Smart Enterprise in HRIS at University of Phayao

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Abstract: The objective of this research is to analyse and design huge of the personal data components in government organizations that are management issues in human resource planning. It has three essential components: The first component is to study the problematic elements regarding management and the conception of a personal development plan. The second component is the development of a database system to be used to drive the smart enterprise. The third component is the evaluation of the developed database system. This research is a qualitative research. There were 21 samples used to evaluate the database. It consists of executives and staff who are involved in the development of the human resource planning. The tool used in this research consists of two parts. The first part is database design and development tools. The second part is the database design evaluation tools. It consists of the satisfaction questionnaire for database design, and the database performance assessment form. The statistics used in the research were mean and standard deviation . The researchers were found that the results of the evaluation of database design were at the highest satisfactory level ($\bar{x}$=4.60). The evaluation results of the database user interface design were found at the highest level ($\bar{x}$=4.59). The evaluation results of the utilization expectation of the database system were found at the highest level ($\bar{x}$=4.73). For future work, the researcher aims to develop it into a mobile application to facilitate further.

Keywords: Smart Enterprise, HRIS, Human Resource Planning, Disruptive Technology

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1. Introduction

The major problems affecting the research initiative arose as the University of Phayao was recently established and in the period of organizational expansion. These impacts have resulted in enormous activities and missions of sub-organizations. Issues that are important to human resource development including, the designing and managing employee performance appraisal organization platforms [1], the developing an efficient management system with technology [2], and so on. The problem that follows is learning new laws, new technology, and new colleague to create appropriate processes for the organization [3], [4].

There are several factors that contribute to a difference in work, including age, qualifications, number of staff, number of students, and assigned duties [5]. Moreover, the School of Information and Communication Technology at the University of Phayao is responsible for producing graduates in Information and Communication Technology. At the same time, the School of Information and Communication Technology has a common objective to become a complete university of the University of Phayao that focusing on producing bachelor's degree graduates in science and technology to response and solve problems in the community.

Therefore, personnel must rely on cooperation and public mind to promote effective work [6]. In addition, gathering personnel information is essential for faculty or departments and personnel work who have to pay more attention to the fact that there are personnel with different styles. However, the use of computer systems is beneficial to the operations and storage of various information within an organization, whether it is a small or large organization. It includes the educational system at the university level, which focuses on bringing relevant information in the organization to be stored systematically, called a database system technology. This covers

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transmitting, converting, storing, processing, and searching for system information. Nevertheless, the operation of the system will facilitate the user to access the required information.

Due to the fact that there are issues with file storage and the redundancy of the information collected about the personnel within the organization. It is a heavy burden on the assigned staff to monitor and collection information, as well as to participate in the development of the human resource development planning.

Therefore, the researchers aim to study and research according to the research objectives. It is to analyze the composition of the huge personal data in government organizations, which is a management issue in human resource development planning. It has three essential components: The first component is to study the problematic elements regarding management and the conception of a personal development plan. The second component is the development of a database system to be used to drive the smart enterprise. The third component is the evaluation of the developed database system. Finally, the researchers aim to bring the results of research to develop the organization into a more efficient organization.

The outline of the research presentation consists of presenting the problem and its importance in the introduction section, summarizing the relevant research in the second section, explaining the research process in the research methodology section, discussion of the results at fourth section, and summarize the results in the conclusion section.

2.Literature Reviews

There is a large amount of research done on the development of an effective organization. The research work related to human resource development in Thailand [7]–[9] is as follows many aspects. Examples of issues discussed in the field of employee quality include creating an organizational development strategy [8], Impacts arising from ASEAN (Association of South East Asian Nations) economic [9], government policy, and the critical factors of research and innovation creation in public universities in Thailand [10].

However, there are still some developments in technology that support human resource technologies, such as, human resource information systems (HRIS) [3], [11]. HRIS stands for Human Resources Information System. HRIS is a system used to collect and store information about an organization's employees. The key objective of HRIS is to collect information on members of the organization to monitor, evaluate and make full use of them [12]. However, the HRIS system in the university still needs to be developed, which the researcher realizes the importance and therefore conducts a research study in this work. This research has studied and designed the HRIS system for universities on the basis of complete information.

3.Research Methodology

3.1. Research Tools

3.1.1. Analyzing and designing tools for a database consist of Draw.io application used for presentations of diagrams, and Microsoft PowerPoint application used for user interface design visualizations.

