The Development of Artificial Intelligence System for Being a Good Host: A Case Study of Tourism City in Betong District, Yala, Thailand

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ABSTRACT

The objective of this research was to develop and evaluate the efficiency of artificial intelligence for being a good host, a case study of tourism city in Betong District, Yala Province. Collecting needed information from key informant by in-depth interview and small group meeting with relevant 4 groups including academic group of tourism management, academic group of Information Technology, Tourism operators and tourists. The evaluation efficient system auditors were designed for 30 people. The results found that the developed artificial intelligence for being a good host able to use by tourist sent text message by user interface and system sends information into dialog flow which classified data as 6 aspects which were tasty, good to go, accommodations, amazing journey and help. These were connected and exchanged information between program to program and then process data to questions and connected to database in various detail as followed food, restaurants, location, activities. The results were shown that the efficiency of artificial intelligence for being good host was in highest level ($\bar{x}$ = 4.58, s.d = .531) and together with the highest level of functionality and human-like characteristic. For satisfaction was effective at a high level.

Introduction

According to economic and social in current situation, tourism industry is growing, which can be reflected to the population's demand in consumption and service while traveling were steadily increased. This can stimulate both the manufacturing and service sectors with stakeholders in travel and tourism including hotels, airlines, shipping lines, Airport with big income, the person who takes care of the accommodation, Provincial tour leader or local guides (Sofronov, 2018). To use information technology as a tool to promote tourism such as booking flights from all over the world, for comparison of hotel and accommodation prices, searching for attraction places, selling travel packages or offering travel information, etc., these were developed from Web 3.0 to Web 4.0, which was a new type of web where artificial intelligence agents interact with humans and machines (Hulya, Osman, and Erdem, 2018). The artificial intelligence system can be divided into 6 aspects: expert systems, learning systems, robot visualize systems and nerve networks, natural language processing. The Artificial intelligence system which is most popular is the field of natural language processing which is currently used as a chatbot that answers questions, acting as human talking (Hayco, 2018), can naturally interact with users to demonstrate good service to users (Watcharasinging, Bunyapraphan, and Saksri, 2015). It is also intelligent and able to analyze what human need, learn human behavior in order to present various information as needed, presenting by application with human-like characteristics chatbot which able to answer the question and talk (Hayco, 2018). This evolution was led to major changes in the sector of tourism (Hulya, Osman, and Erdem, 2018. Moreover, chatbots can be accessed throughout the 24 hours and reached 365 days, these features make the

chatbot can replace humans and creating new experiences in tourism (Nagaraj, Bharath, Raja, and Raua, 2019), in which Thailand has designated tourism as an important tool in driving the economy and stabilizing the country by taking advantage of its location and abundance of multicultural tourism resources. In quarter 4 of 2016, southern Thailand was most monetized in travel at the first rank with 44, 233.49 million baht (Kasikorn Research Center Thailand, 2019), which Betong district, Yala province as a tourist border connect with Malaysia and have abundant natural resources. There are many tourists coming in and increased tourism income in the area (Yala Provincial Integrated Administrative Committee, 2017) However, the results of recent tourism development have been limited, there were disadvantages and problems such as competitiveness abilities. Revenue concentrated only in large cities and negative images such as crime, safety, and fraud issues (Ministry of Tourism and Sports, 2015). Therefore, to provide communication tools in order to promote of being a good host in Betong District, Yala Province throughout the presented information of tourism through behavioral analysis, learning and present needed information to users instantaneously by using artificial intelligence system, this comply with government policy to promote innovation in order to restructure the country's economy by digital including Internet of things, Embedded technology and artificial intelligence (Division of Research Administration and Quality Assurance in Education, 2017) the researcher was conducted the topic The development of artificial intelligence system of being a good host, case study of tourism city Betong district of Yala province, the objective of this research is to develop artificial intelligence in or der to be a good host and evaluate the performance of artificial intelligence systems as being a good host.

