Artificial Intelligence Chatbot Platform: AI Chatbot Platform for Educational Recommendations in Higher Education

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***Abstract*—AI chatbots platform for educational recommendations in higher education is a tool intended to promote learning through the "Line" application, an application which is compatible with a variety of responsive web designs. This platform can be used to assess the decision to study in higher education based mainly on the user's aptitudes. Consequently, this study explores the perspectives with regard to the development of the AI chatbot platform and the assessment of the decision to study in higher education. The study is mainly related to the use of AI technologies and digital innovations with the aim of creating a decision support tool that can operate on a small mobile device and can be accessed anywhere and anytime, for admission to the Railway Technical School, Bangkok, Thailand. The participants in this research are divided into two groups: 1) six experts chosen by means of purposive sampling, all of whom are from different higher education institutions and who specialize in information system development, and 2) 65 students interested in studying at the Railway Technical School, all of whom were chosen by means of voluntary selection. The participants in both groups are well protected in terms of confidentiality and anonymity; in other words, the identities of the participants were neither indicated nor mentioned in the research instruments. The research results show that: 1) The overall efficiency of the AI chatbot platform in terms of three aspects (function requirement, functions, and usability) were assessed as being at a very high level. 2) According to the results of decision assessment based on the aptitudes of AI chatbot platform users, 86.15% of the said users made their decision based on the suggestions of the platform. 3) The satisfaction with regard to the AI chatbot platform is at very high level. According to the above results based on the analysis of the users' aptitudes and abilities, it was found that the AI chatbot platform can be used as a tool for educational recommendations in higher education. The platform is also able to analyze users' questions accurately and precisely in order to provide answers that meet the users' needs.**

***Keywords*—artificial intelligence, AI chatbot platform, educational recommendations, higher education**

I. Introduction

Currently, many higher education institutions have begun to provide varied forms of knowledge freedom and the accesses to knowledge sources while accommodating the leap of change in digital technologies and innovations. As a consequence, this has changed education such that it focuses more on the facilitation of learning. In this study the eventual result is the development of a decision support tool operating on a small portable device that can be accessed anywhere and anytime. The aforementioned advantages correspond to current education policies that encourage lifelong learning and self-learning by making use of learning materials of all kinds, combined with communication technologies and social media.

Artificial intelligence (AI) is a set of technologies designed and developed to solve problems and one which has been widely applied in various fields. The core of AI is machine learning (ML). This involves the use of a complex set of algorithms and methods for problem management by means of categorizing, grouping, and predicting the data needed for decision making, planning, and management with the aim of encouraging higher efficiency in organizations. A number of AI applications are fabricated on the basis of ML [1], and have been applied in order to achieve better results in terms of speech recognition and speech emotions. Moreover, ML has been used in data analysis and in a variety of expert systems.

The artificial intelligence model (AI model) is a kind of program that analyzes a data set to identify specific patterns and then make predictions. The AI model is designed in order to simulate human intelligence by means of algorithms, whereas ML is designed to teach machines to operate in such a way as to increase their work efficiency. Thereby, different AI models perform different functions depending on the services and purposes that are specifically desired. This study employed an AI model in the form of a simple random forest algorithm using multiple decision trees so that the platform can arrive at accurate decisions. Virtual assistants (Siri, Alexa), chatbots, and text summarization via ChatGPT are all the samples that have been used involving a simple random forest algorithm in order to make educational recommendations.

AI technology is considered a new technology created by using human intelligence and technologies to create increasingly smart tools and equipment that can be used easily, but with higher abilities to analyze problems based on reasons [2, 3]. AI consists of five main components:

1) Machine Learning: This is the learning part of an AI system, and it is regarded as the "brain" of the system whose function is to learn and analyze data from humans so as to obtain the results that can be used to plan and decide on the appropriate problem-solving processes.
2) Robotics: This component is a model of the human body that is controlled by a computer. It is intended to work in place of humans in tasks that require speed and which may be dangerous.
3) Natural Language Processing (NLP) System: This is a computer system capable of synthesizing natural voices and communicating with humans. NLP is a branch of computer science and AI that focuses on enabling

computers to understand texts and speech just as humans do. The techniques and processes used in NLP are mainly related to syntax and semantic analysis, involving the breaking down of messages or sentences in human communication into language patterns that can easily understand. The devices can then analyze and process relationships with regard to the said simplified messages in order to extract information and summarize the main ideas for communication purposes [4]. Currently, NLP technology is utilized in various forms in the fields of business and education, e.g., spam detection, language translation (Google Translate), virtual assistant (Siri, Alexa), chatbot, text summarization, etc.

