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**HUMAN RESOURCE INFORMATION SYSTEM (HRIS) DEVELOPMENT
TO OPTIMIZE HUMAN RESOURCE MANAGEMENT IN HIGHER EDUCATION**

¹⁾*Management Study Program; Tashkent State University of Economics*

²⁾*Management Study Program; Universitas Pendidikan Indonesia*

Student: **Raximova Begoyim**¹⁾ ¹⁾begoyim.ra@gmail.com

Supervisor: **Askolani**²⁾ ²⁾askolani@upi.edu

Abstract: *Human resource management in higher education institutions using software applications can improve effectiveness and efficiency. Without the assistance of a Human Resource Information System (HRIS) application, operational management performance will not be optimal. Higher education institutions' HR data is decentralized, leading to the possibility of data redundancy. Furthermore, data processing and presentation are time-consuming. This research aims to develop an HR management application. The application will be implemented in higher education institutions, and the HRIS will be developed using a case study at Tashkent State University of Oriental Studies.*

With this application, it is hoped that HRIS will optimize operational management performance. The method used in this research is an applied method (action research). The system development approach uses prototyping.

The design methods used are system design and detailed design, which include object design. The tool used to measure the implementation of the system being built is a questionnaire. The validity used in this research is content validity. The results of this study are presented descriptively, as follows: The system is very good (45%), with ease of use (65% stated it was very good and 35% stated it was good), 56% stated it was very good regarding the interface design, 72% stated it was good regarding the accuracy of the information provided in the system, 55% stated it was very good and 45% stated it was good regarding the language used in the application, and 32% stated it was very good regarding error handling, 68% stated it was good.

Keywords: *HR management, personnel information system, lecturer information system*

1. INTRODUCTION

The rapid development of information and communication technology offers solutions for effective and efficient organizational management. The application of information technology in organizations, both companies and universities, is a crucial aspect of competition in the digital era. The failure of an organization, specifically a university, to utilize technology in information management will render the university uncompetitive.

Furthermore, the quality of a university can be assessed by the quality of its graduates. To produce quality graduates, universities must be able to manage their resources, including

students, human resources, and facilities and infrastructure. Of these three resources, human resources are crucial.

According to Arwildayanto (2012), no matter how good the facilities and infrastructure are, if they are not supported by quality human resources, the university will not develop optimally and will even tend to remain static and maintain the status quo [1].

The BAN-PT Accreditation Standards (2008) also indicate that one aspect that serves as a benchmark for assessing the quality of a university is human resources [2].

In the field of management, it is explained that one element within an organization is human resources. Human resources are an organizational resource that must be managed efficiently and effectively. Shiri (2012) concluded that good human resource management will contribute to improved organizational performance [3]. The large amount of information that must be managed related to human resources gives rise to problems of high complexity. These problems are difficult to solve with traditional HR information systems. The high complexity of managing HR-related information can be resolved with the help of a computer-based HR information system.

The combination of human resource management and information technology produces a human resource management solution known as a Human Resource Information System (HRIS). Implementing an HRIS will increase the effectiveness of the human resource management function [3]. All information is stored in a single database and shared, resulting in high efficiency. Kovach et al. (2002) state that HRIS is an example of how businesses can use it not only to save administrative costs but also to generate strategic advantages through the collection, processing, and sharing of information [4].

Fierce competition occurs not only between commercial companies but also between educational institutions, including higher education. This requires higher education institutions to manage all their resources, including their human resources, to gain an advantage and win the competition. Rawat (2008) explains that to survive, higher education institutions must be able to adapt to the dynamic developments of the times. He further stated that to build an effective institution, universities need a Human Resource Information System [5]. The fundamental capabilities of an HRIS include a high level of accuracy combined with time efficiency. HRIS in universities is useful for providing speed, accuracy, ease of access and updating, and integration of existing resource data, thereby increasing capacity and simplifying control within the overall reporting system.

The human resource management implemented at Tashkent State University of Oriental Studies and many other universities, particularly private universities with limited funding, have not yet adopted a Human Resource Information System. Consequently, their HR management remains suboptimal. This study aims to implement a Human Resource Information System (HRIS) to optimize human resource management in higher education, focusing on Tashkent State University of Oriental Studies.