3.1.2. The tools for assessing performance and satisfaction include satisfaction questionnaires used to assess database design, satisfaction questionnaires used to assess user interface design, and satisfaction questionnaires used to assess database utilization expectations.

3.2. Target Groups

3.2.1. Samples used in database development were 66 academic staff and 23 supporting staff in the School of Information and Communication Technology, the University of Phayao.

3.2.2. Examples used in design evaluation and design satisfaction were 21 examples who were involved in the human resource development planning. It consists of executives and staff who are involved in the development of the human resource planning.

3.3. Research Procedures

3.3.1. Study of composition and collecting data for research purposes including the study of personnel information, the study of information and self-development history, the study of academic position request information, the study of information reporting on the performance of the personnel development plan and searching and collecting data obtained from the composition study to analyze and classify the necessary data.

3.3.2. Data analysis is an analysis of the needs of the database from the users by bringing the information obtained in the process of studying and collecting information to analyze the work process.

3.3.3. Database design is the use of the analysis of the database usage requirements to design a computer program in order to demonstrate the style of presentations on the computer screen for the users. This step is the design of the context diagram, data flow diagram, data dictionary, and user diagram design.

3.3.4. Evaluation of the database is an evaluation by experts and people who are involved in the use of the database to find the flaw of the database in decision support along with satisfaction assessment.

3.4. Statistical Methods

There are mean and standard deviation with assessment method relying on the following criteria by using a Likert Scale. There are 5 levels of satisfaction:

- Satisfaction level 5 means strongly agree,
- Satisfaction level 4 means agree,
- Satisfaction level 3 means neither agree nor disagree,
- Satisfaction level 2 means disagree, and
- Satisfaction level 1 means strongly disagree.

After having a rating of satisfaction, it is computed to interpret the results using the following criteria.

- Mean is equal to 4.21 - 5.00 highest level,
- Mean is equal to 3.41 - 4.20 high level,
- Mean is equal to 2.61 - 3.40 medium level,
- Mean is equal to 1.81 - 2.60 low level, and
- Mean is equal to 1.00 - 1.80 lowest level.

4. Experimental Results

4.1. Database Analysis Results

In the form of analyzing the database usage requirements from the users directly, it requires the use of accurate and current information to facilitate the users by using the information in the implementation of the personnel development plan. This information can support management decisions including information that can be used for quality assurance divided into 3 areas as follows.

4.1.1. Requirements for using the personnel information including personnel profile information, contact, employment, position, job title, academic position, job status, education, and personnel number by type of personnel.

4.1.2. Requirements for using information and self-development history including training/seminars/visits, budget use, personnel development, study leave, and outstanding personnel information.

4.1.3. Requirements for using information for academic placement including status for teaching evaluation and teaching evaluation documents, academic placement request, teaching evaluation and teaching evaluation documents, teaching materials, and academic placement request.

4.2. Database Design Results

In the form of a context diagram, data flow diagram, ER Diagram, Data Dictionary, and user interface design from the analysis of the database from the requirement for use. Therefore, designing a database to support the employee development plan is presented as an interface diagram with user interface design as follows.
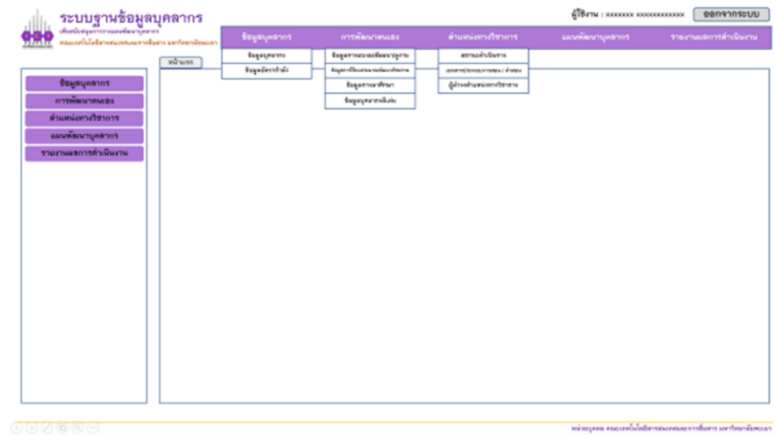
Figure 1. Overview of Smart Enterprise in HRIS

According to Figure 1, it shows the menu for the database system to support the employee development plan. The user menu is divided into 5 parts as follows.