4) Expert System: This refers to an intelligent computer system equipped with knowledge and capabilities of knowing how to use reasoning to analyze problems. The system can also use existing knowledge or knowledge derived from experiences in solving one problem in order to solve other problems in a logical manner.
5) Speech Recognition System: This component is a computer system which is capable of understanding human language and recognizing human speech.

Chatbot is a type of software that interacts with users by engaging in conversation, either written or spoken, in such a way as to mimic typical human interactions. This software allows quick and automatic responses in the form of text or voice conversation, and it can be used through many applications such as Line, Facebook, Instagram, etc. [5, 6]. Chatbot is recognized as an important tool for businesses in the digital age because it has the ability to analyze the users' questions by detecting the words or texts that are the same or similar to the specified keywords in order to reply to the users with the most suitable answers as quickly as possible. Chatbots are divided into five groups based on different functions. These are as follows:

1) Scripted or Quick Reply Chatbot: Users select questions listed in a menu so that the chatbot can better understand what the user wants. It responds according to predetermined keywords.
2) Keyword Recognition Based Chatbot: This chatbot will detect patterns from keywords given by the user and then respond to the user based on predetermined messages.
3) Voice-enabled Chatbot: This kind of chatbot will process the answers based on the user's voice. An example of such a chatbot is Siri, which responds to users' voice commands or questions.
4) Hybrid Chatbot: This kind of chatbot is equipped with a combination of certain functions. Users can type or select questions from a menu bar in order to get the most relevant answers.
5) Contextual Chatbot: This chatbot is more complex than the others because its development includes both ML and AI. This type of chatbot is able to develop itself by memorizing conversations and learning from questions in such a way as to improve the efficiency of its responses for the next time.

AI Chatbot is a software agent that interacts and has conversation with users using natural language. The AI Chatbot was devised with artificial algorithms that analyze messages from users and understand them in order to recommend users via auto reply service, choosing answers that accurately match the needs of the user [7, 8].

Educational recommendation refers to the guidance provided for students so that they can have accurate information about education in different institutions, and can then choose the appropriate ones that match their needs and aspirations. Consequently, such guidance may include the qualifications required by particular institutions, available courses or programs, assessment, tuition fees, educational qualifications after graduation, career opportunities, etc. With educational recommendations, students can explore their aptitudes, competencies, and interests, in order to prepare themselves for the institutions they wish to study in.

In reference to the aforementioned ideas, it is evident that the application of digital technologies and innovations to create decision support tools which can be used on small mobile devices and can be accessed anywhere and anytime, can lead to proactive communication. Communication in such a manner can respond to and support the current world situations which focuses on the use of information technology for the maximum benefit. Accordingly, the researchers had the idea to develop an AI chatbot platform for use as a tool for educational recommendations in higher education. Consequently, this research is a case study which was conducted with a sample of students who are interested in studying at the Railway Technical School, Bangkok, Thailand.

This study explores the perspectives with regard to an AI chatbot platform development and the assessment of the decision to study in higher education based mainly on the participants' aptitudes after using the said platform. All of the participants involved in this study gave their consent to participate in the study, answering the questionnaire with confidentiality and anonymity. This is to verify that the AI chatbot platform developed in this study is adequate for use in the assessment of the decision to study in higher education in terms of the users' aptitudes. Therefore, the study intends to answer the following research questions:

RQ1: What is the methodology associated with the development of the AI chatbot platform, and what instruments are used in this research?

RQ2: What is the workflow structure of the AI chatbot platform?

RQ3: What is the format of the AI chatbot platform for educational recommendations in higher education?

RQ4: What are the results of the decision assessment based on the aptitudes of the AI chatbot platform users?

II. Methodology

A. Research Design

The AI chatbot platform for educational recommendations in higher education involves research and development. The development concepts are based on the system approach [9, 10], the widely accepted principles of systematic learning process design and development, including the steps of analysis, design, development, implementation, and evaluation; and the theories of Software Development Life Cycle (SDLC) [11] that comprises the stages of planning, analysis, design, and implementation. In addition, this

research employs the pre-experimental research method with one sample group and a one-shot case study. The research hypotheses are related to the study of the results after using the AI chatbot platform, which is in line with RQ4. The research hypotheses are as follows:

H1: The results of the assessment of the efficiency of the AI chatbot platform are at a high level.

