A WEB-BASED MANAGEMENT INFORMATION SYSTEM FOR HUMAN RESOURCES IN SELECTED UNIVERSITIES OF DUHOK PROVINCE

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ABSTRACT:

Today, all managers use the information system to manage their organization efficiently and effectively. Moreover, a management information system (MIS) is a type of computerized information systems. Hence, human resource management information system (HRMIS) has a fast processing to produce accurate information within the organization environment. Therefore, many researchers proposed numerous HRMISs for university campuses. However, some universities, including Kurdistan Region universities are still relying paper-based system in managing their human resources. Based on that, this study aims to identify and analyze current systems which are used for managing and accessing human resource information in the university campus. Further, the study tries to design a web-based HRMIS based on the requirements achieved from aforementioned aim. The data collection of this study has been carried out at three universities, as a case study, in Duhok province. A mixed method of data collection was done. Then, the qualitative method of data collection conducted using interviews and observation instruments. Also, the quantitative method conducted using system usability scale (SUS) to evaluate the designed web-based HRMIS. Further, the analysis of collected data was based on the strategic planning technique using SWOT (Strengths, Weaknesses, Opportunities and Threats) to identify strengths, weaknesses, opportunities and threats points. Then, the requirements of designing a proposed web-based HRMIS were achieved. After implementing of the proposed system, the evaluation results of SUS were conducted to be acceptable (i.e. total score is 72.03%) based on the end-user viewpoints. Further, the reliability of the proposed HRMIS will be conducted at the University by using reliability measurement tools after implementing such system for a period of time.

KEYWORDS: Human Resource Management Information System, SWOT, System Usability Scale, Duhok.

1. INTRODUCTION

Information system is an academic study which contains of hardware and software, database, human resources and procedures, that people and organizations use to collect, process, create, generate and also distribute data (Hasan, Alina, & Nor, 2014). Today's, all managers use the information system that incorporates a series of information technologies to manage their organization efficiently and effectively (Rafael & Carlos, 2012).

Moreover, Management Information System (MIS) is a type of computerized information systems that help managers to take the decision-making, and also monitors the current state of the organization. In addition, such systems can gather and process information from various sources of organization to support decision-makers in the level of management (Ankrah & Sokro, 2012; Hasan et al., 2014). Hence, Human Resource Management Information System (HRMIS) is became a key management tool, which collects, maintains, analyses and reports information on people and jobs (Shaikh, 2012). This system has a fast processing to produce accurate information and enhanced employee communications within the organization environment (Kashive, 2011). Further, the HRMISs are process of producing, organizing and storing the information to help the organization managers at different levels. Nowadays, most successful organizations are using HRMISs to facilitate the daily operations of Human Resources (HRs) in their management process (Hasan et al., 2014).

In order to establish effective MISs, the design process of such systems needs a well strategic planning (Fergerson, 2012). Also, the design of any information system needs a strategic planning technique as a base, which is the key factor of progress of any organization (Sarhan, Atroshi, & Ahmed, 2016).In addition to that, Basahel and Irani (2009) said that "Strategic Information Systems Planning (SISP) techniques can be vital contributors in the IS strategy (ISS) designing process.". The aforementioned researchers have been classified these techniques regarding to the strategic analysis, competitiveness, and alignment. Based on their classification, SWOT (Strengths, Weaknesses, Opportunities and Threats) has been considered as an analysis technique, which is the bedrock of data collection and analysis of this study.

Furthermore, universities are one of the main sources for developing environment in many countries especially in our country. For that reason, many researchers have proposed different HRMISs for universities to facilitate the work of administrative staff and decision-makers (Fergerson, 2012). However, most of these universities in some countries including Iraq (especially Kurdistan Region of Iraq) are still using manual system to manage their human resources (Ismaeel & Mikhail, 2014). This leads that the work of administration units within the university campus are still separated from each other. Therefore, Disintegrated administration units and manual systems hinder information sharing and cooperation among administrative staff, thus impeding optimal use of human resources and delaying applications of new updating of information because large amounts of data are difficult to manage and control in a system that uses paper. The aforementioned problem is the extraction of message of the Minister of Higher Education and Scientific

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Research in Kurdistan Region Government (KRG), as he said on the 3rd, May, 2016, "The project of electronization our universities and ministry is one of the significant projects of our ministry and has started some steps onward (Goran, 2016).