2. Literature review

2.1 Human Resource Management

Human resource management is the process of acquiring, training, assessing, and compensating employees, addressing their labor relations, health, safety, and fairness [6]. Based on this opinion, it can be said that human resource management is a method of managing human resources effectively and efficiently within an organization so that they can optimally contribute to achieving organizational goals.

In general, human resource management functions or activities encompass three main elements:

1. Recruiting a qualified workforce. This includes human resource planning, recruitment, selection, and placement.
2. Developing a qualified workforce. This includes job orientation, training and development, career planning and advancement.
3. Maintaining a workforce. This includes managing retention and turnover, performance appraisal, compensation, welfare, and management-workforce relations [7].

As can be seen in Figure 1 below, the human resource management cycle in an organization:

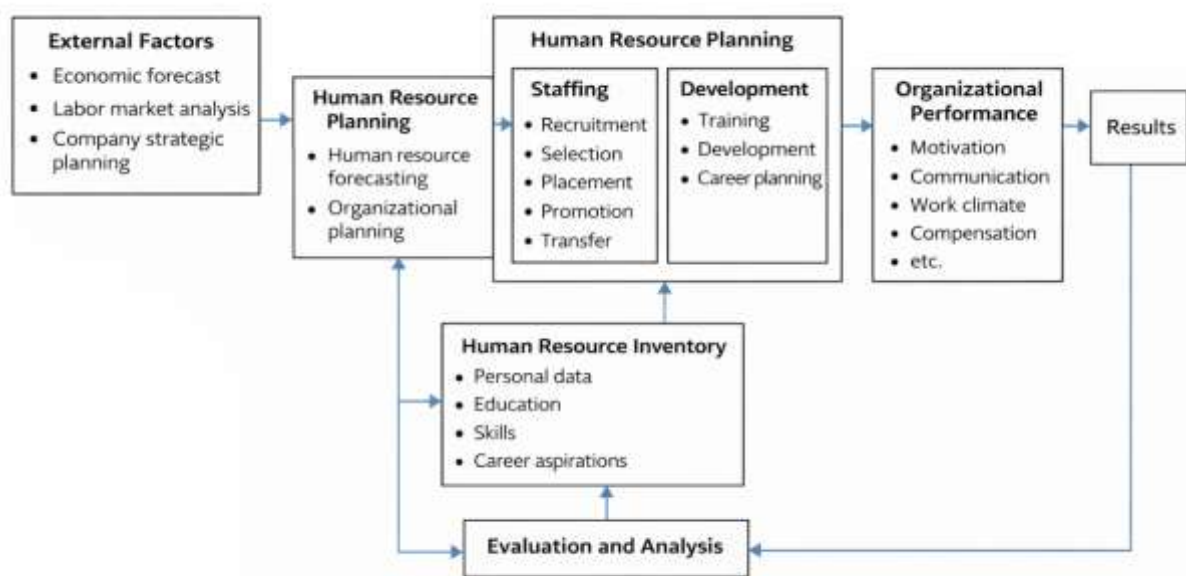


Figure 1. Human Resource Circle

2.2 Human Resource Information Systems

Human resource management is a process that addresses issues related to employees, laborers, managers, and other workers to support organizational activities in achieving predetermined goals.

A human resource information system (HRIS) is a fusion of human resource management and information technology. A HRIS is an integrated component that collects, processes, stores, and disseminates information to support decision-making, coordination, control, analysis, and visualization of an organization's HRIS activities [6].

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Mamun & Islam (2016) explain that a HRIS is viewed as a tool for creating and disseminating information related to human resources, aligned with a company's strategic direction [7]. A study conducted by Shiri (2012) found that the use of HRIS in an organization produces more effective and faster work results, as well as bringing improvements to the overall human resources function. It has even helped align human resources practices with organizational strategy, thereby increasing the efficiency of the HR function [3].

2.3 Information System Development Methods

Information System Development Methods are methods, procedures, work concepts, and rules that will be used as guidelines for how and what to do during information system development [9].