H2: The results of the decision assessment based on the aptitudes of users after using the AI chatbot platform for educational recommendations in higher education are higher than 80%.

H3: The satisfaction of the users with regard to using the AI chatbot platform is at a high level.

B. Participants

The research participants are divided into two groups, i.e., 1) six experts derived by means of purposive sampling from different higher education institutions, all of whom are specialized in information system development, and 2) 65 students obtained by means of voluntary selection, all of whom were interested in studying at the Railway Technical School. The participants in the two groups are well protected with the policies of confidentiality and anonymity.

C. Research Instruments and Data Collection

The data collection tools used in the development of the AI chatbot platform for educational recommendations in higher education took the form of the following: 1) the AI chatbot platform, 2) an efficiency assessment form, 3) a decision assessment form based on aptitudes, and 4) a satisfaction assessment form. The statistics used in data analysis were mean, standard deviation, and percentage. With regard to data collection, the researchers employed the research instruments detailed above to collect the data from all participants who were subjected to confidentiality and anonymity. Before this stage and before conducting data analysis, the researchers provided the participants with detailed information together with the assessment criteria.

D. Methodology

The researchers designed and developed the AI chatbot platform based on the concepts of AI technology, a chatbot, and an AI chatbot. The methodology can be summarized into four phases as follows:

Phase 1: Planning the guidelines to design and develop the AI chatbot platform. This stage focuses on the study of all details of the current system to see what it can do, and what tools are required in order to undertake analysis, make decisions, and identify the guidelines for design and development.

Phase 2: Design of the AI chatbot platform. At this stage, the researchers designed the workflow structure and the elements of the AI chatbot platform with the aid of a workflow diagram, a structure diagram, and the user interface of the Botnoi platform.

Phase 3: Development of the AI chatbot platform. The researchers employed the Botnoi platform, along with the data obtained from the analysis and the design in the previous stages, to develop the AI chatbot platform. Botnoi is a platform that has frequently been used to create chatbots. Not only can Botnoi be connected to a variety of database systems, but it can also support data acquisition and display in the Thai language.

Phase 4: Study of the results after using the AI chatbot platform. In this stage, the research tools were employed to study the results of the AI chatbot platform after being used by both groups of participants, i.e., 1) six experts, derived by means of purposive sampling, and 2) 65 students at the Railway Technical School, all of whom were derived by means of voluntary selection. The participants in both groups are well protected in terms of confidentiality and anonymity; in other words, their identities were neither indicated nor mentioned in the research instruments. The average score and the interpretation [12] are illustrated in Table 1.

Table 1. Average score and interpretation

Average score	Interpretation
4.50–5.00	Very High
3.50–4.49	High
2.50–3.49	Moderate
1.50–2.49	Low
1.00–1.49	Very Low

III. AI Chatbot Platform for Educational Recommendation in Higher Education

The main objective of this research is to verify that the AI chatbot platform can be used as a tool to provide educational recommendations in higher education given that it can provide accurate information about study in different institutions; that is, the AI chatbot platform shall provide only the data that are relevant and appropriate to the users' aptitudes and competencies. Thereby, this study is intended to answer the RQ1, RQ2, and RQ3.

A. The Design of the AI Chatbot Platform for Educational Recommendations in Higher Education

This stage is related to the design of the AI chatbot platform's workflow structure and elements, which were acquired from the analysis of the tools used in the research and the needs of the users so that the AI chatbot platform can fulfill their demands as best as it can. The research tools include:

1) Workflow structure of the AI chatbot platform

Fig. 1 illustrates the workflow of the AI chatbot platform for educational recommendations in higher education. Once users use the Line application to ask questions in the Line Official of the Railway Technical School, all data will be processed in Botnoi by means of the Chatbots Engine as to the chat format created by the administrator. Line application is a two-way communication platform capable of sending messages, images, documents, and even voice messages. In addition, it can also respond to feedback directly and immediately, which is so convenient that it makes the communication system within the organization more efficient.