The University of Zakho, as one of Kurdistan universities, is still using manual system to manage their human resources system. Therefore, the management of university's staff information within the campus has become one of the chief problems. To overcome such a problem, the university needs to have an electronic HRMIS instead of traditional manual system. Such electronic system also needs a strategic planning analysis technique, which is SWOT, for designing a good management information system in this study. The significance of developing HRMIS is to facilitating the management work, sharing the up-to-date of staff information among administrative staff and providing information in a timely mariner with lowest efforts and costs.

2. RELATED WORKS

The review of related works helped the researcher to determine the extent of research conducted with regard to the topic. In addition, the review exercise helped the researcher to understand the importance of HRMIS in organizations and identify the problems facing employees during the information management staff in any organization, such as time consuming, cost effective and loss of information. For example, Navaz, Fiaz, Prabhadevi, Sangeetha, and Gopalakrishnan (2013) proposed a design of Human Resource Management System for company. The main objective of such system is to reduce the effort of administrator to keep the daily events, such as attendance, projects, works, and appointments. For that reason, many researchers proposed different electronic systems for managing human resources to solve the aforementioned problems, especially in the universities campuses.

According to Abadiano (2012), a Human Resources Information System (HRIS) has proposed for the University of Cebu. The aim of his proposed system is to provide solutions to the difficulty of the manual human resources system recently used by the University of Cebu, which is characterized by being very slow in processing the request and inquiries. Further, such a system will enable faculty and staff to transact queries faster in the database server and automatically they will be able to obtain information that they need, and make necessary update. The aforementioned study has some objectives such as: To analyse, design and develop a prototype of a Human Resource Information System (HRIS-UC) for the University of Cebu, Cebu City, to describe features of a good human resource information system may be included in the university's HRIS and to design a Human Resource Information System. However, the aforementioned researcher just focused only on the dilemma of the manual human resources system recently used by the University of Cebu which is very slow in processing the request and inquiries.

Due to web-based applications considered as web sites with user interactivity, such applications become a key factor in designing HRMIS to provide multi-users access when they connect to the internet (Lingareddy, 2007). Therefore, Achola (2013) proposed a designed human resource management information system (DHRMIS) based on the web to facilitate the work of HR department regarding effectively managing human resource information and records. The above researcher used the quasi-experimental method to assess the existing human resource system in the Kampala International University with the new proposed system. The results found that the proposed system improved the work of HR department much better than the old system. However, the aforementioned study assessed pre-test design, as assessment of the existing human resource system, and post-test design, as after the implementation of the proposed DHRMIS system.

The growing demand and complexity of developing web services and based on the analysis of Human Resource Management and information system requirements for numerous enterprises, especially in higher education institutions, Chen and Ni (2013) proposed a cloud computing-based HRIMS (cHRIMS). Cloud computing technology can help enterprises save early stage work force and financial investment, which through internet can rent necessary software services from software service providers. The cHRIMS has its advantages such as user convenience, high security, high performance etc. The architecture of such system has 3 layers which are composed of 6 system components. The aforementioned study aims at reduce cost and increase HR performance efficiency. However, the developing of cHRIMS system platform is still in its early stages and has not been used at the university yet.

In addition, in most universities of Kurdistan Region, Iraq, information of human resources with regard to managing and sharing within the university is still using manual system (Goran, 2016). Such a system can lead to insufficient management and loss of information at university campuses with large amount of manual data, where lack of computer-based management system can lead to generate inaccurate information and spend more time and efforts (Abadiano, 2012). For the aforementioned problems, Ismaeel and Mikhail (2014) proposed Design of Locally e-Management System For Technical Education Foundation-Erbil called DLMS4TEF. The previous study deals mainly with a problem that there is no e-management and automation necessary for the operations' procedures of the departments in the Technical Education foundation-Erbil. Thus, the aforementioned researchers aimed to design and implement a local website for an e-management to link between information and technology for foundation of technical education. This e-management system covered some management issues as monitoring system for the process of work. However, the problem of managing human resources information at the university is still available, which is based on paper.

