

Information system for public relations via mobile application using in-depth user experience according to education experts

Sengdavanh Jularlark^a, Pakpasak Technical College, Sihom Village, Fa Ngum Road, Laos PDR, Chanthabouly, Vientiane, <https://orcid.org/0000-0002-8543-1226>

Pinanta Chatwattana^{b*}, King Mongkut's University of Technology North Bangkok, 1518 Pracharat 1 Road, Wongsawang, Bangsue, Bangkok 10800, Thailand <https://orcid.org/0000-0002-7749-530X>

Pallop Piriyasurawong^c, King Mongkut's University of Technology North Bangkok, 1518 Pracharat 1 Road, Wongsawang, Bangsue, Bangkok 10800, Thailand <https://orcid.org/0000-0003-2904-3226>

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Abstract

The information system for public relations via mobile application (PPSTC system) is considered a tool to promote public relations and information perception in digital age based on the application of new ideas that can respond to and accommodate the current world situations. This research aimed to analyse and develop the PPSTC system; and assessment of the use of the PPSTC system. The participants consisted of experts from various institutions in higher education, including and teachers, staff, students of Pakpasak Technical College, and outsiders aged 17 to 25 years. The data collection tools are as follows: the PPSTC system; the effective evaluation form; the assessment form for users' proactive perception of information; and the assessment form for users' satisfaction. The results of the study indicated that (1) the overall performance evaluation was highly; and (2) the overall users' perception of information and users' satisfaction were high.

Keywords: Information system, PPSTC system, mobile application, user experience, proactive perception, information perception.

* ADDRESS FOR CORRESPONDENCE: Pinanta Chatwattana, King Mongkut's University of Technology North Bangkok, 1518 Pracharat 1 Road, Wongsawang, Bangsue, Bangkok 10800, Thailand
E-mail address: pinanta.c@cit.kmutnb.ac.th

1. Introduction

The modern information society has gone beyond the framework of information processes and, with the development of information and communication technologies, has gradually grown into a digital society (Bedelov et al., 2021). Information technology has evolved in a rapid manner and has become ubiquitous in everyday life. It has also been used in a variety of professional fields, for example, to enhance work performance, quickly communicate with clients and other users, and to make information more accurate, more reliable and easily accessible. At present, the utilisation of information technologies is changing the way of life for everyone in society. The changes in information technology usage have also encouraged various institutions and industries to adjust their operations by applying and making the ultimate use of technology (Chatwattana et al., 2022; Hirunphoem et al., 2009).

Public relations is an important media relations event and a job with a broad scope and a complex system. In addition, public relations assistance promotes the characteristics of the leadership of organisations and individuals. Also, it gains understanding and cooperation from both internal employees and outside people. Public relations is a process that aims not only to disseminate information from one social group to another but also to encourage social groups to consider and judge society's values in the age of globalisation, causing understanding and sympathy between social groups (Thanyasiri & Prinyokul, 2020). Public relations in various social media enable people to get information rapidly and up to date. Currently, information and communication technology is critical for coordinating public relations for students in the 21st century. Most people have smartphones, tablets and computers; these devices are essential in communication (Julthab & Tansuwannon, 2015). There is much public relations information through various social media, either factual or false (Mongkol, 2017). So, we cannot recognise whether the received information is a trust or not (Sombut & Manon, 2016). The application is also used to communicate and coordinate with students and personnel.

1.1. Literature and related research

The researchers explored the relevant documents and related researches as a guideline to develop and apply to complete the study. Jularlark et al. (2022) said applications developed to be used on mobile devices and support the usage make it convenient and easy for the phone users to use. Mobile phones or smartphones include a variety of operating systems; the most popular ones are iOS and Android. In addition, these modern devices are equipped with several applications that can support both businesses and educational services (Sombut & Manon, 2016; Yilmaz, 2016).

