province that have the potential to become tourist attractions; (2) design a route for community-based tourism and natural resources to accommodate the factors in travelers' diverse decisions and logistics systems; and (3) develop methods or tools for accessing tourist attraction information and presenting community-based tourism routes and natural resources to accommodate the diverse behavioral patterns. This research combines a survey to collect preliminary tourist attraction data with an experimental study to investigate the travel route using a computer program system. Wang Nam Khiao in Nakhon Ratchasima Province is the case study. According to the results of 107 travelers, 46.7 percent preferred to go for two days and one night. More than half of those questioned chose nature tourism, sightseeing, and camping. Twenty attractive tourist places are classified into 5 categories including camping areas, cultural tourism, natural tourism, farms, and cafés. The GAMs program is used to determine the tourism routes based on the traveling salesman and conditions from the survey results. The results show 4 tourism routes that pass 4 attraction tourism areas and 1 camping area and are then presented in the brochure.

Keywords: travel routes; tourists' behavior; traveling salesman; QGIS

1. INTRODUCTION

Many governments rely on the travel and tourism growing industry to generate cash, create employment, expand the private sector, and construct infrastructure. Wang Nam Khiao, in Nakhon Ratchasima Province, is one of the most interesting places for traveling in Thailand. It is known as "Eastern Switzerland" and is the world's 7th greatest source of ozone. When looking for tourist attractions in Nakhon Ratchasima, however, Wang Nam Khiao's information is difficult to come by. As a result, travelers have limited data from both online and offline platforms to plan their tourism itineraries based on their travel habits and the state of tourist sites. The researchers then intend to encourage tourism in the Wang Nam Khiao region, particularly tourism following the COVID 19 pandemic, and to provide travelers with additional information about tourist attractions in the Wang Nam Khiao sub-district. The objectives of this research are to 1) identify the basic needs of tourists in local tourism, 2) design travel routes using the Traveling Salesman Problem algorithm [1] in GAMS application [2], and 3) design and develop a media prototype for information communication and designing tourism routes.

2. MATERIALS, METHODS AND RESULTS

The processes of this research are presented in Figure 1.

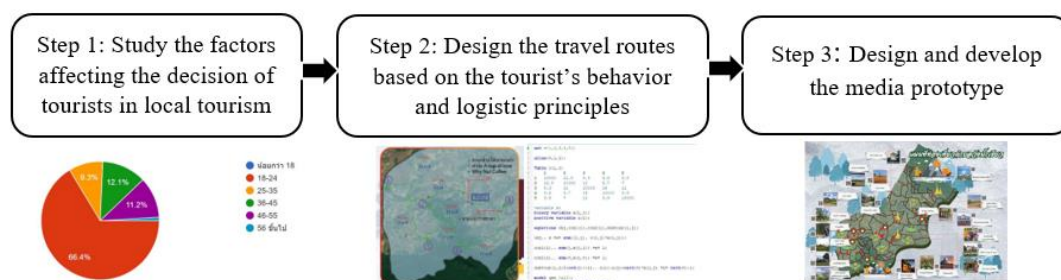


Figure 1. Overview of processes in this research

2.1. Step 1: Study the factors affecting the decision of tourists in local tourism

The purpose of the survey is to gather information and investigate preliminary findings. The information is then utilized to create travel routes. Results from the survey show that males and females travel in the same manner. They opted for a one-night stay and natural tourism. Sightseeing, camping, and cultural tourism are also appealing to them. They are not very interested in local tourism. Local tourism, on the other hand, is encouraged to help the local community generate cash and create jobs. As a result, researchers decided to create a tourist route by merging various tourist attractions in order to promote a new tourist lifestyle.