Prototyping Method

Prototyping is a rapid system development method. Testing of prototypes is carried out through an iterative process. This method is typically used by information systems experts and business experts. The advantages of prototyping are as follows:

- 1) There is good communication between developers and users.
- 2) Users play an active role in system development.
- 3) Developers can work better in determining user needs.
- 4) It can save time in system development.

5) Implementation is easier because development is carried out collaboratively with users based on their needs from the start.

Generally, the prototyping processes in the model are as follows:

1) Needs Identification

The developer and client will meet first and then determine the general objectives, known requirements, and an outline of the components that will be needed.

2) Design

The design is done quickly and represents all known aspects of the software, and this design becomes the basis for creating the prototype.

3) Prototype Evaluation

The client will evaluate the prototype created and use it to clarify the software requirements.

Stages in Prototyping

Furthermore, modeling software requires several stages in the development process. These stages will determine the success of the software. Software developers must pay attention to the stages in the prototyping method so that the final software is accepted by its users. The stages in prototyping are as follows:

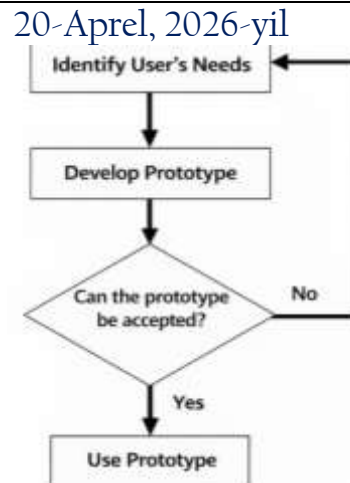


Figure 2. Prototyping Method (Nugroho, 2008:111)

a. Requirements Gathering

The customer and developer jointly define the format and requirements for the overall software, identify all requirements, and outline the system to be built.

b. Prototyping

The prototyping is built by creating a preliminary design focused on presenting it to the customer (for example, by creating input and output examples).

c. Prototyping Evaluation

This evaluation is conducted by the customer to determine whether the prototype built meets their expectations. If so, the fourth step is taken. If not, the prototyping is refined by repeating steps 1, 2, and 3.

d. System Coding

In this stage, the agreed-upon prototyping is translated into the appropriate programming language.

e. System Testing

Once the system has become ready-to-use software, it must be tested before use. This testing is performed using White Box, Black Box, Basis Path, architectural testing, and others.

f. System Evaluation

The customer evaluates whether the completed system meets expectations. If so, step seven is performed; if not, repeat steps 4 and 5.

g. Using the System

Software that has been tested and accepted by the customer is ready for use.

2.4 System Design Tools

System design tools can be divided into two categories: process design tools and data design tools. Process design tools include data flow diagrams and system flow diagrams. Data design tools include entity relationship diagrams and data dictionaries.

a. Data Flow Diagram

A data flow diagram (DFD) is a graphical documentation tool that uses symbols to describe a process. Although its name suggests an emphasis on data, this is not the case. The

word "data" means flowing data. This diagram shows the process flow of the entire system to the user and can be customized in detail according to the user's understanding.

DFDs consist of three elements: the environment, processing, data flow, and data storage [10].

b. System Flow Diagram

A system flow diagram is a design tool used to describe system processes in detail. System flow diagrams are divided into two types: diagrams that illustrate the flow of information systems and diagrams that illustrate program flow [10].

c. Entity Relationship Diagram

An entity relationship diagram shows the relationships between entities and their relationships, so that the data is combined into an integrated whole [10].

d. Data Dictionary

A data dictionary is a complete written explanation of the data entered into a database [10].

3. Research Method

This research method is designed to serve as a framework and guide for the research stages. This research method is expected to ensure the research process is conducted in a directed and systematic manner.

The method used in this research is applied research (action research).

This method aims to develop new skills or approaches and solve problems through direct application in real-world situations. The system development approach uses the prototyping method. The design methods used are system design and detailed design, which include object design. The tool used to measure the implementation of the system being built is a questionnaire. The validity used in this research measurement tool is content validity, meaning that the questions are structured according to the definition of the variables to be measured.