Literature review
Artificial intelligence

Ongsuli (2017) stated that artificial intelligence or AI is a field of computer science that involve with computer programming. It is a problem solving process described as algorithm step by step. The forms that appear can be classified in three ways, namely the general communication. The manner described by pseudo-code that has been agreed from the beginning and the manner described by flowchart. Each branch of artificial intelligence is different, in this research presenting artificial intelligence systems in natural language processing. This means creating programs that have the ability to communicate and understand human language so the natural language processing is a program that aims to allow users to use a computer by commanding in common language. The artificial intelligence system for processing natural language in a chat bot is a software that use for chat through hearing or through text by input answers in a database in order to answer the questions (Nagaraj et all., 2019), and Dahiya (2017) indicated that a chatbot is a robot for communication by conversation with a user. The chatbot is a tool that is being used in the tourism industry. It enhances the presentation of the Tourism or increase the tourist experience in a new style in order to meet the users' requirement. This can make tourism industry has increased potential continuously. However, before implementing a chatbot, its performance should be evaluated so that the chatbot can achieve its goals within a given context (Abran, Khelifi, Surym abd Seffah, 2003).

Being a good host

The Tourism Authority of Thailand (2019) provided the meaning of being a good host, that mean all Thai people with every occupation, live in a local area, a tourist destination, or have an opportunity to meet with tourists and visitors from foreign country who can convey understanding to the visitors with warm hospitality with generous and sincere. However, there are many academics have stated that the good host is the person with service mind which Watcharasing, Bunyaprapan,

and Saksri (2015) stated that the service providers have service mind will lead to good service for customers. Therefore, the meaning of service is about the process of responding the others' requirements so service providers should have the qualifications of the service which are ability to facilitate quickly, accurately, with responsibility, human relations and happy in providing services to satisfy customers the most (Tourism Authority of Thailand, 2019). Moreover, there were researchers studied the relationship between the characteristics of the chatbot with the satisfaction of users by collecting data from the samples who had experienced in the use of chatbots of 252 people, the results showed that there were 4 characteristics of chatbot including convenience use, existence, fun and useful. It was found that convenience use, fun and useful affected to customer satisfaction, but convenience use did not affect the customer's satisfaction with statistical significance and satisfaction in using chatbots

made customers decide to use service again (Jungkim, Naeeum, and Mi-Sook, 2019) In addition, Kanjanawong and Kanchanawong (2014) have applied information technology to increase tourism capability by conducting research on Application of two-dimensional bar code technology to provide tourist information in tourist destinations, a case study of Wat Phra That Doi Suthep Worawihan, Chiang Mai Province. It presented in the form of mixed media of 30 stories for 10 tourist attractions and creates a QR code for tourists to access information. The data was collected with a samples of 250 people. It was found that the overall satisfaction of tourists was at a high level because information in mixed media was useful to tourists. The displaying information was met their needs. It was easy to access to information convenience use and the QR code label at the information service point is sufficient
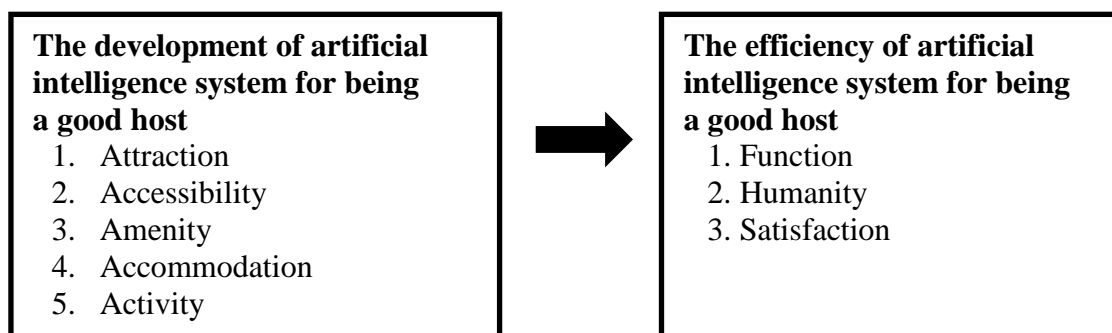
Research conceptual framework