In-depth user experience is a design that includes in-depth interviews (Ta-oun & Junthotai, 2007), from which the various needs of users were analysed to design a system with efficiency and suitability. Referring to user experience, the design was able to find out diverse feelings of users, e.g., needs, motivation and user sentiment. Moreover, the design herein applied technologies that were suitable for different formats of data (Jawdat et al., 2011). User experience design is used to design a system which is very easy to use, and at the same time, the system designer can use that workpiece in order to satisfy the business objectives in terms of both plans and overall needs. They are combined with the use of technology that can be used by the user groups effectively (Rodsoodthi, 2018). Furthermore, it can adopt suitable technologies with potential product development and the system design that can match the target group perfectly. Therefore, an in-depth interview is

considered a technique that can be used to ask and discuss with both interviewers and interviewees in order to get relevant questions and answers and to meet the objectives and targets. In addition, thorough explanations using open-ended questions to obtain information are most beneficial to the researchers. Therefore, in-depth interview techniques rely on the interviewer's ability to find out the details of the subject matter for in-depth study (Rita, 1999).

Proactive perception of information is how a person is exposed to information, i.e., intention to a perception of information, and understands the meaning of the information received. The perception of information issues may be relevant to the organisation or product that must be systematically recognised. By receiving clarifications from the organisation and exposure to knowledge and understanding with the information, the content of the target information directly causes proactive perceptions. Therefore, effective proactive perceptions of information rely on the presented as centralised. Besides, using a variety of media to assist in the presentation caused the perception of information to be easy to understand and easily accessible via various mobile devices.

The study of the stated theories and related research shows that the use of information and communication technology is crucial for coordinating public relations in the 21st century, which is communicated through social media. Therefore, the researchers have an idea of how to develop an information system for public relations (PPSTC system) via an application for public relations of Pakpasak Technical College, Vientiane, Laos PDR, which can work on tablets and smartphones to distribute information with reliability and consistency. To create this information system, the researchers designed using the user experience design (UXD) combined with an in-depth interview, focusing on problem-solving and enhancing efficiency in the public relations division in Pakpasak Technical College, Vientiane, Laos PDR.

1.2. Conceptual framework

In this section, the researchers studied the theories and other researches related to information system (Tivawong, 2012; Thanyasiri & Prinyokul, 2020), mobile application (Karapakdee et al., 2016), user experience design (Ta-oun & Junthotai, 2007; Jawdat et al., 2011), proactive perception of information (Jularlark et al., 2021), and satisfaction. The conceptual framework is shown in detail in Figure 1.

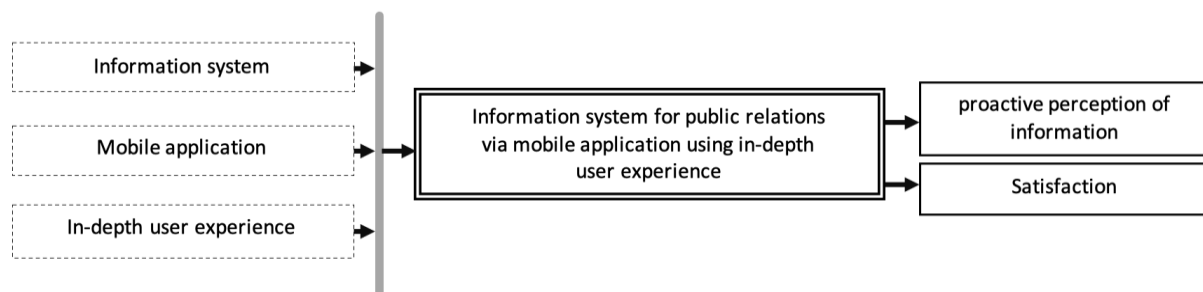


Figure 1. Conceptual framework of the PPSTC system

1.3. Objectives and hypothesis of the study

The researchers set the research objectives as follows:

O1: To analyse the PPSTC system according to education experts.

O2: To develop the PPSTC system according to education experts.

O3: To evaluate the use of the PPSTC system according to education experts.

Research hypotheses for the PPSTC system are as follows:

H1: The PPSTC system effectiveness is high appreciated.

H2: The results of the evaluation of the PPSTC system are high appreciated.

H3: The assessment results of satisfaction with using the PPSTC system are high appreciated.

2. Method and materials

This research is related to the development of the PPSTC system and the details thereof are below.

2.1. Research model

This research followed a research and development (R&D) model. The researchers employed the concepts and the theories of UXD and the system approach theories based on SDLC technique (Robert et al., 2013) in the design and development of this research.