- Personnel information consists of information for personnel and manpower.
- Self-development consists of information for training / seminars / visits, potential development budget, study leave, and outstanding personnel.
- Academic rank consists of operational status, teaching / teaching document, and academic positions.
- The human resource development plan shows all information in the human resource development plan.
- Performance report shows Performance data records according to the annual personnel development plan.

4.3. Designed Interface

There are the following four subsystem designs: (1) employee basic information, (2) employee attendance information, (3) employee academic information, and (4) report of organization.

4.3.1. Employee Basic Information

Employee basic information interface is shown in Figure 2 to Figure 3.

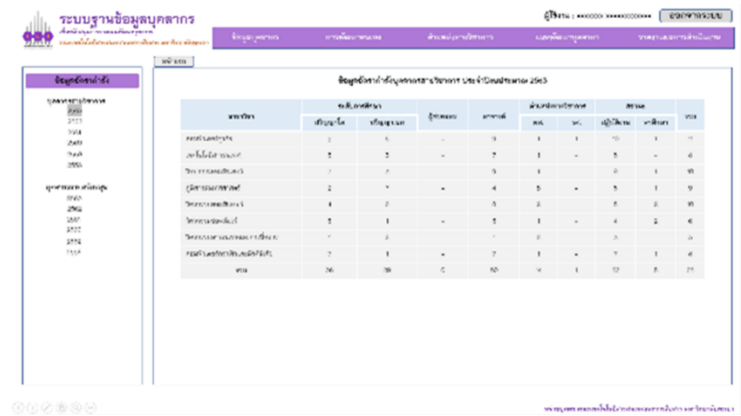**Figure 2.** Employee basic information interface

Figure 3. Employee basic information interface

According to Figure 2 and Figure 3, it shows the basic information of personnel. This information is disclosed, consisting of information for name and surname, position, executive position, job title, phone number, email, and manpower classified by fiscal year.

4.3.2. Employee Attendance Information

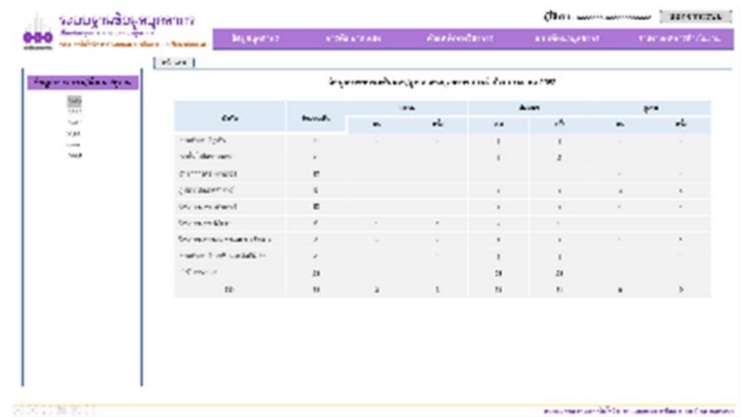Employee attendance information interface is shown in Figure 4 to Figure 6.

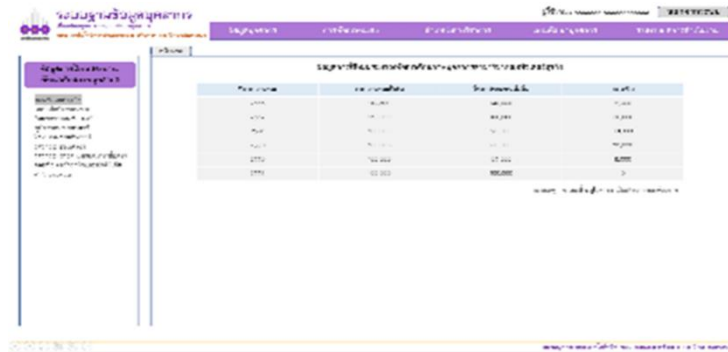**Figure 4.** Employee attendance information interface