Figure 1 Conceptual Framework

Research conceptual framework Development of an Artificial Intelligence System for Being a Good Host, A Case Study of Tourism Town, Betong District, Yala Province Had set the following variables;

Independent variable

Artificial intelligence system for being a good host: A case study of Tourism Town, Betong District, Yala Province consisted of tourism elements as following (1) Attraction (2)

Accessibility (3) Amenity (4) Accommodation (5) Activity

Dependent variable

The efficiency system of artificial intelligence to be a good host a case study at the tourism city in Betong district of Yala Province , including (1) Function, (2) Humanity , (3) Satisfaction

Research method

In the research of development of article Artificial intelligence system for being a good host: A case study of Tourism city in Betong District, Yala Province. The researcher had carried out the research according to the following steps;

1. Determined the Key The Informants in order to gather requirements by In-depth interview with the administrators of Betong District and a small group meeting with related persons, totaling 4 groups, namely a group of tourism business administrative officer 5 people, group of information technologist 5 people, an entrepreneur group about tourism 5 people and tourists 15 people.

2. Determined a group of system evaluators. The researcher selected purposive samples from those who have knowledge and ability to provide information according to the research objectives (Pakcharoen, 2012), including tourism management specialist 10 people, Information technologist 10 people and entrepreneu in tourism-related business

3. Research instruments and quality of instruments

3.1 Interview and group discussion. The researcher developed interviews and group discussion. In addition, the three measurement and evaluation experts and information technology experts were led to assess the consistency of the questions with the research objectives. The researchers selected the questions that were on average from 0.50 included 11 questions.

3.2 Performance appraisal. The researcher developed a 3-part performance appraisal, where part 1 was the general information of the respondents, selected items, part 2, evaluating the performance of 3 aspects, namely the function, humanity and satisfaction with rating scale at 5-

level and part 3 additional suggestion, it's an open-ended question. The researcher led a questionnaire to measurement and evaluation experts and information technologist to assess the consistency of the questions with research objectives. The researcher selected questions with an mean over 0.50. The questionnaire was obtained in part 1 with 6 clauses, part 2 with 17 clauses, and part 3 1 clause. After that, the questionnaire was used to find the reliabilities of questionnaire at .797, which was a valid questionnaire (Pasunon, 2015).

4. Collecting data. The researcher collected the data and analyzed by descriptive statistics such as mean, frequency, standard deviation and interpreted data by using the following criteria, mean between 1.00 - 1.49 referred to was improvement, mean between 1.50 - 2.49 referred to the system was less efficient, mean between 2.50 - 3.49 referred to the system was at a moderate level, mean between 3.50 - 4.49 referred to the system was very efficient and the mean between 4.50 - 5.00 referred to the system was most efficient.

Research results

1. Results of the development of artificial intelligence system for being a good host, a case study of the tourism town of Betong District, Yala Province.

