

**Designing and Implementations of Web-Based  
Student Information System: A Case Study for  
University of Sulaimaniyah in Kurdistan Region of  
Iraq**

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## **ABSTRACT**

The Student Information System is on the speed trend of taking over the crude way of performing some official works both many institutions. A large body of this study is centered on the positive impacts of ICT to the higher educational system after integration of technology and ICT tools into the system. Recently, a growing number of students in Sulaimaniyah University (more than 22000), the volume of paper used documents and data been increased significantly. Most students' information systems are web-based, allowing data to be updated and viewed across multiple devices. Accordingly, a new proposed system information system was designed and proposed to assist students in checking their academic result, administration announcements and lectures inputs. This can be easily viewed in a website on their devices at any times. A quantitative method was adopted, based on questionnaire that was distributed on a random sample of 500 students, lecturer and academic staff from seven departments in Sulaimaniyah University. In this research, ANOVA, T-testing and test of correlation between two or more items were used as well as SPSS for analyzing data and finding connection and correlation between them. The perception of students, instructors and administrative staff toward online students' information system in Sulaimaniyah University have been discussed and investigated. The Research findings indicated that applications of student information system instead of classical paper style, was considered highly important by all participant especially the students. The results yielded a general weighted mean of 4.26 that describes the respondents strongly agree that the developed system was acceptable by the student, academic staff and administrative staff in Sulaimaniyah University. Conclusively,

this study offered insights into the university staff and students perception about proposed web-based student information system.

**Keywords:** Information Technology Sulaimaniyah University, students, Administrative and Academic staff.

## ÖZ

Öğrenci Bilgi Sistemi, hem birçok kurumun, hem de bazı resmi yapıtların yapılma biçimini devralma eğilimindedir. Bu çalışmanın büyük bir kısmı, bilgi ve iletişim araçlarının sisteme entegrasyonu sonrasında BİT'in yüksek eğitim sistemine olumlu etkileri üzerine odaklanmıştır. Son zamanlarda, Süleymaniye Üniversitesi'nde (22.000'den fazla) öğrenci sayısı arttıkça, kağıtların hacmi önemli ölçüde arttırıldı. Çoğu öğrencinin bilgi sistemleri web tabanlı olup verilerin birden fazla cihazda güncellenmesini ve görüntülenmesini sağlar. Buna göre, öğrencilerin akademik sonuçlarını, yönetim duyurularını ve ders girişlerini kontrol etmelerinde yardımcı olmak için yeni önerilen bir sistem bilgi sistemi tasarlanmış ve önerilmiştir. Bu, bir web sitesindeki cihazlarında her zaman kolayca görüntülenebilir. Süleymaniye Üniversitesi'ndeki yedi bölümden 500 öğrenci, öğretim görevlisi ve akademik personelin rasgele bir örneğinde dağıtılan ankete dayalı olarak nicel bir yöntem benimsenmiştir. Bu araştırmada ANOVA, T-testi, iki veya daha fazla madde arasındaki korelasyon testi ve SPSS'nin yanı sıra verileri analiz etmek ve aralarında bağlantı ve korelasyon bulmak için kullanılmıştır. Sulimani Üniversitesi'ndeki öğrencilerin, öğretim elemanlarının ve idari personelin çevrimiçi öğrencilerin bilgi sistemlerine yönelik algıları tartışıldı ve araştırıldı. Araştırma bulguları, klasik kağıt stili yerine öğrenci bilgi sisteminin uygulanmasının, özellikle öğrencilerin katılımıyla çok önemli olduğunu düşündürmektedir. Sonuçlar, katılımcıların geliştirilen sistemin Süleymaniye Üniversitesi'ndeki öğrenci, akademik personel ve idari personel tarafından kabul edilebilir olduğunu kabul ettiğini açıklayan 4.26 genel ağırlıklı ortalaması vermiştir. Sonuç olarak, bu çalışma, üniversite personelinin ve öğrencilere

önerilen web tabanlı öğrenci bilgi sistemi hakkındaki algılamalarını ortayakoymuştur.