Research Steps:

1. Identification of User Needs
2. HRIS Prototype Development
3. Prototype Evaluation
4. System Coding
5. System Testing
6. System Evaluation
7. System Implementation
4. Results and Discussion
- 4.1 Identification of User Needs

Identification of user needs for the system to be developed was conducted through interviews with potential users, including the Human Resources Division, employees (lecturers and staff), and management (Vice Rectors, Deans, and heads of study programs) within Tashkent State University of Oriental Studies.

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Based on the interviews, the potential users' needs for the system can be tabulated as follows:

Table 1. System Requirements Tabulation

No.	Department / User	System Requirements
1	Personnel Department (HR)	a. Store employee data: – Education data – Rank data – Decree (SK) data b. View employee list based on: – Work unit – Education level – Rank – Decree (SK) – Employment status – Active status – Employee group (Lecturers & Administrative Staff) c. View and print employee summary reports d. Upload and download employee archives
2	Management (Rectorate, Deanship, Head of Study Program)	View statistics/summary and employee lists based on: – Work unit – Education level – Rank – Decree (SK) – Employment status – Active status – Employee group (Lecturers & Administrative Staff)

4.2 HRIS Prototype Development

Process Design

a. Context Diagram

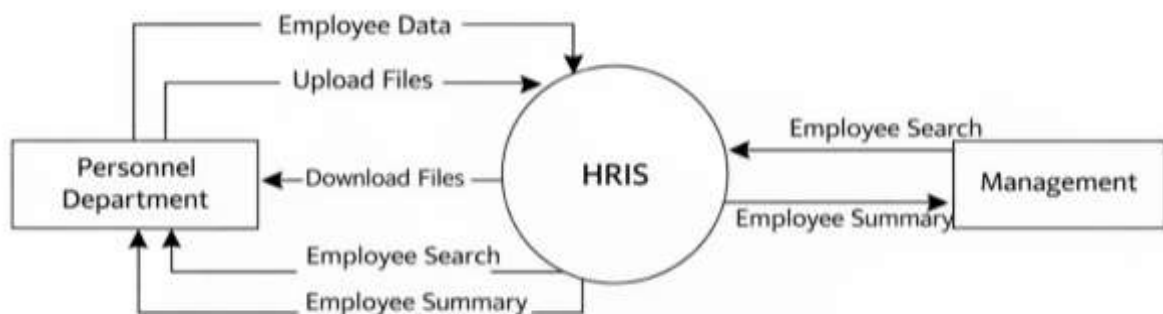


Figure 3. HRIS Context Diagram

b. Data Flow Diagram (DFD)