2.2. Participants

The samples of the study were divided into two groups: (1) experienced professionals in designing and developing the technologies designated for information and communication, information management system and learning management system, from various higher education institutions, a total of 10 persons; and (2) teachers, personnel and students of Pakpasak Technical College (totally 50 persons), in addition to outsiders aged between 17 to 25 years (totally 20 people), were derived by means of random sampling.

2.3. Tools used for data collection and data analysis

The researchers have developed and used data collection tools as follows: (1) the information system for public relations via mobile application (PPSTC system); (2) the effective evaluation form; (3) the assessment form for users' proactive perception of information; and (4) the assessment form for users' satisfaction of the PPSTC system. The data collection tools are in the format of questions with 5 rating scales, and the criteria of evaluation and the interpretation are presented in Table 1. The statistics employed in this research include mean and standard deviation.

2.4. Research methodology

Development of the PPSTC system is divided into four stages, as shown in Figure 2.

Stage 1: Analysis of the PPSTC system.

Stage 2: Design of the PPSTC system.

Stage 3: Development of the PPSTC system.

Stage 4: Study of the results of implementing the PPSTC system.

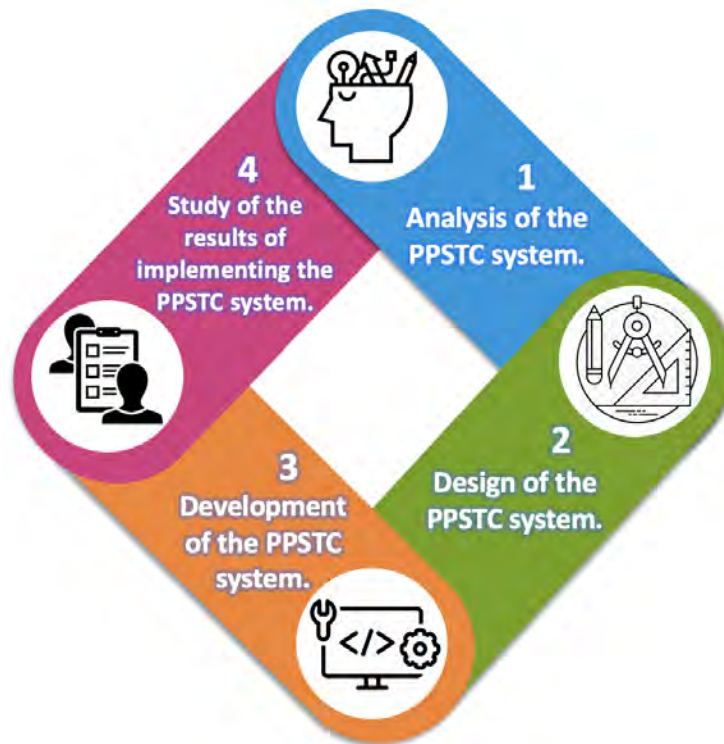


Figure 2. Research methodology

3. Results

The results of the study of the PPSTC system are summarised below.

3.1. Results of the analysis of the PPSTC system

From the exploration of an in-depth interview from the users who are teachers and the college personnel responsible for public relations combined with an in-depth Interview with the user experience design process (UXD Process), it can be concluded that user groups need the system ability to distribute information online and view data at any time, anywhere on a smartphone. In addition, they need the system to respond to the necessary information, which benefits both the internal and external system users of the college. It is a reliable and systematic publicity system that is easy to use, even without any manual. Besides, they can understand the system's use by their experience in using the application.

3.2. Results of the design of the PPSTC system

The researchers designed a user interface of the developed PPSTC system through the figma.com website, as shown in Figure 3.