**Anahtar Kelimeler:** Bilgi Teknolojisi, Süleymaniyah Üniversitesi, öğrenciler, İdari ve Akademik personel.

## **DEDICATION**

For my father Fadhil A. Lawa and mother Media Faraj Sheriff,

To my three nice and lovely sisters (Arina, Lava and Land).

All members of Lawa and Sheriff families and all of my friends, words fail but  
thank you for making this possible.

Now, let's enjoy our next trip in life.

Nawroz Fadhil Lawa

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## **LIST OF ABBREVIATIONS**

ICT	Information communication technology
E-learning	Electronic learning
MVC	Model View Controller
SIS	Student Information System
UNESCO	United Nations Educational Scientific and Cultural Organization
DBIR	Design-Based Implementation Research
ANOVA	Analysis of Variance
SPSS	Statistical Package for the Social Sciences
HTML	Hyper-text markup language
CSS	Cascading Style Sheet
JS	JavaScript
ASP	Active Server Page (Microsoft script engine)
SQL	Structured Query Language
DBMS	Database Management System
VB	Visual Basic

# Chapter 1

## INTRODUCTION

### 1.1 Background

The technology has been changing all over the world. Although in developing countries these changes are not happening as fast as in developed countries but at uneven pace. Education sector also has witnessed an enormous change in many developing countries. Although compared to developed countries these changes are far-behind but being lagged in technology is so much better than not utilizing it at all.

Today in developing countries' higher institutions, computers are extensively used for educational and administrative purposes. As it mentioned by (Barta et al., 1995), computers are the most effective tools in universities for general administration, financing, students, administration data, personnel record maintenance and library system. In fact, technology can be utilized right from the student's admission until their graduation in educational institutions (Maki, 2008). Many studies reveal that integration of Information and Communication technologies (ICT) to the administrative and teaching activity in higher education can increase the functionality and operational speed of these institutes (Salerno 2009) (Singh, 2008). According to Zainally (2008), ICT can provide many facilities and possibilities for university administrative works. Usage of ICT in universities involves better planning, monitoring and analyzing the core functions of university, using technology (UNESCO, 2009). Student information system is a general information



system for entering, storing, maintaining and inquiry of student's information. Almost all higher educational institutes in developed countries have such computerized system but in developing countries this system is still paper-based, manual and excruciating slow. A central computerized web-based student information system can help enormously in reducing time of searching for information, processing and overall Registration exercise.

Student administration is an important part of student information system which can be categorized into many activities from, admission process to the learning activities. Integration of technology to the student administration system can increase the efficiency of the system and optimal utilization of the university resources.

Greater part of this work is focused on the advantages that can be brought to the higher education system after the integration of technology and ICT tools. Also, the structure of Information system and the functionality of it in admission process of students in Sulaimaniyah University is equally discussed in this study.

## **1.2 Problem Statement**

Sulaimaniyah University has about 22000 students who study different subjects in different faculties. Recently, by growing number of students in this university, the volume of documents and data has increased significantly and this has made the whole process of query, analysis and maintenance very difficult. These challenges could be overcome with proper usage of technology and ICT tools in the educational and administration processes of this university.

This Research discusses the design and implementation of web-based student information system and in what ways the system will be of advantages to both university staff and students.

### **1.3 Research Goal and Objectives**

The main objective of this study is to implementation and design a web-based student information system for Sulaimaniyah University. This system is expected to increase the efficiency of the registration process by increasing the speed of work, computerize and centralize the whole procedure. The following specific objectives were defined for this study:

- 1) Identifying the problems encountered in current paper-based registration system.
- 2) Identifying the required student information needed for online system.
- 3) Specifying the proper identification and security measures needed for such system.
- 4) Specifying the advantages and disadvantages of centralized online student information system (SIS).
- 5) Implementation and design system suitable with administrative staff, instructors and student needs.