The researcher had developed the system according to the tourism elements including attractions offered through the "tasty" and "good to go" facility for the trip offered through the "amazing journey" facilities are offered through the " Help. " Accommodation is presented through a "accommodation" menu and various activities presented through a "must-do" menu as shown in Figure 2.
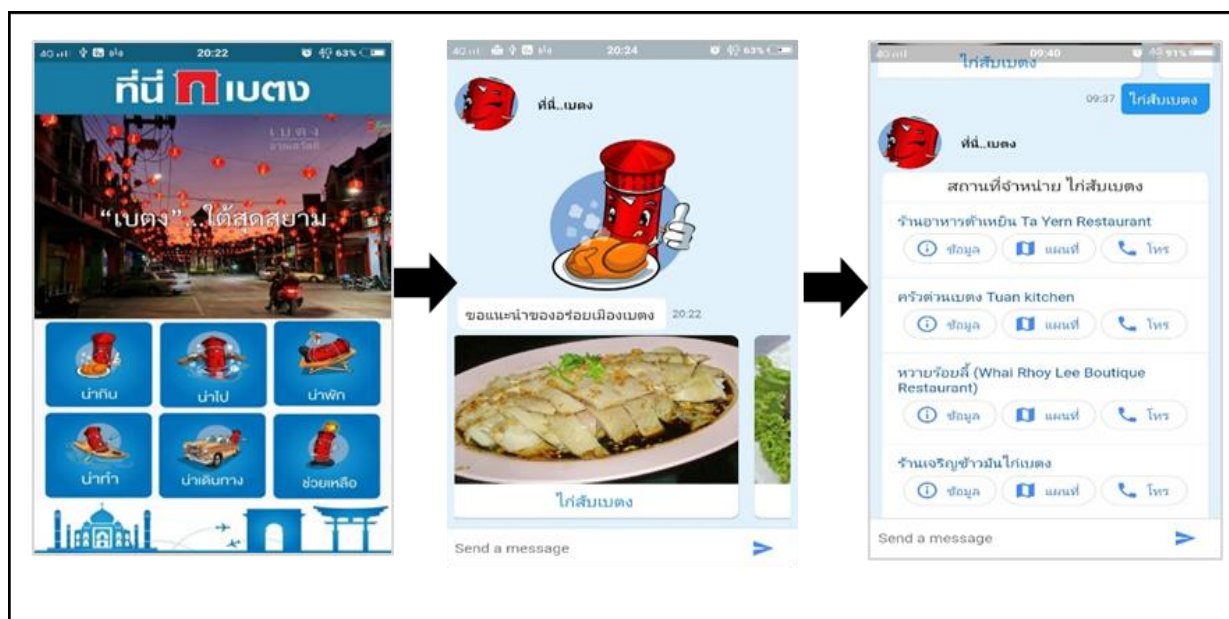
Figure 2 An example of artificial intelligence for being a good host.

The users can type text or input audio text in order to allow the system to process and answer questions on demand or select data via the menu that has been defined as above. The system will send data to the API to process questions and connect to a database containing various tables such as food tables, restaurant tables, activity schedules, etc. After that, the system answers questions and displays results in the form of text, images, maps, phone numbers through the chatbot as postbox-shaped, which is the symbol of Betong District. The researcher illustrated the structure of the artificial intelligence response system for being a good host, a case study of the city of tourism, Betong District, Yala Province as following;

Example 1 when the user typed text "Hello" or "Hi", the system will randomly reply with a picture that represents a "hello" when users type text "Hungry" the system will reply with a suggested must-try food of Betong district. When tourists choose food items from pictures, the system will reply with a list of restaurants that sell the food item along with other restaurant details. When the user types the message "Is it far ?", The system will reply with "far" message "not far" depending

on where that person live and present Travel map from the user's location to the restaurant Or, if the user types the message "Som Tam", the system will reply with a message and picture of the famous Som Tam shop of Betong district. When users type "Halal?", The system will reply with "Halal" or "No Halal" message according to the characteristics specified to the stores in the database.

For example 2, when users type "rest" the system will offer interesting activities. When users choose an activity they are interested in the system will present the details of the activities. When a user types the text "Where to stay?" or "Is it far?",the system will reply with a list of accommodations that are close to those nearby the activity area.

Example 3 When a user types the words "headache " or " sick " or any other text related to the symptom they want to be treated. The system will respond as well menu list, take medicine and see doctor menu. In the event that the user selects the medication menu, the system will present the

pharmacy name, description and phone number.