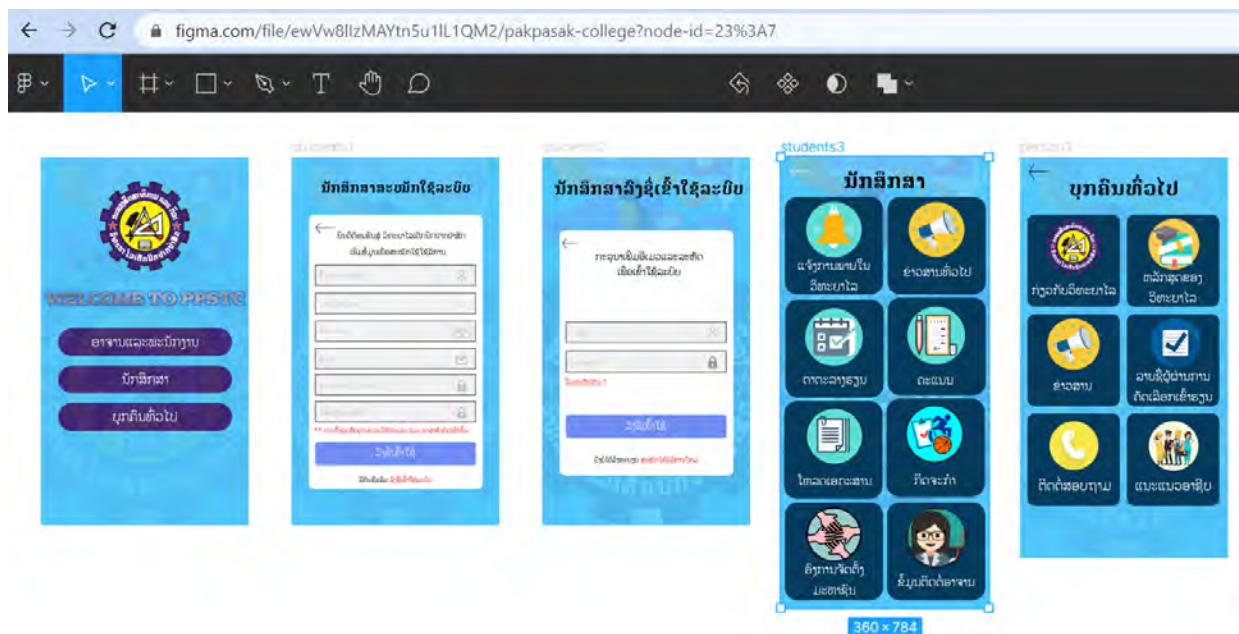


Figure 3. The user interface of the PPSTC system

Figure 3 shows the design of the user interface of the PPSTC system through the figma.com website. The user interface screen includes a homepage, register for internal user, login for internal users, the main menu for internal users and the main menu for external users.

3.3. Results of the development of the PPSTC system

The user interface of the PPSTC system is an application that assists in the spread of information in Pakpasak Technical College, Vientiane, Laos PDR, where users can access information rapidly through smartphones and tablets. To develop the PPSTC system, researchers relied on the concept of UXD in the design and development processes. It consisted of five stages: 1) study the problems and user behaviour: in this stage, the researchers conducted an in-depth interview with the user group to find out the problems and the background of the previous system. The objective of this stage is to solve the problems concerning the core requirements of users by studying their experience of using technology similar to that of the developed PPSTC system and also studying the collected data in order to analyse the problems in the next stage; 2) analyse the problems: the researchers, in this stage, used the data derived from a study of the problems and user's behaviour to conduct data analysis and identify the importance of each problem. The objective of this stage is to set up a plan that can meet the core requirements of users, solve the problems and can be used as a guideline for designing the PPSTC system; 3) design the prototype to create a prototype of the proposed PPSTC system with interactive interface design. The content in the application is organised in a hierarchical structure by arranging the content that focuses on user actions and categorising them so that users can understand and use them easily; 4) build the prototype based on the analysis and design in

stages 2 and 3, which can be applied in practical use; and 5) test the developed PPSTC system prototype with the two samples groups. This is to study the usage results and then develop the PPSTC system, as shown in Figure 4.