### **1.4 Research Questions**

#### 1. Implementation steps for students

1.1 How the new student register in the university using his formal University and department code?

1.2 After first log in how the student gets his SIS code and password to use it properly?

1.3 What are the main interfaces available for the student s to be sued during his academic life?

- 1.4 How students can uploads /download data and information?
- 1.5 How the student can interact with academic and administration staffs?
2. Assessment of the System according to Students opinions.
  - 2.1 What is Student Information System?
  - 2.2 W are the advantages and disadvantages of using Student Information System?
  - 2.3 Do you like the main frameworks of this Student Information System?
  - 2.4 Can you use this system easily and any time.
  - 2.5 Relatively to paper based style, This SIS is more efficient and applicable?
  - 2.6 Which part of SIS should be expanded and which part should be removed.
3. Implementations steps for academic and administration staffs Part
  - 3.1 All university Academics and administration staffs will get their SIS code and passwords through formal email from their departments or university organizations?
  - 3.2 Each academic staff will starts using his interface after log into SIS.
  - 3.3 Each academic staff will be able to upload and download his data and information as listed in the interface?
  - 3.4 Each administration staff will starts using his interface after log into SIS, using his formal code?
  - 3.5 Each academic staff will be able to upload and download his data and information as listed in the interface?
  - 3.6 The administration staff in the registration and /or departments and scientific department will check the data and confirm all the information, Grade ranks and certifications for each student from first year to Graduation date?

4. Assessment of the system according to academic and administration staff ideas
  - 4.1 Do you think web based-student information improve education system?
  - 4.2 What is your idea about the main interfaces and proposed SIS framework, with special attentions to your position interfaces?
  - 4.3 Do you think this SIS will be better alternative to the classical paper style?
  - 4.4 Which part you wish to be expand in this system, and which part should be reduced or removed?
  - 4.5 What is the department's role in student information system?
  - 4.6 How does the web-based system information support the academic department in data transfer?
  - 4.7. Do you think this SIS will decrease the complex steps in higher educations to easier and less time effective procedures?
  - 4.8 What is the importance of the web site for future research about student information system?
  - 4.7 How can the website be integrated with other educational trends?

### **1.5 Significance of the study**

The overall significance of this study is in the result and potential of proposed system in improving the speed, accuracy and simplifying the current student information system. Computerizing the current paper-based student's information system can minimize the information overload and make the data control much easier. The proposed system will also encourage the centralization of the system to make the coordination process simple and the whole entering, storing, retrieving and evaluating the information will be done in much faster, organized and simpler way.

This study will examine how the instructors, administrative staff and students are using current paper-based system and how integration of technology and ICT in this system, can improve the quality, control, security, performance and speed of the traditional system.

### **1.6 Methodology of the study**

This study was conducted in quantitative framework and questionnaire was used as an instrument of data collection. The data was gathered from the students, instructors and administrative staff in Sulaimaniyah University. The questionnaire consists of five parts. The first part was about the demographic information of the participant. In the second part, researcher gathered information about experience of population sample on using current paper-based system. The third part of the questionnaire is about contribution of proposed system to the student information system of Sulaimaniyah University, and the last part of questionnaires is to collect data about quality and acceptability of proposed system. For having more accurate and successful questionnaires' results, researcher explained the purpose of research briefly and guided the users in steps of using proposed system.

### **1.7 Study Sample**

The participants in this research were students, instructors and administrative staff of faculty of physical and basic education in Sulaimaniyah University of Kurdistan. Since the acceptance of each department was necessary for ethical form, only population of cooperative department in "computer science", "English Language", "Mathematical science", "Physical education", "Early childhood education", "Kurdish Language", "Social Science", "Art education" departments were considered in this research. From population of 500 students and staff in these

departments only 268 people accepted to test the proposed system and answer the questions in the questionnaires.