The process of data processing in Botnoi is associated with the analysis and processing of questions and answers with the aid of Natural Language Processing System (NLP) techniques and methods. Consequently, the database system will store the said data for analysis and processing. The Application Programming Interface (API) will process the aptitude scores

and respond to the users. Meanwhile, every process taking place in this platform will be connected to a database system, so that user data and aptitude scores can be stored in order to calculate the results.

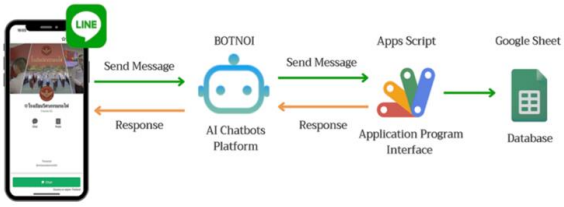


Fig. 1. Workflow structure of the AI chatbot platform.

2) Workflow diagram of the AI chatbot platform

The workflow diagram of the AI chatbot platform shown in Fig. 2 represents the system's internal work process and the relationship between users and the subsystems therein.

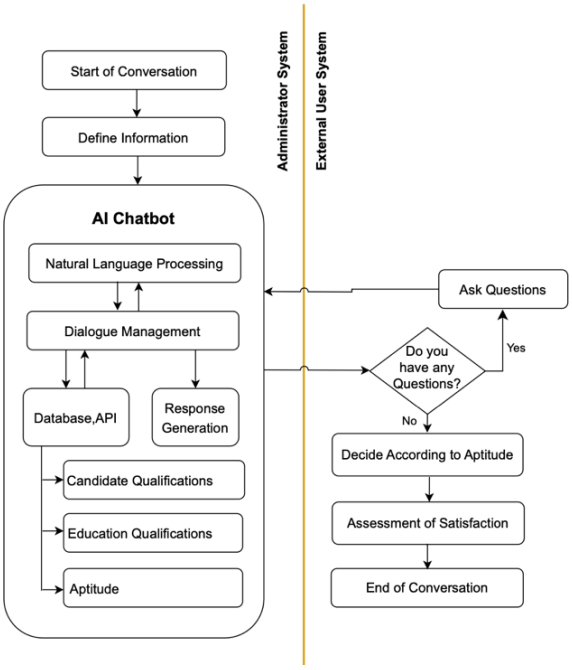


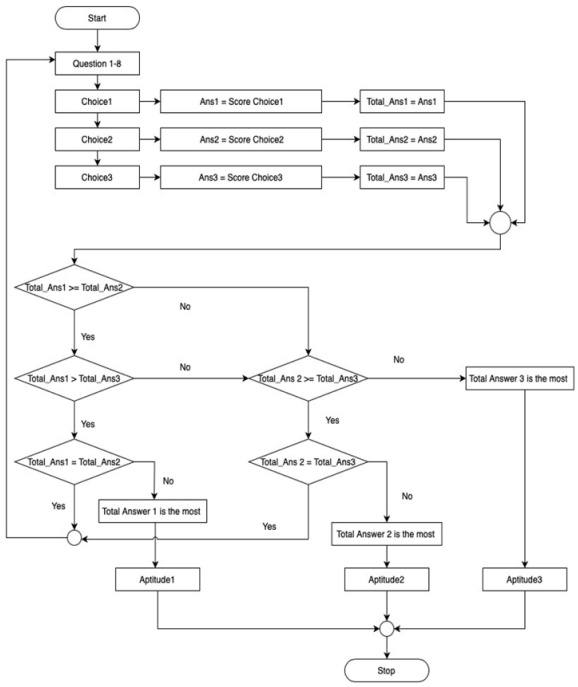
Fig. 2. Workflow diagram of the AI chatbot platform.

Fig. 2 represents the workflow of the AI chatbot platform, which is divided into two sections in the form of the administrator system and the external user system. In terms of the administrator system, in order to manage the data within the platform, the administrator can configure all the settings or the data of the chatbot by means of the Chatbots Engine. For instance, the administrator can configure relation of conversations as well as questions and answers, analysis and processing of questions and answers, processing and retrieval of answers from the database in which the data about candidate qualifications, educational qualifications, and aptitudes are stored. Regarding the external user system, when users make inquiries via the Line Official of the school, the AI chatbot platform will process the said questions and reply to the users with some recommendations based on their qualifications and aptitudes, until they feel satisfied with the answers. The users will then be asked to assess their satisfaction in terms of the use of this AI chatbot platform.