2. The evaluation results of Artificial intelligence system for being a good host: A case study of Tourism Town, Betong District, Yala Provinc

Table 1 Performance Analysis Results Artificial intelligence for being a good host

Result	Efficiency		Interpretation
	Mean $(\overline{x})$	**Standard Deviation** $(s.d)$	
Function	**4.71**	**.408**	**Highest**
1. Correct order	4.76	.430	Highest
2. Result with correct language	4.93*	.253	Highest
3. Process as per request	4.90	.305	Highest
4. Practical use	4.80	.406	Highest
5. Flexible interpretation	4.16	.647	High
Humanity	**4.61**	**.661**	**Highest**
6. Answer ability in specific questions	4.63	.490	Highest
7. Interact naturally	4.60	.621	Highest
8. Understand conversation	4.53	.730	Highest
9. Unique	4.66*	.802	Highest
Satisfaction	**4.44**	**.434**	**High**
10. Conversation suggestion	4.60	.770	Highest
11. Emotional expression	4.40	.621	High
12. Reliability	4.30	.466	High
13. Interesting	4.20	.484	High
14. Users enjoy with good interaction	4.17	.461	High
15. Response to tourist	4.30	.466	High
16. Time to respond	4.66	.479	Highest
17. Worth	4.86*	.434	Highest
Overall	**4.58**	**.531**	Highest

* The highest score of an aspect representing the most efficient factor

From Table 1 It shows that the overall efficiency Artificial intelligence for being a good host has highest level. The mean value was ($\square$ = 4.58, s.d. = .531) When considering each aspect, it was found that the functional aspect ($\square$= 4.71, s.d. = .408), humanity ($\square$= 4.61, s.d. = .661) was at the highest level of efficiency and satisfaction in highest level ($\square$ = 4.44, s.d. = .434) The considerations of each item in efficiency of correct language rendering ($\square$= 4.93, s.d. = .253), the efficiency in requested ($\square$= 4.90, s.d. = .305)

and efficiency of worth use ($\square$ = 4.86, s.d. = .434), powerful descending order , however, it was found that there were list of Artificial intelligence for being a good host with the lowest efficiency score in the three rankings were efficiency in enjoy interaction with users ($\square$= 4.17, s.d. = .461) effective of interesting ($\square$= 4.20, s.d. = .484) performance and reliability ($\square$= 4.30, s.d. = .466).

Discussion

The development of artificial intelligence system for being a good host, a case study of tourism city, Betong District, Yala Province had developed in accordance with the process of developing information systems by using natural language processing and presented in a chatbot. It can communicate information according to the elements of tourism through the main menu of the system, which is tasty, good to go, accommodations, amazing journey, and help. The system presented the main menu through a graphic showing the symbol of Betong District, the largest postbox in the world, in consistent gestures, such as the appetizing menu presented through the postbox graphics and the image of the chicken leg, representing the most famous food of the district Betong. Appealing menus were presented through graphics, postboxes sitting in cars, which the characteristics of such cars are characteristics of specific cars that are commonly used for traveling from the city to Betong, travel, etc., when tourists select items through the main menu of the system. The system will provide important information related to that category and the system has categorized the keywords of the questions and answers. In the event that a traveler has more questions, the system is flexible, capable of answering questions across categories, and the system can randomize answers with the same meaning but write differently, or present answers using different images. According to the behavior of tourists and another important thing is the artificial intelligence system for being a good host, with a help menu that can truly help tourists through providing information when they encounter emergencies such as breakdowns, wheel problems, and safety emergencies. The artificial intelligence for a good host can be connected to a phone number, the relevant authorities such as police stations, emergency hospital immediately and can offer maps and including climate. The research results were found that Artificial intelligence system for being a good host can provide information according to the tourism component. It has the highest level of

overall efficiency. The mean was ($\square$= 4.58, s.d. = .531) because in the process of collecting data through interviews and small group meetings, obtained complete information based on the tourism component, as Dickman (1996) indicated on the 5A composition of tourism which were Attractions, Accessibility, Amenity, Accommodation and Activity. Moreover, the artificial intelligence system for being a good host effective to display the correct language is the most powerful number ($\square$ = 4.93, s.d.= .253) since the system did with this program the answer in advance carefully, tourists can use artificial intelligence of being good host with efficiency as per requested ($\square$= 4.90, s.d.= . 305) and it was worth for using system ($\square$ = 4.86, s.d = . 434), because they spent less time in the requested information, including the short time to interact with the system but still got completed as required.

Acknowledgment

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