The aim of earlier studies was enhancing the management of HR information within university campuses by proposing electronic MISs. However, most of them were using their universities as a case study and none of them used any strategic planning technique in developing MIS for HR in the university. While, selecting a right strategic planning in designing process of MIS can establish an effective system for management in any enterprise (Fergerson, 2012). Based on the literature, proposing and implementing of a system for managing human resources' information within the university campus in Kurdistan Region, Iraq, is still in the early stages. Therefore, this study tries to design and implement HRMIS for some universities in Kurdistan region, as case studies, in order to overcome most of the problems mentioned previously in this section. In addition, this study intends to use SWOT analysis, as a strategic planning technique, in order to investigate the current system used in managing HR of the selected universities and find the requirements for designing a web-based HRMIS.

3. METHODOLOGY

A methodology is an examination of finding solutions to any problems (scientific and social problems) through objective and systematic analysis (Dey, 2005). The research process is used to collect information and data for the purpose of making business decisions. The methodology of researcher may include publication research, interviews, surveys, and other research techniques (Rajasekar, Philominathan, & Chinnathambi, 2006).

In any study, researchers use different methods for collecting data which is based on the requirement and type of investigation. Therefore, research methods are divided into three types such as: quantitative, qualitative and mixed methods. The quantitative research is descriptive and experimental research, which uses hypotheses. In quantitative method, data can be collected as numbers (Dey, 2005). The qualitative research is the research that includes analyzing and interpreting texts and interviews to discover meaningful patterns describing a particular phenomenon. Where the questions are how and why, the use of qualitative methods is necessary (VanderStoep & Johnson, 2008). Also, the mixed methods is a procedure to mix quantitative and qualitative research. Based on that, the mixed methods can be used when one type of method (qualitative or quantitative) is not enough to address the research problem and to answer the research questions (Karikari, Boateng, & Ocansey, 2015).

In the current study the mixed methods were used .The study has been conducted in different universities as case study, especially in government universities. In this study, the qualitative research method was adopted interviews and observations instruments as data collection techniques. In this step of research method, a list of questions was designed for interviews, however after data collection the data will be analyzed by SWOT analysis technique to determine strength, weakness, opportunities, and threats for proposed and current systems used. Based on the participant's requirements the system was designed by using a web-based application tools and after designing the system was tested in two universities and implemented at university of Zakho. In addition SUS technique, as quantitative research method, was used to evaluate the scalability and usability of the proposed system from. The SUS is a free, easy, and effective tool for assessing the usability of any system (Al-Khawlani, 2009). Further, Bangor and others said" The SUS is composed of ten statements, each having a five-point scale that ranges from Strongly Disagree to Strongly Agree". It was developed by Brooke in 1996 to measure the effectiveness, efficiency, and satisfaction of the system (Bangor, Kortum, & Miller, 2009).

Due to the data collection instruments conducted in the way of SWOT analysis as a strategic planning technique, the analysis steps of this technique were bedrock of this work. Further, agile system development life cycle (ASDLC) steps were used to develop the proposed system. Öztürk (2013) said "Selection of appropriate Software Development Life Cycles can increase projects success". For ethical issues, the data collection was conducted after getting the respective approvals from the management of the aforementioned universities for conducting the interviews and the observations.

4. VALIDITY AND RELIABILITY

In this study, the research instruments were revised by a group of experts in the field of strategic planning. The professionals were able to validate the instrument before conducting the pilot research. They were helpful in evaluating the appropriateness of the contents of the research instruments.

The aforementioned professionals were requested to provide their inputs and suggestions as they felt necessary for accuracy and content validity of the instruments. These professionals were all given copies of the instruments and an information sheet explaining the purpose of the study. All of them provided comments on items of the instruments. The researcher believed that the input of ideas from these professionals significantly contributed to the success of the instrument design based on their comments.