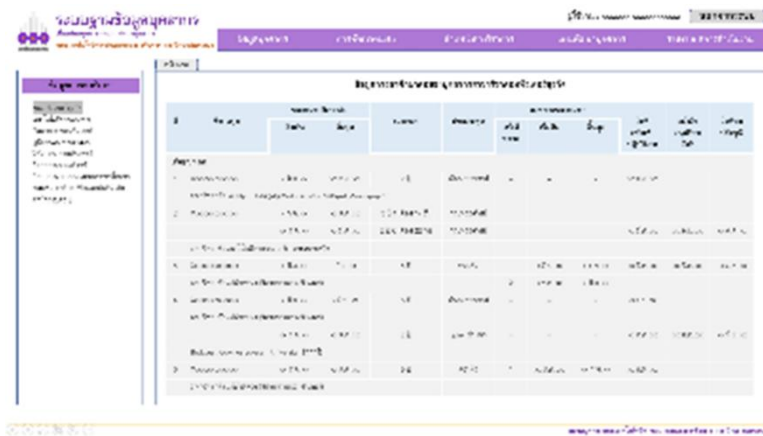**Figure 5.** Employee attendance information interface

Figure 6. Employee attendance information interface

Figure 4 to Figure 6 shows the information on personnel training / seminars / visits, the estimation for developing human potential classified by the fiscal year, and study leave classified by jurisdiction.

4.3.3. Employee Academic Information

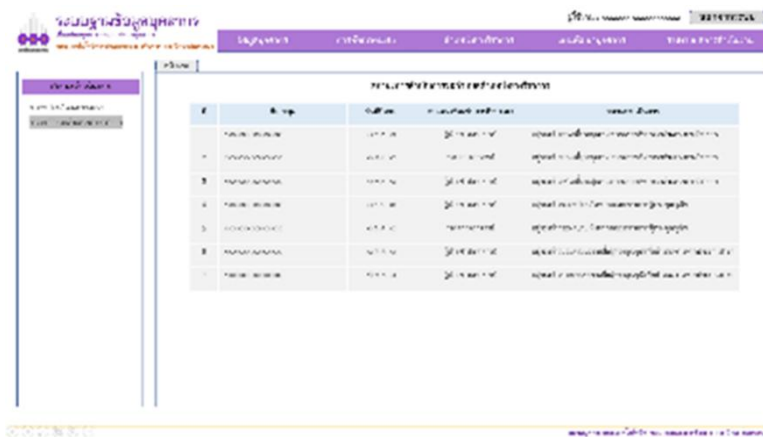Employee academic information interface is shown in Figure 7 to Figure 9.

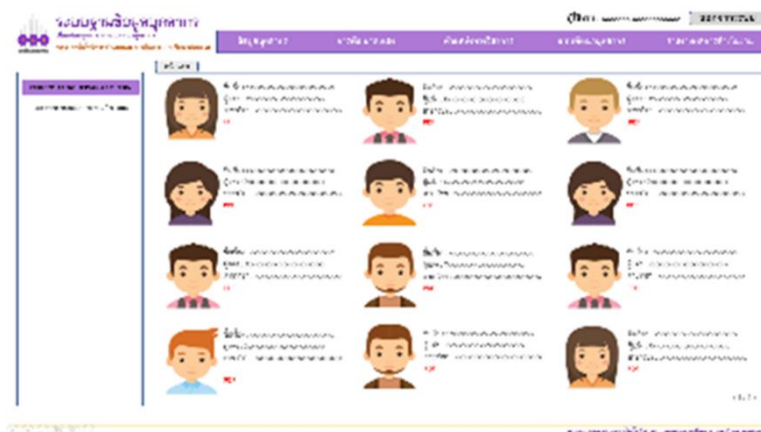**Figure 7.** Employee academic information interface

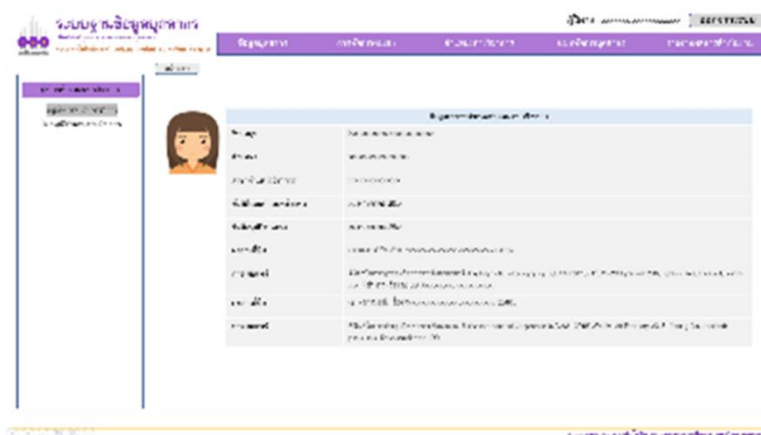**Figure 8.** Employee academic information interface

Figure 9. Employee academic information interface

According to Figure 7 to Figure 9, the information shows the status of the application for academic positions based on information from the staff divisions of Phayao University. In addition, the information shows academic positions within the faculty specifying details of academic positions including name and surname, position, area of expertise, academic position, and position approval date. The information for holding personal academic positions refers to the details used in requesting positions including name and surname, position, area of expertise, date of application for position determination, position approval date, and publications.