In order to evaluate the efficiency of the NLP algorithm and AI, the topic modelling was employed in this study, using the technique of Latent Dirichlet Allocation (LDA) based on Bayesian approach so as to analyze the data, find out significant words, and cluster the topics in the texts regarding aptitudes and abilities. Then, the acquired data were used to create the valid decisions that could be further used in educational recommendation in higher education, which can actually be interpretable to humans. After that, the extrinsic evaluation was applied in the efficiency testing, using K-means clustering technique, in order to see how well the vector derived from Latent Dirichlet Allocation (LDA) can provide results regarding aptitudes and abilities.

According to the evaluation on the efficiency of topic clustering by means of K-means clustering, it is found that the data clustering results present high values and the data are well partitioned. Therefore, the AI chatbot platform can be used to provide educational recommendation for higher education, which is obtained through the analysis of user's aptitudes and abilities.

3) Processing structure of aptitude scores




```
// Function to register a new user
function doGet(request) {
  // Get the user's name, ans1, ans2, and ans3 from the URL parameters
  var name = request.parameter.name;
  var ans1 = request.parameter.ans1;
  var ans2 = request.parameter.ans2;
  var ans3 = request.parameter.ans3;

  // Open the Google Sheet by its ID
  var sheet = SpreadsheetApp.openById("1x649ZvjvdmeYzfTc1L6Ei0MKfYrPA_xt-ZjHwI4Ilvs").getActiveSheet();

  // Search for the user's name in column A of the sheet
  var data = sheet.getDataRange().getValues();
  var rowIndex = -1;
  for (var i = 0; i < data.length; i++) {
    if (data[i][0] == name) {
      rowIndex = i;
      break;
    }
  }

  // If the user's name is found, insert ans1, ans2, and ans3 in columns C, D, and E respectively
  if (rowIndex !== -1) {
    sheet.getRange(rowIndex + 1, 3).setValue(ans1);
    sheet.getRange(rowIndex + 1, 4).setValue(ans2);
    sheet.getRange(rowIndex + 1, 5).setValue(ans3);

    // Return success message
    var result = {};
    result.result = 'added';
    result.message = 'บันทึกข้อมูลสำเร็จ';
    var resultJSON = JSON.stringify(result);
    return ContentService.createTextOutput(resultJSON).setMimeType(ContentService.MimeType.JSON);
  } else {
    // User's name not found, return error message
    var result = {};
    result.result = 'error';
    result.message = 'ไม่พบข้อมูลไซ';
    var resultJSON = JSON.stringify(result);
    return ContentService.createTextOutput(resultJSON).setMimeType(ContentService.MimeType.JSON);
  }
}
```

Fig. 3. Processing structure of aptitude scores and program set.

Aptitude refers to the ability that a person develops and accumulates from self-training until it becomes a special and specific skill [13], which is believed to affect the ability to learn and achieve success in the future. Aptitude is generally classified into two types: 1) general aptitude or scholastic aptitude, and 2) specific aptitude. The processing structure of aptitude scores and the program set for processing aptitude scores are presented in Fig. 3.

Fig. 3 illustrates the processing structure and the program set for processing aptitude scores. With regard to the processing of aptitude scores, API is created to store aptitude scores derived from three variables, i.e., ans1, ans2 and ans3, in Google Sheets. The program will then process the answers most frequently given by the users and will then analyze and forecast their aptitudes.

4) User interface of the AI chatbot platform for educational recommendations in higher education

The researchers designed the user interface screen with the aid of the Botnoi platform, as shown in Fig. 4. Botnoi is a platform which is frequently used to create chatbots by means of AI technology. Botnoi can be connected to database systems and support API connections, making conversations and interactions more flexible and natural. It can also support and display the information in the Thai language.

Fig. 4 represents the user interface of the AI chatbot platform, in which a conversation, especially the questions and answers about registration, educational qualifications, aptitudes, etc., can proceed in a continual manner.