## **1.8 Limitations**

Student information system is one of the most essential requirements of any university and the fact that Sulaimaniyah University is still using paper-based information system for registration, processing and searching data, is evidence of poor planning, management and equipment in this university. Other challenges were lack of enough computer devices, inconsistency internet access and insufficient computer literate people in this university.

## **1.10 Key Definition**

ICT: Information communication technology is the term refers to the communications hardware and software.

E-learning: Electronic learning is any media used in education over the internet

SIS: Student information system is an application that provides personal and academic data about students to help educational institutes processes to be done faster.

## **Chapter 2**

### **LITERATURE REVIEW**

Today the changes in the information technology industries allow higher education institutions to think differently about their educational decision making. This is because Student information system works as data mining tool that provides institutions with accurate data about application, registration and graduation of the students. Managements of the Universities are expected to have logical tool for assessments and evaluation of the effectiveness of their strategies. The implementation of systematic information system improves the role of data accountability in the organization and therefore increases student learning and satisfaction from the system (Mitchell, Lee, & Herman, 2000). Recently, the growing number of students in many universities forces these institutions to look for a central information system which can store, process, retrieve and evaluate data in an efficient and timely manner. Such systems can help to improve traditional registration and management systems. This is why most universities in developed countries are already switched to online centralized systems (Ackley 2001, Thorn 2002).

In under developed countries, the first instinct of people is to continue doing things in the same way that they have done it for many years. University management, administrative staff, instructors and students are not different from this attitude. Many of them consider the old way more comfortable, familiar and cheaper than the new ways that are being used in developed countries (Hawken, P., Lovins, A. B., &

Lovins, L. H. (2013). New technologies in these countries still face the great resistance. In recent years, after decades of traditional learning and administrations many countries have embrace the new promising educational approaches and technologies in their higher education systems (Sanati, 2005). Perret (2012) mentioned that the integration of SIS with resources to higher education systems has proven that certain group of students can acquire and gain effective literacy skills through the SIS. The process and understanding the value of education service crafted to provide best teachings are equally as possible through SIS. Cosidon (2016) found and concluded that the developed SIS provides greater satisfactions to the users compared to the previous system. This can be measured through the efficient querying of student information records, keeping the student records in a more secured manner with the help of SIS.

Although ICT development in Kurdistan is in very early stages, but considering the usage and the change that will be brought about by SIS, it will help the Kurdish society to keep up with 21<sup>st</sup> century technology and ICT standards. According to the results of the research written by Kakbra & Sidqi (2013) which has done in Kurdish society, integration of technology in the higher education and universities of Kurdistan can push the educated generation of this country in adapting to the technology. In this regard, the researcher integrates technology in current student information system of Sulaimaniyah University to increase the speed, accuracy, quality and convenient of this system.

In this chapter, the researcher will briefly have an overview on advantages of using ICT tools in higher education system and the challenges that these institutions face in implementing such systems. Moreover, the information systems and its usages in the



educational will be introduced and explained. Finally, current student information system of the Sulaimaniyah University and the proposed system will be compared and discussed.

Gantos et al., (2015) found and concluded that the design and development of a mobile web-based student integrated information system was among the requirements to achieve the functional system. In additions to that, the evaluated system showed that the respondents strongly agreed with the system's acceptability in terms of functionality, reliability, efficiency, usability, maintainability and portability.

Arabie (2016) recognized that with the rapid growth and higher rates of attention paid to online education, higher education administrations are placing great emphasis on student retention. More researches are needed for better understanding of how to improve student satisfaction, and ultimately retention. In order to better retain students, education managements need to consider that students are customers of online learning. Fritz (2016) demonstrates how instructional technology impacts teaching and learning, with special attention to learning analytics. This can be implemented to encourage student responsibility for learning and identify effective faculty course designs that help.