4.3.4. Report of Organization

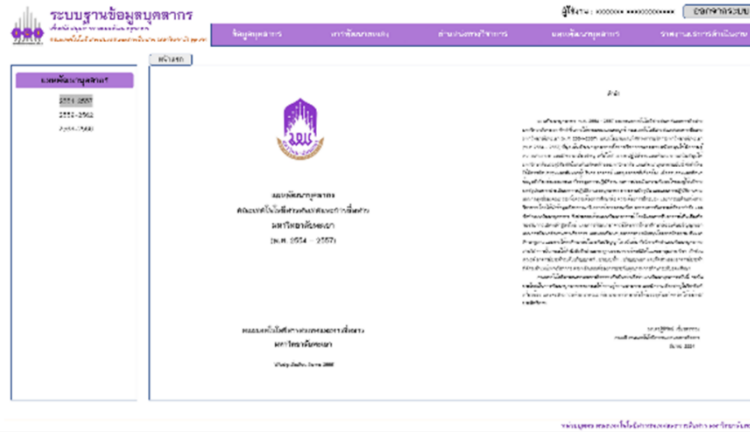Report of organization interface is shown in Figure 10 to Figure 11.

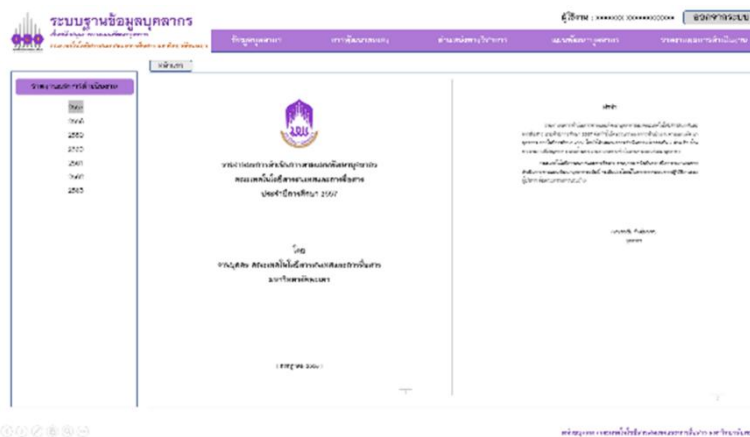**Figure 10.** Report of organization interface

Figure 11. Report of organization interface

Figure 10 to Figure 11 indicates the information on the personnel development plan and the operating report according to the personnel development plan specified by selecting years.

4.4. Evaluation of Database Design

The researcher used a specific assessment by specifying the assessor as a participant in preparing the human resource development plan and those involved in the use of information. It consists of the dean, deputy dean, assistant dean, head of the faculty office, supervisor, and program chair, shown as follows.

Table 1. The results of the satisfaction assessment of database design

List	$\bar{x}$	S.D.	Interpretation
1. Data Dictionary is designed appropriately	4.64	0.50	Highest
2. ER Diagram is designed appropriately	4.57	0.51	Highest
3. Data Flow Diagram is designed appropriately	4.57	0.51	Highest
Total	**4.60**	**0.51**	**Highest**

As table 1, the results of the evaluation of satisfaction with database design for database system development to support employee development plan found that the highest level ($\bar{x}$ = 4.60, SD. = 0.51) with the highest satisfaction in the appropriate design of Data Dictionary. The highest level of satisfaction ($\bar{x}$ = 4.64, SD. = 0.50)

and the lowest satisfaction in the ER Diagram design was appropriate at the highest level ($\bar{x}$ = 4.57, SD. = 0.51) and the Data Flow Diagram that was designed is appropriate at the highest level ($\bar{x}$ = 4.57, SD. = 0.51).