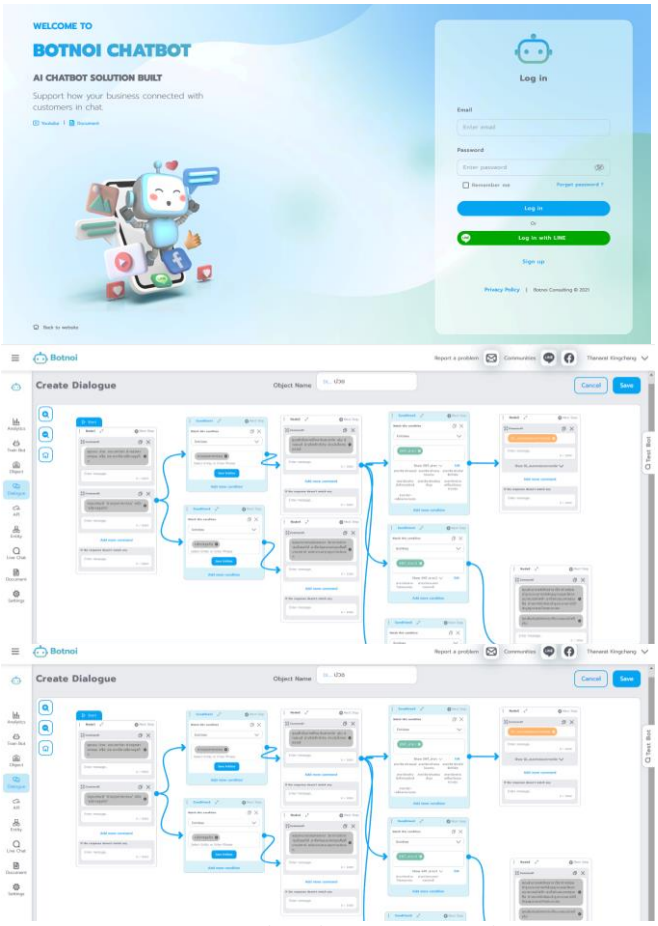


Fig. 4. User interface of the AI chatbot platform.

B. The Development of AI Chatbot Platform for Educational Recommendations in Higher Education

The AI chatbot platform is compatible with Line applications and many responsive web designs. Users can instantly interact and chat with the chatbot anywhere and anytime on any mobile device. Thereby, this research is a case study which was conducted with a sample group, the members of which are interested in studying at the Railway Technical School, Bangkok, Thailand, as can be seen in Fig. 5.

Table 2. Results of assessment with regard to the efficiency of the AI chatbot platform

	Items	Mean	SD
Function Requirement	1. Ability to answer questions and continue conversation	4.60	0.55
	2. Ability to search for keywords in the database	4.60	0.89
	3. Ability to check questions that are grammatically incorrect	4.40	0.55
	4. Ability to guide education fields according to learners' aptitudes	4.60	0.55
	5. Ability to store aptitude scores in the database	4.80	0.45
	Overall	4.60	0.58
Functions	6. Validity in storing question-answer data	4.60	0.55
	7. Validity in data classification	4.20	0.45
	8. Validity in guiding education fields according to the learners' aptitudes	4.60	0.89
	9. Reliability of the platform	4.80	0.45
	10. Validity of questions found in conversations	4.20	0.45
	Overall	4.48	0.59
Usability	11. Ease of use	5.00	0.00
	12. Convenience of use	5.00	0.00
	13. Spontaneity and clarity of dialogue	4.00	0.55
	14. Virtuality in the platform like being with education guidance specialists	4.40	0.55
	15. Suitability of the language used in the platform	4.40	0.55
	Overall	4.56	0.51
Overall in three aspects		4.55	0.24

According to the results of the assessment on the efficiency of the AI chatbot platform as shown in Table 2, it is found that the overall efficiency of the AI chatbot platform in three aspects (function requirement, functions, and usability) is at very high level (mean = 4.55, SD = 0.24). With regard to considering each aspect separately, the efficiency of function requirement (mean = 4.60, SD = 0.58), functions (mean = 4.48, SD = 0.59), and usability (mean = 4.56, SD = 0.51), is still at a very high level. This corresponds to Hypothesis 1, indicating that the AI chatbot platform is efficient enough for use as a tool for educational recommendations, particularly for study in the Railway Technical School, Bangkok, Thailand. This is because the AI chatbot platform is able to analyze and examine the questions accurately and precisely. In addition, it can select and provide responses that correspond and are suitable to users' aptitudes to a very high level.