## **2.1 Web 2.0 Technology Adaptation in Student Information in Higher Education**

Many higher educational institutions in the past decade have shifted their educational structure into modern technologies. Web 2.0 tools were one of the main platforms that were integrated in the higher education institutions for improving the teaching and learning activities. What is important is that in 21<sup>st</sup> century the pedagogical

change in our educational system is inevitable and required from both teachers and students to adopt themselves to these changes. According to Grosseck (2009), the use of web 2.0 tools technologies makes students digitally fluent and ready to face the challenges in their future job. Familiarity with such technologies gives the technology base to the students to be more creative, corporative and constructive. As it was also mentioned by Boulos et al., (2006) the main achievement of web 2.0 tools in learning process was '*ability*'. Students now can access their learning materials and their instructors' feedbacks from anyplace at any time. These kinds of technologies motivate the students to be more active and engaged with their learning materials, and have access to many teaching/learning styles suitable for their own way of learning. Many students nowadays use web 2.0 tools as a part of their daily life, and that is why utilizing these tools for educational purposes could provide great advantages for higher educational institutions. Web 2.0 based learning management systems such as Blackboard and Moodle have played an important role in incorporating active participants in the classrooms (Cain & Fox, 2009). Moreover, participatory applications in Web 2.0 could offer a flexible learning opportunity out of classroom formality for students.

However, we should not forget that these technologies can only be effective when it is introduced properly to both students and instructors. This is because as much exciting and innovative these technologies are, if the user does not know how to work with them, they can create additional problems to current dysfunctional process of traditional learning. Awareness about the functionality of the different web 2.0 tools can provide a situation for higher education institutions to choose an appropriate instructional strategy and technology.

### **2.1.1 Benefit of Integrating ICT into a Higher Education System**

Moving from traditional paper-based system to modern computerized system in educational institutions can bring many performance and pedagogical advantages. As it was mentioned by Stephenson (2001), in the classroom, using of ICT tool can increase the access of students and instructors to variety of resources and types which can lead to better performance of students. Many scholars like (Andres, 2004), described ICT tools as helper to support learning and teaching in many different terms such as web-learning, virtual class, online instruction and e-learning. Moreover, for many years, the traditional pedagogy of universities was teacher-centered but through technology-facilitated approach leaning now can be student-center and more adaptive to the students need and learning style (Oliver, 2002). The integration of technology to the classrooms also gives this opportunity to the students to have access to their learning materials, E-book, Journals, online database and other forms of online resources. This could be achieved whenever and wherever they need it, inside or outside of the university. Giving them freedom of choice can be a huge motivation for students (Holmes and Gardner, 2006). As a matter of fact, overall, the main advantages of integrating an ICT tools in higher educational system can enhance the quality of teaching and learning and improving students' participation (Larsen & Vincent-lancrin, 2005).

As it was mentioned by Taylor (2002), educational institutions should utilize ICT tools in their administrative and educational programs. These tools give the universities the ability to extend the educational research beyond the location limit. This can also reduce the expenses of the university in the long run. Also, utilizing ICT tools in the classrooms enable students to be more collaborative. This can hugely reflect as a constructivist approach to the education (Freedman, 2016). ICT

can also accumulate the sharing experiences and resources (Blogs, Wikis, and YouTube) and minimize the skills needed for that (Grosseck, 2009).

### **2.1.2 Challenges of Integrating ICT into a Student Information System in Higher education**

The challenges in utilization ICT tools in the higher education system can be divided into two parts; *pedagogical problems* and *technical problems*. According to Mohanty (2016), the attitude of teachers and whole educational actors toward ICT can vary and deeply affect the success rate of these technologies. If the teachers believe that ICT can be potential tool to aid learning process, then there are more chances that should be taken to use these technologies in order to increase the productivity of students significantly. However, the lack of technological and computer skills among teachers and administrative staff could build a huge barrier in using these technologies efficiently and effectively. In addition to that, for having a perfect experience with ICT, it is compulsory to have internet connection and the cost for network foundations and broadband services should also be considered (Grosseck, 2009).