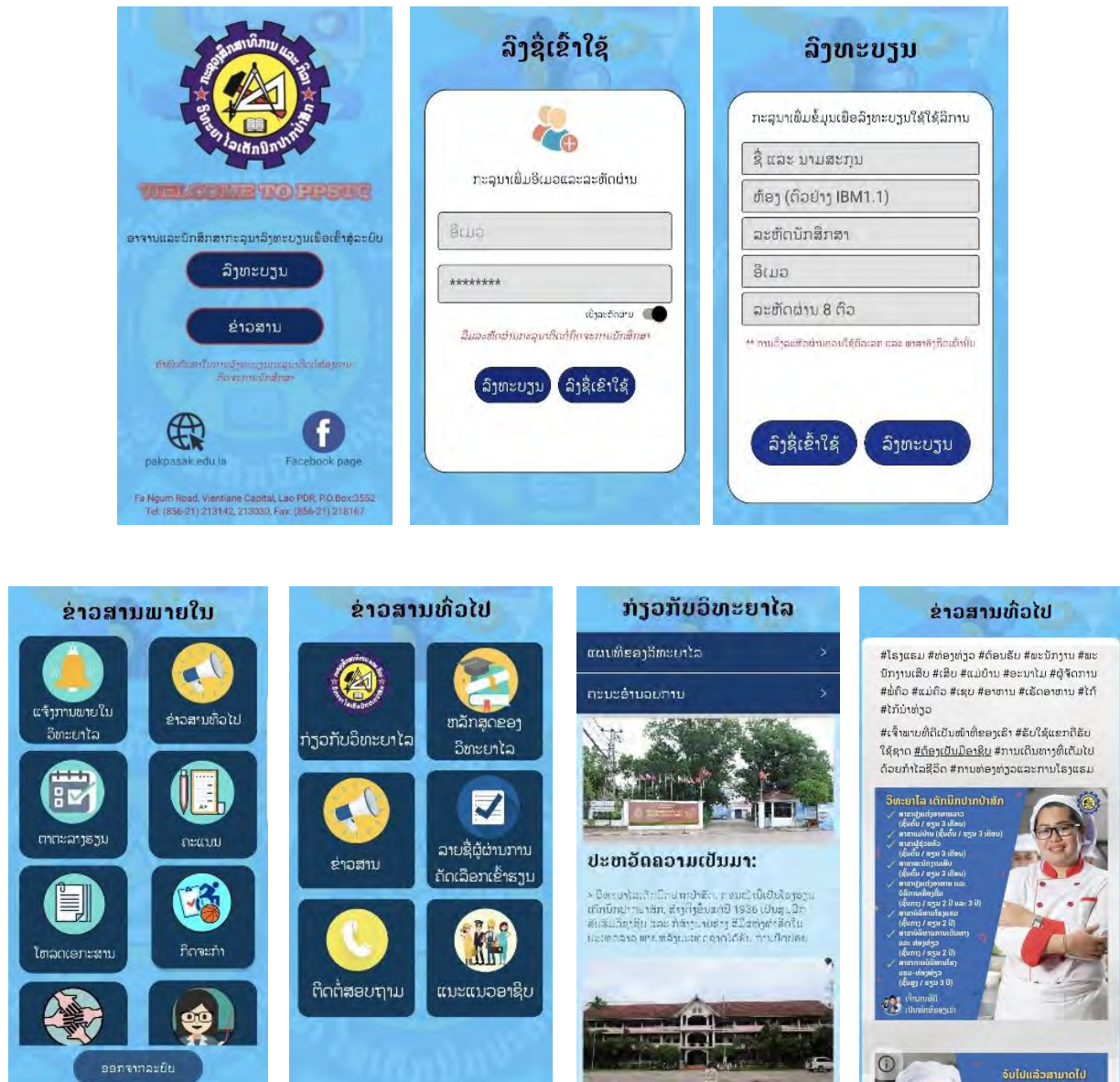


Figure 4. The PPSTC system

Figure 4 shows the PPSTC system, which supports three user groups. (1) Administration system is a system for the administrator who can manage the information of both internal and external users, courses, public information, and data. The administration system has three submenus consisting of Manage courses menu, Manage public information menu, and Manage data user menu. (2) Internal user system is a system for students, personnel, and teachers in the college. They are able to manage personal information and view public information and data. The internal user system has eight

submenus consisting of College news menu, News menu, Class schedule menu, Score menu, Download document menu, Activity menu, Public organisation menu, and Contact menu. (3) External user system is a system for outside people who want to know some information of the college. They are able to log in, view public information, etc. The external user system has six submenus consisting of College's information menu, Courses menu, News menu, List of candidates menu, Contact menu, and Career advice menu.