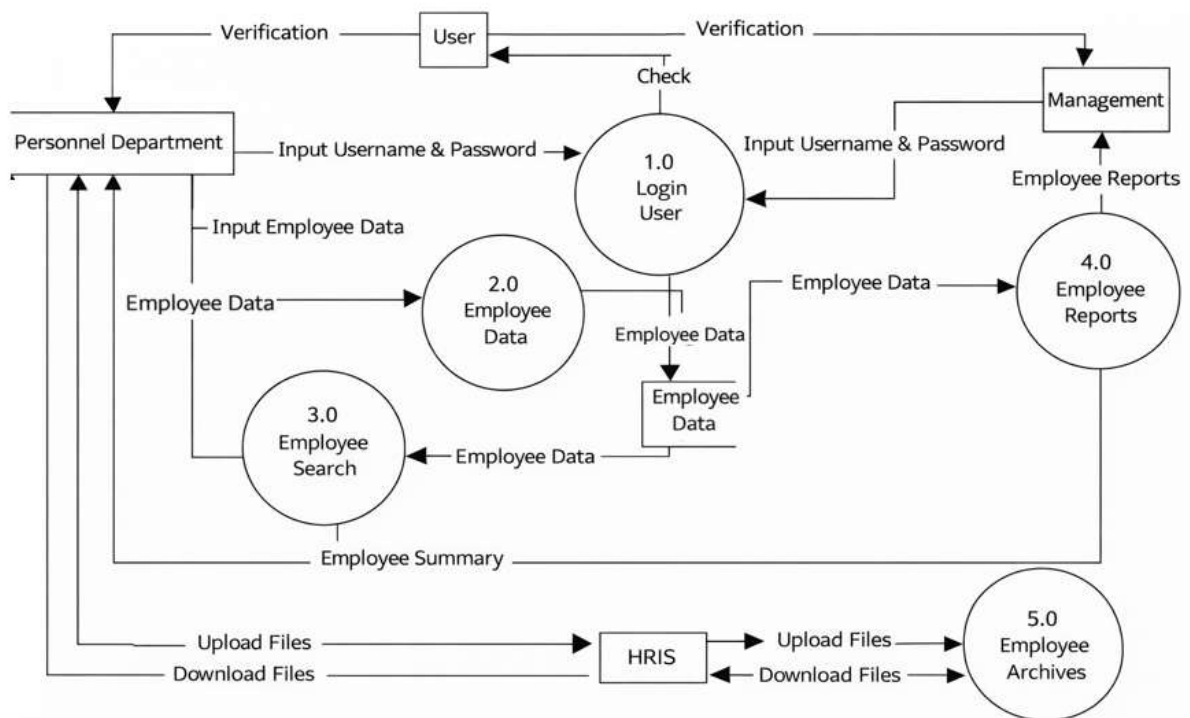


Figure 4. Data of Flow Diagram HRIS

Database Design

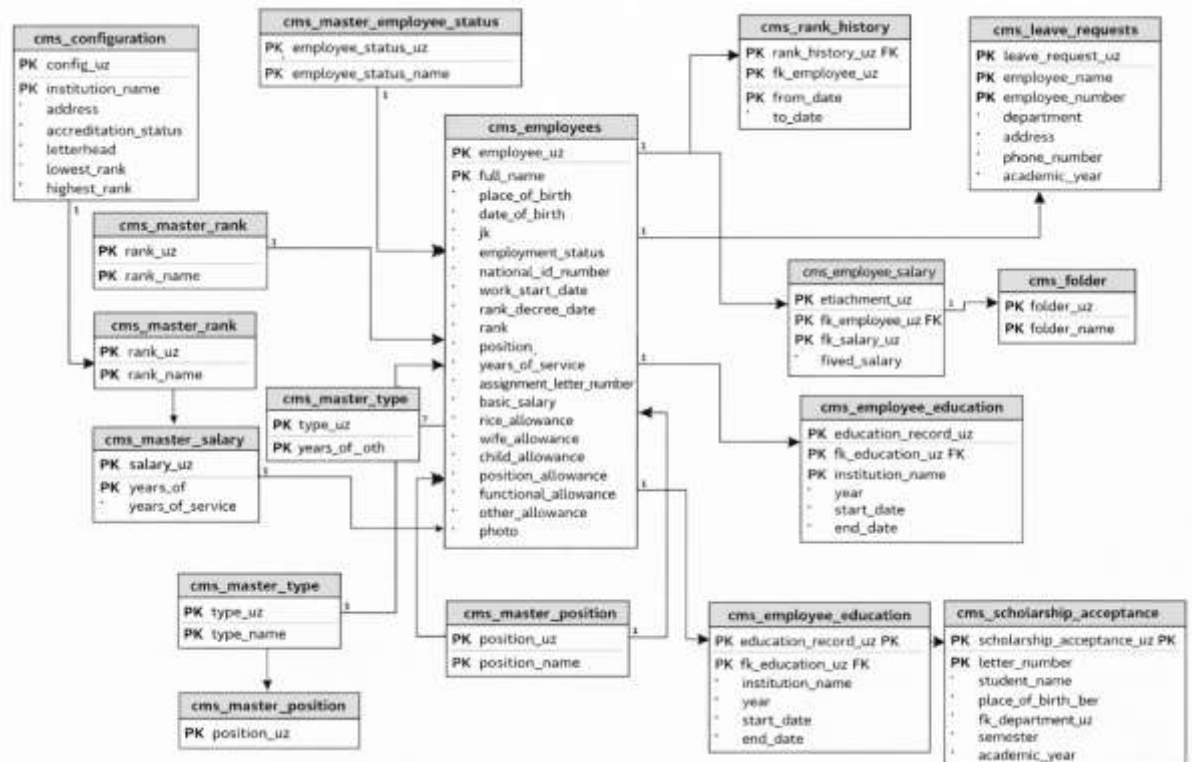


Figure 5. HRIS Class Relationships Prototype Evaluation

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This evaluation is conducted by the user to determine whether the developed prototype meets user needs. If so, proceed to step 4. However, if it still does not meet user needs, the prototype is revised by repeating steps 1, 2, and 3.