Table 2. Satisfaction assessment results for User Interface Design to

List	$\bar{x}$	SD.	Interpretation
1. User interface design is suitable for the main menu position	4.57	0.51	Highest
2. The design of user interface is designed to be simple	4.50	0.52	Highest
3. User interface design can be responsive to users with complete functions	4.71	0.47	Highest
4. User interface design has user status segmentation	4.64	0.63	Highest
5. User interface design uses clear text color	4.64	0.63	Highest
6. User interface design uses proper font alignment.	4.64	0.50	Highest
7. User interface design is beautiful and attractive	4.50	0.76	Highest
8. The user interface design has the same screen layout within the same standard	4.57	0.51	Highest
9. User interface design comes with a motivating screen layout	4.57	0.51	Highest
10. User interface design can display the information properly and completely	4.57	0.51	Highest
Total	4.59	0.56	Highest

As table 2, the results of the satisfaction assessment of user interface design to support employee development plans were found at the highest level ($\bar{x}$ = 4.59, SD. = 0.56) with the highest satisfaction. The user interface design is responsive to the user with complete functionality were at the highest level ($\bar{x}$ = 4.71, SD. = 0.47) and the lowest satisfaction in the design of the user interface with simple design ($\bar{x}$ = 4.50, SD. = 0.52).

Table 3. The results of the satisfaction assessment on the utilization expectation

List	$\bar{x}$	SD.	Interpretation
1. The database system reduces the time to work	4.71	0.47	Highest
2. The database system reduces the time for reporting	4.49	0.58	Highest
3. A database system facilitates the work	4.93	0.27	Highest
4. A database system helps users to become more interested in information systems	4.50	0.65	Highest
5. A database system encourages progress in various operations	4.71	0.47	Highest
6. A database system can support the implementation of the organization's strategy.	4.71	0.47	Highest
7. A database system can be used to make decisions faster and timely	4.71	0.47	Highest
8. Information obtained from the database system can be used to verify the information in various operations	4.71	0.47	Highest
9. Information obtained from the database system can be used for quality assurance	4.79	0.43	Highest
10. Information obtained from the database system can be used to support the employee development plan	4.71	0.47	Highest
Total	4.73	0.47	Highest

According to table 3, the results of the evaluation of satisfaction on the utilization expectation of the database system to support human resource development plan found that the highest level ($\bar{x}$ = 4.73, SD. = 0.47) with the highest satisfaction in the database system. It facilitates better work at the highest level ($\bar{x}$ = 4.93, SD. = 0.27) and

the lowest satisfaction in the database system where users were more interested in information systems at the highest level ($\bar{x}$ = 4.50, SD. = 0.65).

5.Conclusion

The objective of this research is to analyze and design huge of the personal data components in government organizations that are management issues in human resource planning. It has three essential components: The first component is to study the problematic elements regarding management and the conception of a personal development plan. The second component is the development of a database system to be used to drive the smart enterprise. The third component is the evaluation of the developed database system. This research is a qualitative research. There were 21 samples used to evaluate the database. It consists of executives and staff who are involved in the development of the human resource planning. The tool used in this research consists of two parts. The first part is database design and development tools. The second part is the database design evaluation tools. It consists of the satisfaction questionnaire for database design, and the database performance assessment form. A database system was developed divided into 5 aspects, which are (1) personnel information, (2) self-development, (3) academic position, (4) human resource development plan, (5) operating report.

The statistics used in the research were mean and standard deviation . The researchers were found that the results of the evaluation of database design were at the highest satisfactory level ($\bar{x}$ =4.60). The evaluation results of the database user interface design were found at the highest level ($\bar{x}$ =4.59). The evaluation results of the utilization expectation of the database system were found at the highest level ($\bar{x}$ =4.73). For future work, the researcher aims to develop it into a mobile application to facilitate further.

Future Works

This research will use the research results should coordinate to seek encouragement from some personnel information from the staff division, University of Phayao. It will reduce the time required to fill in and make the information more consistent.

The future research should also be organized in a statistical format as it facilitates data analysis and decision-making in the various actions of management and users. Also, the summary of information or statistics should be provided to specify the updated date of the current information for citing information, which will be in the form of a systematic development in the next research.

Conflict of Interest

The researchers declare no conflict of interest. Research ethics: the researchers is allowed to conduct this research according to the announcement of the University of Phayao: No. UP-HEC 2.1/012/64 on April 21, 2021.

Acknowledgements

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