In technical part, according to Alqurshi (2009), the main reasons to ignore ICT tools are the change resistance, technophobia and lack of user's computer skills (whether the user is teacher, student or administrative staff). Moreover, as it was mentioned by Mohanty (2016), the main setback for usage of ICT in the classroom is the fact that the foundation and maintenance of such technologies can be quite costly. However, with the new technologies and invention of cloud computing there are some ways to decrease this cost.

Although ICT can improve the teaching and learning quality significantly, however these technologies can be useful if only the users know how to really use them. Moreover, the university has to improve its hardware and software equipment's which can be costly steps for many higher educational institutions.

### **2.1.3 Technology in Sulaimaniyah University**

Under developed countries are still at the beginning of usage of technology and more specifically ICT tools in their higher educational systems. In fact, most of under developed countries do not have habit of using ICT tools and technology in their classrooms, therefore, majority of teachers, administrative staff and students are not introduced properly to such systems.

## **2.3 Information System**

With the invention and development of computer, network technology and internet, mankind has entered into the era of digital information system. Information system is designed to provide information that is needed for managers and administrators to make logical decisions. According to Zwass (2016) "An information system is a set of interrelated components that collect, manipulate, store data and disseminate information and provide a feedback mechanism to monitor performance". Laudon & Laudon (2002), defined information system as connected components that are able to collect, process, store and distribute information to support decision makers achieving their organization's goals. In fact, Information system is the backbone of every organization and institution. Information system is composed from five main components which are: resources, hardware, software, data and network.

### **2.3.1 Student Information System**

Information system is an inseparable part of higher educational institutions, to provide sufficient information query tools for both system administrators and

management of the university. The population growth of students in the universities makes it crucial for these institutions to find more effective way to manage students' information. As it was also mentioned by Dacuycuy-Pacio (2013), information about students is vital, time-consuming and to manage that we need the most effective tools for aiding both staff and students. Development of student information system can help in modifying, editing and searching information in the organizations with a minimum time. Moreover, information system helps in managing and analyzing students' records in easy and more accurate way (Mei-shan, Chang-li & Jing, 2012). According to vangalista (2008), the university information system should be a secure online web-based system which allows users to access grades, reports, transcripts and schedule of classes.

As it was mentioned by Desousa (2008), web-based student information system has standard advantages such as:

- 1) Web-based information system is compatible with any platform (Mac, Windows, Linux)
- 2) Do not need any separate software to install.
- 3) Web-based information system is fast, efficient and accurate.
- 4) Much more secure than paper-based information system.
- 5) Cost effective and need less hardware and software requirement and maintenance.
- 6) Easy to use by anybody with minimum computer literacy.

Considering the above mentioned advantages, the researcher has decided to design and develop brand new web-based information system.

### **2.3.2 Functionality of Student Information System**

According to A Kasozi (2006), Asogwa et al (2015), well-structured student's information system has to offer various capabilities such as:

- Ability to capture and maintain the students' data.
- Ability to coordinate all categories of students' information.
- Supporting 24/7 access to information for students and instructors through web.
- Record the biometric information of students for further security
- Ability to get the inquiries from both students and instructors.
- Adding new students to the system.
- Ability to manage and analyze the administration process.
- Ability to create class and teacher schedule.
- Ability for save the examination, grades and academic progression.
- Ability to save and report the attendance records.
- Record communicating history of students and instructors.
- Ability to provide special educational services.

### **2.3.3 Paper-based Student Information System vs. Proposed SIS**

The increasing pervasiveness of internet all over the world has made the web based platforms the best opportunity for institutions like universities, to base their core applications online. There are many advantages on using computerized information system over paper-based system, as it is listed below (Asogwa et al., 2015):

- 1) There is a significant difference in speed of process in computerized system against paper-based system.
- 2) Accuracy of computerized system is drastically higher than paper based system.