In terms of reliability, multiple studies, such as (Bangor et al., 2009) and (Lewis & Sauro, 2009), have found the SUS tool to have a Cronbach's alpha of 0.85 and above (i.e., values above 0.70 are considered "good"). This is indicated that the SUS can be used as a reliable tool to measure the usability of any system.

5. PARTICIPANTS

The participants of this study were selected from different public and private universities in Duhok province in Kurdistan region, as case study, to address the research problem. These universities are the University of Zakho (UOZ), the University of Duhok (UOD) and the Nawroz University (NU). The period of data collection was from (18/1/2015) to (16/2/2015). In UOZ, interviews were done with a five employees, and the period for each interview was around one hour. In addition, interview was conducted with a five employees in UOD, and the period for each interview also was around one hour. However, in NU interview was done with one employee. Further, the observations in each university were focused on how they manage the staff information and their vacations. Also, the observation focused on how they process their promotion and bonus. Next, it was focused on how the staff can get their information from university. In this study, the evaluation of the proposed HRMS was carried out in one selected universities, which is the UOZ. This evaluation was conducted with 16 participants from the aforementioned university to measure the usability of the system by using SUS tool.

6. SYSTEM ANALYSIS RESULTS

Based on the data collected from UOZ, UOD and NU through the interviews and observations, the current system is used for managing staff information, accounting, document management, statistical and planning unit, student information, library, unit of legal matters, and engineering unit. All these systems are separated from each other and mostly using manual systems to them with main administrative unit at university's presidency building. Therefore, all end-users of those systems are working together locally inside the university (see Figure 1).
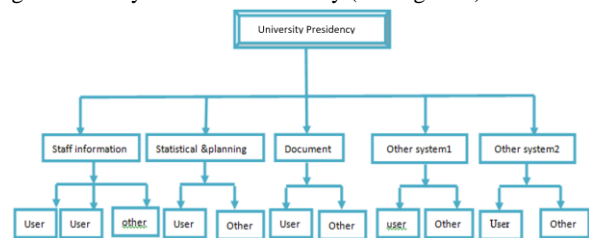

Figure 1. The current system construction use in the University.

The analysis of data, which were collected from interviews and observations, can be analysed using SWOT analysis tool. The researcher interviewed a number of participants in different universities (UOZ, UOD, NU) as shown in the previous section. During the interviews, the researchers of this study were able to realize the strengths, weakness, opportunity and threats of HRMIS used at each university, see the results in Table 1.

7. SYSTEM DESIGN AND IMPLEMENTATION

7.1. General structure of the proposed system

A set of features are required to satisfy the needs in the proposed web-based HRMIS system, these features have been determined

through the author remark and interviews as described in previous section. The functional requirements include:

- Generate code for employees automatically.
- Management of employees' information.
- Process promotion and bonus for employees.
- Check employees' vacations.
- Generate CV online for each Employee through his/her portal.
- Generate statistical reports about employees.

The development of a web service requires a number of features that has included the following hardware and software tools. These are the very basic necessities of a proposed system design which is supposed to share data among its clients.

- Editors of programming languages for coding.
- Linux operating system (server site).
- Hypertext Markup Language (HTML).
- Personal Home Page (PHP).
- JavaScript including (Ajax, and jQuery).
- MySQL database.
- A Web browser for example Google Chrome, Mozilla Firefox, etc (client site).
- Server (minimum: hard=500 GB, RAM=4G).
- Network system (LAN, WAN).
- Any personal computer to access the system online (client site).

Table 1. SWOT Analysis Results

Helpful	Harmful
Strengths	Weaknesses
Sources of power that distinguish universities and justify their existence and secures their survival.	Elements that pull of the total balance and the need to develop and improve performance
1. Promotion and bonus system is a most important sub-system related to HRMIS. 2. The administration staff only has authority to use current system because of security.	1. There is no electronic system in universities for HRMIS. 2. In the current system there is no database for protecting staff information. 3. The staff takes much effort and time to check and update his/her personal information at the administration. 4. The staff cannot change their personal information but only through staff of the administration.
Opportunities	Threats or Risks
'The vacuum which can be blocked in order to continue to compete successfully'.	'Elements that threaten the university development and its scientific abilities'.
1. There is no alternative to the manual system currently and even in the near future. 2. With the rapidly growing number of university staff and structure of the university the current system cannot work regularly and effectively.	1. The system of ministry of higher education for employees' information management at all universities in Kurdistan Region.