Institution Data	
Institution Profile	
University	
Foundation Code *	01
University Code *	011867
University Name *	Tashkent State University of Oriental Studies
Address 1 *	Amir Temur Avenue, 17
Address 2	Yunusobod District
City *	Tashkent
Postal Code	100060
Telephone	+998-71-2354781
Fax	+998-71-2345634
Date of Last Foundation Decree *	2023-02-01
Number of Last Foundation Decree	17/Feb/2023
Email	admin@tsuos.uz

Figure 6. University Profile Page Display

Master User Data				
+ Add User				
Show 50 entries				
No	ID Number	Full Name	Level	Email
1	201308000002	Administrator	Administrator	umar@tsuos.uz

Showing 1 to 1 of 1 entries

Figure 7. User Page View

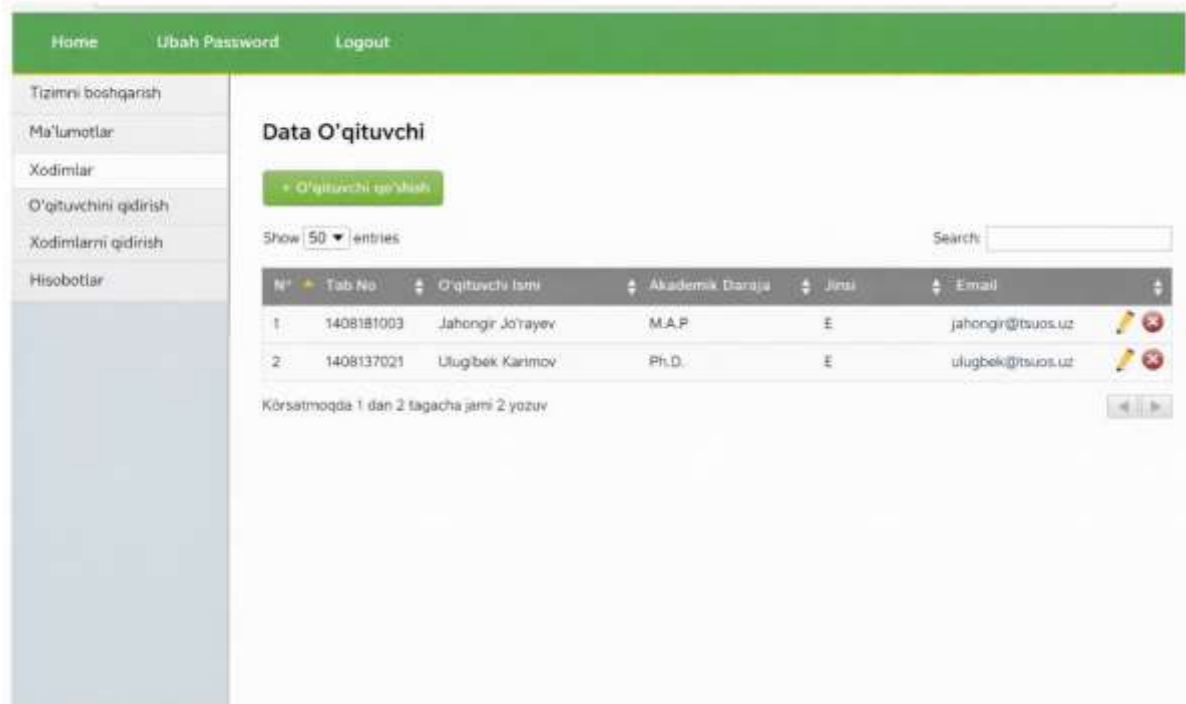


Figure 8. Lecturer Data Page Display

System Testing

After the HRIS software was completed and ready for use, testing was conducted. This testing aimed to measure user satisfaction. The variables measured were:

- 1) Suitability to needs
- 2) Ease of use
- 3) Interface design
- 4) Accuracy of information provided
- 5) Language used

Based on respondents' responses to this HRIS assessment, 38% of respondents stated it was very good, 43% stated it was good, 11% stated it was fair, 8% stated it was poor, and no respondents stated it was very poor. According to respondents, data processing would be faster because the data was centralized in one place, and it would also be easier for leaders to access data for decision-making. As Kovach (2002) stated, in the 21st century, data will drive an increase in strategic decision-making. HRIS is a strategic step that benefits not only cost savings but also data collection, processing, and sharing [4].