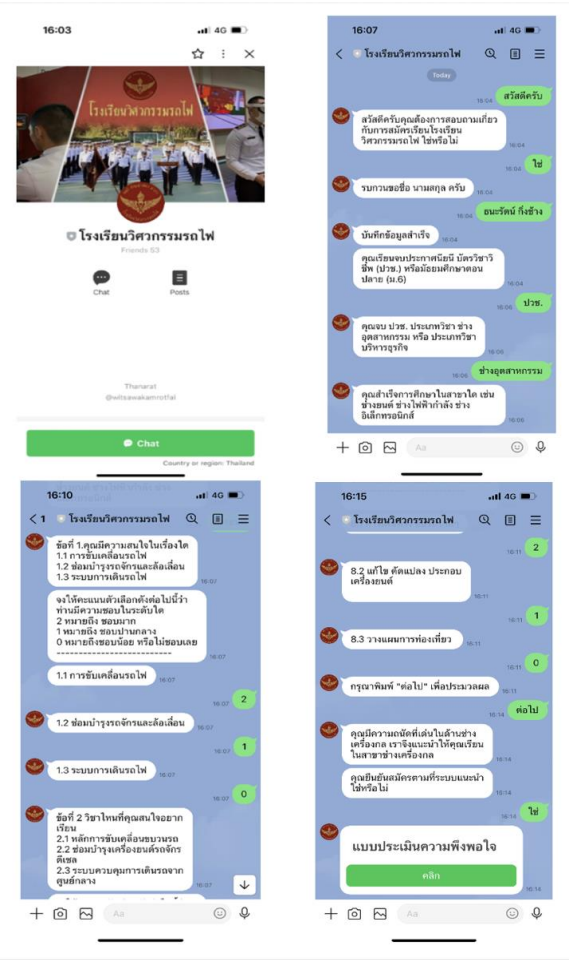


Fig. 5. AI chatbot platform for educational recommendations in higher education, Railway Technical School, Bangkok, Thailand.

IV. Results

This section concerns the results of the decision assessment based on the aptitudes of AI chatbot platform users. The users in this study consisted of 65 students interested in studying at the Railway Technical School, all of whom were derived by means of voluntary selection. In addition, the participants in both groups are well protected with the policy of confidentiality and anonymity. The assessment was carried out by means of the research instruments, i.e., a decision assessment form based on aptitudes, and a satisfaction assessment form. This section is also intended to answer the RQ4.

Table 3. Results of decision assessment based on the aptitudes of AI chatbot platform users

Programs	Total of students	Results of decision based on AI chatbot	Percentage (%)
1. Mechanical technician	38	30	87.84%
2. Electric locomotive and wheel technician	20	17	85.00%
3. Maintenance technician for signaling systems and electric railway telecommunication	7	6	85.71%
Overall	65	56	86.15%

In reference to the decision assessment results based on the aptitudes of AI chatbot platform users as shown in Table 3, it is found that 86.15% of the participants made their decision as to the platform's recommendations, which is in line with Hypothesis 2. On considering the decision assessment results based on the users' aptitudes in each program, it is found that the results in all three programs are higher than 80%, indicating that the results are at very high level. It is quite interesting that, on considering these results, the AI chatbot platform is able to analyze the questions so accurately and precisely that it can find out the optimal answers that match very well with the needs of the users.

Table 4. Results of satisfaction assessment towards the AI chatbot platform

Items	Mean	SD
1. Suitability of usage patterns	4.38	0.59
2. Suitability of font styles and sizes	4.41	0.55
3. Ability to provide educational recommendation	4.56	0.50
4. Validity and clarity of information	4.41	0.59
5. Capability of practical use	4.49	0.51
6. Ease of use and communication	4.59	0.50
7. Capability of quick communication	4.67	0.48
Overall	4.50	0.54

According to Table 4, it is evident that the overall satisfaction with regard to the AI chatbot platform is at a very high level (mean = 4.50, SD = 0.54), which is in accordance with hypothesis 3. It can be summarized that the users seem satisfied with the AI chatbot platform because the design of the user interface is attractive and modern. Not only that, it can fulfill the users' needs and can be applied practically in terms of educational recommendations for study, which is highly beneficial in the field of education.

V. Discussions

This research is related mainly to the study of results with regard to the AI chatbot platform. The main objective is to verify that this platform is capable of providing educational recommendations related to higher education, so that the users can obtain accurate information about education in different institutions, especially the information that matches their aptitudes and competencies. The research is in the form of a case study conducted with the sample group of 65 students, derived by means of voluntary selection, all of whom are interested in studying at the Railway Technical School, Bangkok, Thailand. The research provides answers to the following four research questions and can be summarized with some discussions as follows:

RQ1: What is the methodology associated with the development of the AI chatbot platform, and what instruments are used in this research?