3.4. Results of the study of using the PPSTC system

The researchers used the data analysis criteria and interpretation of Kanasutra (1995), as summarised in Table 1.

Table 1. Average score range and interpretation of the results

Average score range	Interpretation
4.50 - 5.00	Highly
3.50 - 4.49	High
2.50 - 3.49	Moderate
1.50 - 2.49	Low
1.00 - 1.49	Very low

3.4.1. Results of performance evaluation for the PPSTC system

Researchers deployed the PPSTC system. To evaluate the effectiveness of the design of the developed information systems with experts from various higher education institutions, as summarised in Table 2.

Table 2. Results of the performance evaluation of the PPSTC system

Evaluation items	Assessment		Interpretation
	Mean	SD	
1. Components according to system functions (Functional test).	4.76	0.43	Highly
2. Components according to user requirements (Functional requirement test).	4.70	0.46	Highly
3. Components according to ease of use of the system (Usability test).	4.59	0.59	Highly
4. Components according to data security of the system (Security test).	4.68	0.47	Highly
Overall	4.67	0.51	Highly

Table 2 shows the results of performance evaluation for the PPSTC system, and the overall evaluation results are highly (Mean = 4.67, SD = 0.51). While considering each aspect it was found that the performance was also very high in the evaluation of all four components. It can be concluded that the developed PPSTC system is effectively used for public relations.

3.4.2. Results of information perception evaluation using the PPSTC system

The results of information perception evaluation using the PPSTC system are summarised in Table 3.

Table 3. Results of the information perception evaluation using the PPSTC system

Evaluation items	Assessment		Interpretation
	Mean	SD	
1. Providing information and content for communication through the system is clear, entirely and perfectly.	4.23	0.71	High
2. The use of symbols and messages on the developed information system via the mobile application can convey the meaning.	4.33	0.65	High
3. The use of messages in communication is easy to understand, not vague and match the reality of information to present.	4.31	0.75	High
4. Presenting of information contents as a centralised.	4.26	0.72	High
5. Use various media to convey information such as pictures, videos, and symbols causing the perception of information that is easy to understand.	4.30	0.67	High
6. Notifications by the developed information system via the mobile application can support a proactive perception of information.	4.14	0.77	High
7. Information on the developed information system via mobile application is beneficial to the audience can promote publicity.	4.40	0.69	High
8. An overview of the developed information system via the mobile application can support a proactive perception of information.	4.31	0.75	High
9. Fast access to information.	4.39	0.79	High
Overall	4.30	0.72	High

Table 3 shows the results of the information perception evaluation using the PPSTC system. The perception of information was high (Mean = 4.30, SD = 0.72). When considering each aspect, the evaluation of the whole nine components, the perception of information was high also. It can be concluded that the developed information system can use to support the proactive perception of the college's information because the information content is presented as centralised. Besides, using a variety of media to assist in the presentation causes the perception of information to be easy to understand and easily accessible via various mobile devices. It can also support display on a screen of a variety of smartphones.

3.4.3. Assessment results of users' satisfaction with the PPSTC system

Researchers deployed the PPSTC system to assess the satisfaction of using the developed information system with the study samples, including teachers, personnel and students of Pakpasak

Technical College (totally 50 persons), in addition to outsiders aged between 17 to 25 years (totally of 20 people), selected by simple random sampling. This is summarised in Table 4.

Table 4. Assessment results of users' satisfaction with the PPSTC system

Evaluation items	Assessment		Interpretation
	Mean	SD	
1. The display screen of the system is interesting and attractive.	4.16	0.77	High
2. The topics of the content is clearly divided without confusion.	4.40	0.65	High
3. Presentation of information content is easy to understand.	4.24	0.77	High
4. The amount of content is appropriate for the display screen.	4.19	0.73	High
5. Colours and beauty of the screen.	4.20	0.69	High
6. Clear characters and easy to read.	4.36	0.66	High
7. The illustrations are beautiful and crisp.	4.27	0.74	High
8. Buttons are arranged appropriately and easy to use.	4.26	0.67	High
9. Overall beauty of the developed information system via mobile application.	4.34	0.66	High
Overall	4.27	0.71	High

Table 4 shows the assessment results of users' satisfaction to the PPSTC system, and the satisfaction level is high (Mean = 4.27, SD = 0.71). When considering each aspect, assessing the whole nine components, the satisfaction level is highly appreciated. It can be concluded that users are satisfied with the developed information system because the interaction screen has a proper design. It is also beautiful, modern and responds to the users' needs.