Descriptively, the overall system is very good (45%), with ease of use (65% stated it was very good and 35% stated it was good). Furthermore, 56% stated the interface design was very good, the accuracy of the information provided in the system was good (72%), the language used in the application was very good (55%), and 45% stated it was good. Finally, regarding error handling, 32% stated it was very good and 68% stated it was good.

When asked whether HRIS can help optimize human resource management, 39% of respondents responded strongly agree, 32% agree, and 29% somewhat agree. This is in line with the research findings of Mamun & Islam (2016), which found that 54% and 57% of

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respondents agreed that HRIS improves operational efficiency and ensures managerial effectiveness. Furthermore, 70% of respondents emphasized HRIS as a strategic finesse [8]. Shiri (2012) found that the use of HRIS is truly important in increasing the effectiveness of HR management and providing opportunities for employees to increase their contribution to the strategic policy direction of the organization [3].

5. CONCLUSION

The HR information system is a key support for personnel or personnel departments to enhance their performance. The design and prototyping still require adjustments and improvements before they can be implemented.

The number of users involved in the design is currently limited to personnel and management. Further research can add user levels. Future features must be developed in line with organizational developments and applicable regulations within the Ministry of Research, Technology, and Higher Education.

REFERENCES:

[1] Arwildayanto. (2012). *Manajemen Sumber Daya Manusia Perguruan Tinggi Pendekatan Budaya Kerja Dosen Profesional*. Gorontalo: Ideas Publishing.

[2] BAN-PT, (2008). *Buku II Borang Akreditasi yang Diisi oleh Program Studi*. Versi 08-04-2010. Jakarta: Departemen Pendidikan Nasional.

[3] Shiri, Shummy. (2012). *Effectiveness of Human Resource Information System on HR Functions of the Organization: A Cross Sectional Study*. <http://www.davidpublishing.com/davidpublishing/upfile/11/14/2012/2012111401088443.pdf>

[4] Kovach, Kenneth A. (2002). *Administrative and Strategic Advantages of HRIS*. *Employment Relations Today Journal*. Volume 29, Issue 2. <https://www1.villanova.edu/content/dam/villanova/VSB/assets/maggittiresearch/Human%20Resource%20Information%20Systems%20Administrative%20and%20Strategic%20Advantages.pdf>

[5] Rawat, Dr. M. S. (2008). *Application of Human Resource Information System (hris) in Higher Education – Holistic Approach*. *Prociding ECER Region Conference*. Malaysia. <http://iefpedia.com/english/wp-content/uploads/2009/09/Thrusting-Islamknowledge-and-professionalism-in-ECER-development.pdf>

[6] Dessler, Gary. (2011). *Manajemen Sumber Daya Manusia*. Jakarta: PT Indeks

[7] Alwi, Syafaruddin. (2010). *Manajemen Sumber Daya Manusia: Strategi Keunggulan Kompetitif*. Yogyakarta: BPFE.

[8] Mamun & Islam. (2016). *Perception of Management on Outcomes of Human Resource Information System (HRIS)*. *International Journal of Business and Social Research*. Vol. 6 No. 2. <http://www.thejournalofbusiness.org/index.php/site/article/view/837>

“O‘ZBEKISTONDA UCHINCHI RENESSANS VA INNOVATSION JARAYONLAR JURNALI”

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[9] Lahinta, Agus. (2008). Metodologi Pengembangan Sistem Informasi. <https://kuliahagus.files.wordpress.com/2008/11/metodologi-pengembangan.ppt>

[10] Nugroho, Eko. (2008). Sistem Informasi Manajemen: Konsep, Aplikasi, Perkembangan. Ed. I. Yogyakarta: Penerbit Andi