The research shows that the methodology associated with the development of the AI chatbot platform is based on the concepts of a system approach and the theories of SDLC which includes four phases: planning, design, development, and study of the results. The instruments employed in the data collection consist of the AI chatbot platform, an efficiency assessment form, a decision assessment form based on aptitudes, and a satisfaction assessment form. The findings of this study are in line with the research of Chatwattana *et al.* [14], who said that the combination of new technology

concepts and new platforms with the aim of creating new concepts with regard to systematic instructional designs can be applied in learning management in the world of the new normal. In practice, such learning management usually focuses on continuous learning, which can be done anywhere and anytime by means of digital technologies. It is believed that this will eventually lead to a learning society.

RQ2: What is the workflow structure of the AI chatbot platform?

The workflow of the AI chatbot platform is divided into two sections: 1) the administrator system, in which the administrator can configure all settings or the data of chatbot by means of Chatbots Engine in order to manage the data within the platform, e.g., relation of conversations, questions and answers, etc. 2) the external user system, in which the users can make inquiries via the Line Official of the higher education institution until they feel satisfied with the recommendations as to their qualifications and aptitudes.

RQ3: What is the format of the AI chatbot platform for educational recommendations in higher education?

The AI chatbot platform is compatible with the Line application and many responsive web designs. With any mobile devices, users can interact and chat with the chatbot of the Line Official of the Railway Technical School in an instant, anywhere and anytime. We perceived very high level (mean = 4.55, SD = 0.24) of overall efficiency of the AI chatbot platform in three aspects (function requirement, functions, and usability) reflects that the AI chatbot platform is efficient enough to be applied as a tool for educational recommendations in higher education, leading to lifelong learning and self-study through digital technology. The aforementioned findings are also in line with the research of Chatwattana *et al*. [15], who stated that the application of new principles, concepts, theories, and innovations in response to learning in current situations, enabling learning anywhere and anytime, can provide self-learning experiences which will eventually become skills and abilities to assess the learning outcomes on their own.

RQ4: What are the results with regard to decision assessment based on the aptitudes of the AI chatbot platform users?

Regarding the results with regard to decision assessment based on the aptitudes of the AI chatbot platform users, it is found that 86.15% of the participants made their decision in line with the platform's recommendations. The results also reflect an interesting point in that the AI chatbot platform is able to analyze the questions so accurately and precisely that it can find out the optimal answers that match very well with the needs of the users. Accordingly, the results corresponding with the research of Kabataş [16], who mentioned that the use of smartphones in the instructional management makes learning more entertaining. Moreover, these devices enable learners to quickly access and retrieve information from social media networks, and the use of digital technology makes them more satisfied thanks to the proactive information perception. It also corresponds with the research of Chatwattana *et al*. [17], who stated that mobile applications for experiential learning to promote information awareness and proactive public relations can be used as the tools for users perceiving information engaging in public relations. This is because such applications are compatible with various screen displays and responsive web designs, which enables users to access information anywhere and anytime. In addition, this is also in line with the research of Chaiyarak *et al*. [18], who said that the design of new and contemporary models in combination with AI technology and virtual learning technology in the form of online environments, can pave ways for the development of new learning platforms that are believed to promote more engagement in active learning, and which also help develop learners' skills anywhere and anytime.

VI. Conclusion

This research can be employed as a guideline in the design and development of the AI chatbot platform for educational recommendations in higher education, and which can also promote lifelong learning. The AI chatbot platform relies on new innovations and digital technologies in compliance with the current situations, and it is thought to promote the information awareness through self-study. However, there are still some limitations with regard to this study. The research findings presented herein are related to the study of efficiency and accuracy of decision assessment based on the aptitudes of those who are interested in studying at the Railway Technical School, Bangkok, Thailand, only. Thus, the results obtained from this research should be regarded as the findings from a pilot study, and which should be primarily designated for application as guidelines for future development.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Thanarat Kingchang develops the main idea of this research, wrote the manuscript, developing the AI chatbot platform and studied the results. Pinanta Chatwattana, and Panita Wannapiroon revised and compose the writing quality of the manuscript, developing the research methodology, and rechecked the manuscript before it was to be submitted. The three authors have approved the final version of this manuscript for publication.

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