2.2. Step 2: Design the travel routes based on the tourist's behavior and logistic principles

Travel routes are designed as presented in Figure 2

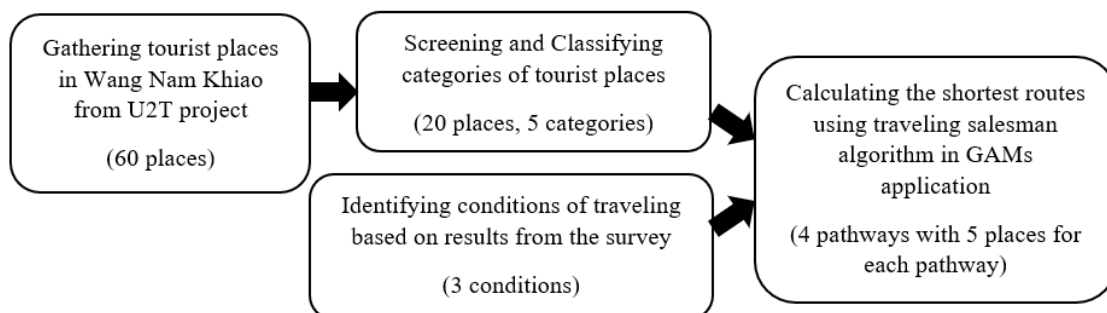


Figure 2. Processes for designing travel routes

Sixty tourist places in Wang Nam Khiao are gathered from the U2T-University to Tambon project. After that, some places are discarded because of their sizes, facilities, and types. As a result, 20 tourist places are left to plan travel itineraries around. These tourist attractions are divided into five categories, which are 4 camping areas, 3 cultural tourism, 3 natural tourism, 4 farms, and 6 cafés. These tourist attractions' locations are compiled to create travel itineraries. Regarding the results from the survey in Step 1, three conditions of traveling routes are identified for calculation. First, tourists will stay camping for one night. Second, they aim to visit all five categories of tourist attractions. Third, their journey starts from the camping area and ends in the same area. That means this route design is suitable for travelers who plan to camp for 2 nights with one day off. In relation to these conditions, four tourist pathways for camping locations are provided. The GAMS program is used to determine the distance between each location based on the traveling salesman dilemma. Ultimately, the itinerary of the trip is designed to start and end at the camping area with the shortest distance traveled through the remaining four tourist attractions as presented in Figure 3.

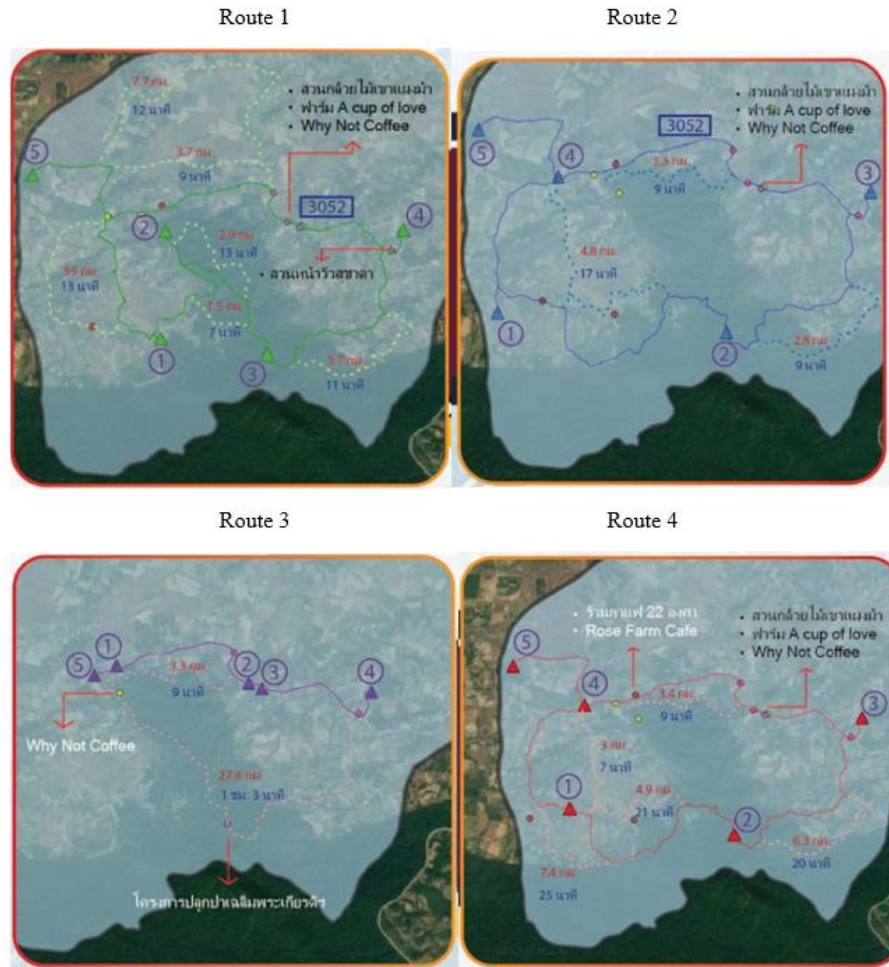


Figure 3. Four travel routes regarding the calculation of the traveling salesman algorithm

2.3. Step 3: Design and develop the media prototype

A brochure is an initial media prototype, which is a simple resource for providing tourism information. Digital media will be expanded further if the information in the brochure is successful. Four travel routes from step 2 are applied in the brochure using the QGIS tool, which may depict the main roads, secondary roads, and geography of the locations. Information in the media contains the names of tourist destinations, travel sequences, the main road and the secondary road, and other interesting places along the route, in kilometers, and travel time. Tourists might choose to follow this advice or visit other locations suggested by the media. An example of one side brochure is presented in Figure 4.



Figure 4. An example of the brochure for travelers

3. DISCUSSION AND CONCLUSION

This research proposes the concept idea for designing the travel routes using the case study at Wang Nam Khiao Sub-distinct Nakhon Ratchasima Province. The travel routes are designed based on logistics principles and tourists' behavior. Tourists nowadays pay attention to nature tourism, especially after the COVID-19 epidemic. Therefore, designing the travel routes by integrating culture tourism and nature tourism is one strategy to support community tourism and increase opportunities to promote a better local economy. The priority strategy for designing travel routes is the time window. The GAMs program then calculates the shortest path based on the traveling salesman problem to save tourists money and time. However, the route types should be more diverse in terms of entrance place, length time, and conveyance. Moreover, route types in this research are not varied and flexible for tourists who have different styles of travel. The concept of a traveling plan should be developed. Additionally, these locations and routes should be fully explored for their integrity and existence on-site after COVID 19.

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