The proposed system has two modules the first part for administration and the second part for staff portal, see Figure

2. The database of this structure has two schemas one schema for administration module which contains of 37 tables and another schema for staff portal module which contains of 14 tables. The publication of data is reduced according to the steps of normalization. Then the tables of two schemas are related through a primary key. Based on the literature of this study, this is the first time to design a web-based HRMIS for University Campus based on the Kurdish language as a graphical user interface. This language was used based on the end-user demands, which is the bedrock of HRMIS in each university of the Kurdistan Region, Iraq.
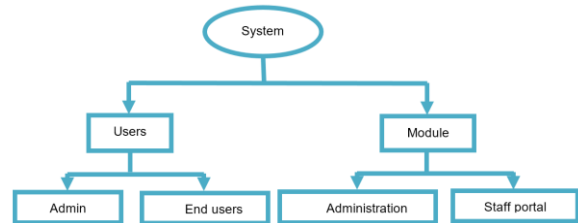

Figure 2. General structure of the proposed system

7.2. Implementation of the Proposed System

The proposed HRMIS system was implemented at university of Zakho and evaluated by using SUS to evaluate the scalability and usability of system. The proposed system has two interface modules. The first interface module is for administrative users. The second interface module is for academic staff. In both modules, the users can only have one level of using these modules which are admin and end-user levels. Therefore, the interface module of each user is differed from another based on their level of use. The interface home page of each module of the proposed system is listed below:

1. Interface module of administration

- End user: the end user has the privilege to login to the administration module interface by entering username and password, then, this user can generate a code for employees, add new employee, insert and edit employee's information, generate reports and see the alarm on the home page (see Figure 3).

Figure 3. Home Page of Administration Module for End Users

- Administrator: the administrator user has the same privilege of end user within create and edit user for administration module, staff portal module, and insert the University main information (see Figure 4).

Figure 4. Home Page of Administration Module for Administrator Users

2. Interface module of staff portal
   - Home page of staff portal Interface module for academic staff: It is a main page of staff portal system. To access such page, the user should have the username and password. After logging, the user can enter to other pages according to his privilege such as pages related to his/her personal CV, update some personal details (see Figure 5).
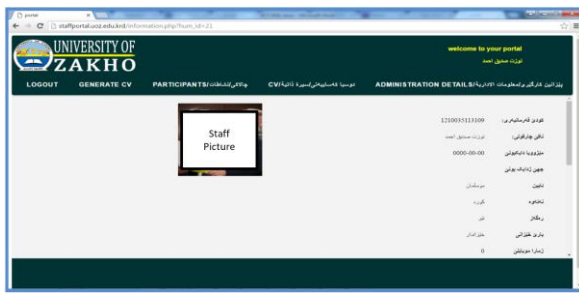

Figure 5. Home Page of Staff Portal Module for Academic Staff

7.3. Evaluation Results

In any system development, the evaluation process is essential to obtain feedback from the potential users to fulfil their requirements. These potential users refer to the university staff involved in the research as declared in the methodology section of this study. After implementation of the proposed HRMIS in the University of Zakho, the evaluation process is carried out. This evaluation was conducted to measure the usability of the system by using SUS tool. The SUS consists of ten items, with the odd-numbered items worded positively and the even-numbered items worded negatively, see Table 2.

Table 2. SUS 10-Questions

Questions
1. I think that I would like to use this system frequently
2. I found the system unnecessarily Complex
3. I thought the system was easy to use
4. I think that I would need the able to use this system support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.

6. I thought there was too much inconsistency in this system.

7. I would imagine that most people would learn to use this system very quickly.

8. I found the system very cumbersome to use.

9. I felt very confident using the System.

10. I needed to learn a lot of things before I could get going with this system.

Following the usability test, 16 of the users (i.e., university staff) were presented with a short survey based on the SUS. The SUS is a simple, ten-item scale that provides a global view of the subjective assessments of usability, which is calculated based on survey results. The SUS scores in this study (Table 3) followed a 87.5 scale (the higher the score is, the higher the level of satisfaction).