4. Discussion

The results of the development of the PPSTC system, according to education experts who are experts from various institutions in higher education, and teachers, staff, students of Pakpasak Technical College and outsiders aged 17 to 25 years, show that there are issues in the discussion of the results with relevant documents and research as follows:

1. With reference to the results of performance evaluation for the PPSTC system with 10 experts from various higher education institutions, the overall performance was high. It is consistent with the study by Djamasbi et al. (2014), whose research is about the creation of business values with the mobile user experience (UX) by designing a website compatible to smaller screen sizes. The researchers measured the user experience of an actual e-commerce website before and after designing the said optimised website for mobile devices, and used Google Analytics to track the users. The results thereof indicated that a positive mobile experience is necessary to maintain a competitive advantage in marketing. An optimised website tends to have a very positive effects on the company. It is also consistent with the study of Davidovitch et al. (2017), who stated that the use of information resources in digital learning system management can facilitate distance learning in a university and enable them to gain necessary knowledge anytime they need.

2. The results of information perception evaluation using the PPSTC system with teachers, personnel and students of Pakpasak Technical College (totally 50 persons) and outsiders aged between 17 and 25 years (totally 20 people) were selected by simple random sampling. The overall users' perception of information was high. It enables users to have a proactive perception of information that meets their needs completely and quickly and provides trustworthy information. This is in line with Karapakdee et al.'s (2016) study, which states that recognising and understanding behaviour is key to designing information systems, which defines an action for problem-solving. The key to the success of information systems is the steps that have a systematic operating.
3. Assessment results of users' satisfaction with the PPSTC system was obtained from teachers, personnel and students of Pakpasak Technical College (totally 50 persons) and outsiders aged between 17 to 25 years (totally 20 people). The overall users' satisfaction with use of developed information systems was high. It is consistent with the study of Phiraphon (2018), which states that user experience design and design thinking can enhance service quality with a system that can communicate with users when integrated with artificial intelligence because the design by applying the principles of UXD is a design that emphasises access to feelings and solutions for users. It also pays attention to concepts, methods and processes in creating products and services. The user interface and responsiveness with precise and efficient assist organisations to control the financial costs and the time of developing innovations effectively. It is also consistent with the study of Jularlark et al. (2021), which states that systematic development through the use of information and communication technology systems assists in managing information efficiency, subsequently affecting public relations, convenience, speed and performance. Users get the same information anywhere, anytime and in the same direction. It can assist in increasing satisfaction of the proactive perception of information.

5. Conclusion

The PPSTC system is considered a tool to promote public relations and information perception in digital age based on the application of new ideas that can respond to and accommodate the current world situations. The participants of the study are divided into two groups, including (1) 10 experts from various higher education institutions, and (2) teachers, personnel, students of Pakpasak Technical College (totally 50 persons) and outsiders aged between 17 to 25 years (totally 20 people), who were selected by simple random sampling. Development of the PPSTC system is divided into four stages: 1) analysis of the PPSTC system, 2) design of the PPSTC system, 3) development of the PPSTC system and 4) study of the results of implementing the PPSTC system.

The PPSTC system, which supports three user groups. (1) Administration system is a system for the administrator who can manage the information of both internal and external users, courses, public information, and data. (2) Internal user system is a system for students, personnel, and teachers within the institute. They are able to manage personal information and view public information and data. (3) External user system is a system for outside people who want to know some information of the college. They are able to log in, view public information, etc.

This research is suitable to be used as a guidance to design and develop the PPSTC system that can promote public relations and information perception in organisation. Also, this can bring about the learning society where the concepts, the elements and the processes of user experience design can

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be utilised as guidelines to design and develop the system. The researchers considered that in the future the PPSTC system should be able to support the use and presentation of a variety of languages. These are recommendations for future research to use in the development of this research.

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