Table 3. SUS Scores by the Participants (N=16)

Participants	SUS scale	Participants	SUS scale
1	57.5	9	67.5
2	60	10	60
3	70	11	87.5
4	67.5	12	82.5
5	87.5	13	67.5
6	60	14	70
7	57.5	15	87.5
8	87.5	16	82.5
SUS Total Score	72.03		

Table 3 shows that the minimum SUS score is 57.5 and the maximum score is 87.5. Therefore, the total score of SUS is 72.03% indicating that the proposed HRMIS is generally acceptable in accordance with the rules of the SUS tool as a 70% acceptable ratio.

The following graph (see Figure 6) is based on the survey results of the user opinion on usability issues of the system. The survey questions talked the learnability and other aspects of usability of the system.
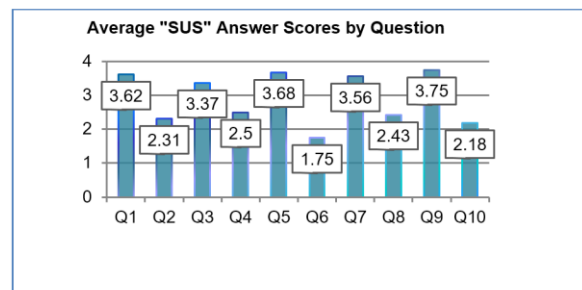

Figure 6. Average Survey Results (N=16)

Potential users indicated that the overall satisfaction of (HRMIS) is good. In accordance with high score in (Q1) and they would like to use this system frequently or in future. Furthermore, the participants found that the system is easy to use and simple (Q3,

Q2). Moreover, the answers of participants in (Q9) indicated that they feel very confident to use this system which is consistent with satisfaction of the users. In addition 60% of the participants showed that they would need assistance to use this system (Q4). This is due to the fact that most of the participants suggested that they need to develop their skills in order to accommodate the system efficiently. And this is often consistent with their requests that were made obvious during the interviews (Q10). And also participants agree by 90% in (Q5) that two sub-systems operate with integration and coordination in order to achieve the main objective of the overall system. Moreover, this is often consistent with the answers of (Q6) as they confirmed that the system modules are characterized by consistency. All participants in (Q7) agreed with the process of learning of use. But in return, (20%) of the respondents in (Q8) confirmed that the system is too cumbersome to require a great effort for learning. Indeed, all participants are satisfaction of using the proposed system, but they need more training courses to get computer skills and learn how to use such systems.

8. CONCLUSIONS

A new integrated web-based HRMIS system is developed to help the administrative units for managing the employees' information, enhancing the quality of service, saving the time, cost and maintaining data store system at the University Campus. The review of literature of this study is shown that many researchers were developed numerous systems in managing human resources within the university environment to facilitate the work of administrative staff. However, most of the universities in Kurdistan Region, Iraq, still relies a paper-based system in managing their employees' information. The strategic planning technique of SWOT is used to collect data and design a well management information system for human resources in the university. A mixed methods approach is adopted from using interviews, observations and SUS tools. The current study is the first to develop the HRMIS system based on the Kurdish language in their interfaces to facilitate the work of end users, which is the mother tongue language. After short time of testing and implementation of the proposed system, the evaluation process of usability system proceeded, and results of this process were acceptable and satisfactions. For future, the reliability of the proposed HRMIS will be conducted at the University by using reliability measurement tools after implementing such system for a long period of time. Further, a cloud computing-based management system for human resources will be proposed to reduce the cost and increment the security based of the cloud computing services provider.

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كورتيا لێكولينێ:

سەردەمێ ئەڤرو، هەمى رێڤەبەر د سیستەمێ زانیاریا كار دكەن دا كو كاریێن رێڤەبەریا وان ل جهێ كاری سەركەفتانە بیت. هەر وەسا، رێڤەبەریا سیستەمێن زانیاریا ئێك ژ جوورێن سیستەمێن زانیاریا دناڤ كومبیوتەری دا. لەورا، سیستەمێ زانیاریا یێن فەرمانبەرا بو ئێك ژ مكوومەترێن كار بو دابینكرنا زانیاریێت دورست لسەر فەرمانبەرا دناڤ هەر رێكخراوەكێ دا. بو ڤێ چەندێ، گەلەك ڤەكولەر هزر دان بو دورست كرنا ڤان جوورێن سیستەما یێن جوورا و جوور بو زانكویان. بێ گومان، هندەك زانكو و تایبەتی زانكویێن هەرێما كوردستانێ تا نوكە كارێ خوو بو رێڤەبەریا زانیاریێت فەرمانبەرا لسەر لاپەر ا دكەن. بو ڤێ چەندێ ئارمانجا ڤێ ڤەكولینێ بو دیاركرنا سیستەمێ نوكە بكارتێت دناڤ زانكوییێن دا چوونە دا كو رێكا دورست كرنا سیستەمەكێ كومبیوتەری لسەر تورا ئەنتەرنێتێ جێ بەجێ بیت لدیڤ داخازیا. بو خرڤەكرنا زانیاریا بو ڤێ ڤەكولینێ هاتە كرن ل سێ زانكویا سەرب پارێزگەها دهوكێ ڤەنە. ئەڤ زانیاریە هاتە خرڤەكرن برێكا (Mixed method). ئەوژی هاتیە كرن برێكا (qualitative)، وەك دیتن وئاخفتن دگەل جهیێن شولەژێ، یا دی ئەوە برێكا (quantitative) بكارئینانا (SUS) بودیاركرنا هێزا سیستەمێ دابینكری ژ لاین كارمەنداڤە پشتی بكارئینانێ. ئەڤكارە هاتە دروست كرن برێكەكا ستراتیجی ئەوژی (SWOT). ئەڤ سیستەمە هاتە دیتن وەك سیستەمەكێ پاش و لدیڤ داخازا كامەندیێن شولە ژێ ورێژا هێزا ڤی سیستەمی هاتە دیتن وەك ٧٢،٠٣%. بو پێشئێخستنا ڤی سیستەمی دێ بەردەوام بیت بو دیتنا موكومیا ڤێ د كاری دا.

خلاصة البحث:

في الوقت الحاضر، جميع المدراء يستخدمون نظم المعلومات لادارة منظماتهم بشكل كفؤ وفعال. وعلاوة على ذلك فان ادارة نظم المعلومات هي نوع من نظم المعلومات المحوسبة. فمن هنا بدأ عملية ادارة الموارد البشرية باستخدام نظم المعلوماتية للوصول الى المعلومات الدقيقة عن الموظفين في داخل بيئة المنظمة. لذلك، قام الكثير من الباحثين بافتراض عدة انظمة لادارة الموارد البشرية للجامعات. ولكن لحد الان هنالك بعض الجامعات ومن ضمنها الجامعات في منطقة كوردستان العراق يعتمدون على النظام الورقي في ادارة اعمالهم. فلذلك، يهدف هذه الدراسة الى معرفة وتحليل النظام الحالي المستخدم في الجامعة لادارة الموارد البشرية. ومن ثم يهدف الى بناء نظام حاسوبي يعتمد على تقنية الانترنيت وحسب متطلبات المستخدمين. وهذه المتطلبات يجمع عن استخدام الطريقة المدمجة (Mixed method). ويتم ذلك عن طريق المقابلات والملاحظات ومن ثم عن طريق استخدام الاستبيان لقياس مدى قبول استخدام النظام من قبل المعنيين. وتم ذلك من خلال استخدام الطريقة الاستراتيجية (SWOT) لتحليل البيئة. وبعد تطبيق النظام في احدى الجامعات المتضمن في هذه الدراسة، تبين ان النظام مقبول بنسبة (٧٢،٠٣%) حسب اراء المستخدمين. وهذا النظام يحتاج الى التطور وقياس الوثوقية بعد تطبيقها لمدة طويلة باحدى المقاييس المتبعة.