- 3) Although it looks like the paper-based system is cheaper but in time and with the growing number of students it is impossible to use traditional way to process the data.
- 4) One of the advantages of computer-based information system is its ability to keep the backup of records in safe and secure situation which cannot be provided in paper-based system.

#### **2.3.4 Student Information System Review**

As it was mentioned by Pan (2004), universities and businesses cannot function effectively without automated information processing system. However, in many developed countries the concept of computerized information system is new. This is applicable to Sulaimaniyah University which is still using paper-based student information system. In this way; creation, modifying and searching of student's information is a boring and repetitive job for both instructors and administrative staff. Moreover, with increasing population of students in Sulaimaniyah University makes it very difficult job for administrative staffs to register and manage students' information in traditional way. Proposed system will highly increase the functionality. The speed of the processes of administrative and academic staffs will increase, and burden of the workload and pressure will significantly decrease in this way. Also, the human errors such as data processing error and data accuracy error will decrease to its minimum by using computerized student information system. In addition, students' data transfer and access between faculties and departments in proposed system will be all central and less time consuming (Zhao & Sun, 2014).

Zhao et al., (2014) in his research has developed a student information management system. According to him traditional way of managing the schools is one big drawback for the managements which put too much pressure and workload on staff.



He also mentioned that manual student information system could suffer from human errors and lack of data accuracy. He said that in traditional system the information flow was not smooth, and there was no safe backup and security for the student's documents. In his findings he concluded that his computerized student information system can improve the efficacy of the system in query, reporting and automated output. As a result of this, the workload of the school staff will be decrease and they would have more time to concentrate on their teaching, research and management of the classes.

Moreover, Saeed & Abdinnour (2013), in their research on self-service information system, focused on post-adaptation of information system. In the research they did evaluation of the user's acceptance from designed information system. Their result showed that some users do prefer to stay in their comfort zone even though the system is designed properly, user-friendly and fully functional. The study has concluded that information system usage has a direct effect with voluntariness of use, satisfaction and knowledge and training of user about designed information system. According to this research, users will be more receptive when they have previous training on information system and the system meet their expectations.

Dippel et al., (2008) in his research has designed and implemented a web based portal for Technical University of Ilmenau. The system was designed to be a central information source for students with functionality such as course catalogs, career opportunity, e-assessment unit and access to university e-learning system. Researcher then put the most of his focus on the e-assessment application which helps students to have a feedback about their knowledge deficits and help them to choose the course which is more appropriate for them. Odsinasa (2010) on her research improved the

existing student information system of her university in Philippines. According to her the current computerized student information system of her university had very low extent in functionality and security. Odsinasa (2010) finds in her research that re-develops the user satisfaction of students significantly increased and grow were noticed in reliability and accuracy of information. Odsinasa (2010) also mention that for maximizing the benefits of student information system, enrolment procedure has to include the personal information, student's subject of enrolment, class schedule, student performance and student attendance.

## **Chapter 3**

### **METHODOLOGY**

#### **3.1 Research Design**

According to the variables and elements of this research, quantitative case study methodology is used. Quantitative research methodology is a valuable way to conduct research in educational and science projects. The case study approach is used in this research because of its attention to the “How” and “Why” questions that are raised in a research work. Case study approach prevents manipulation of behaviors and helps to reflect the true perceptions of participants involved in the research. Moreover, the boundaries and limitations are not clear between the phenomenon (Yin, 2003). This research was designed for Sulaimaniyah University of Kurdistan therefore data was gathered from the population of students and instructors in Sulaimaniyah University through the use of Questionnaires.

#### **3.2 Design Based Implantation**

The designing of effective, scalable, and sustainable policies and programs in education, especially in higher education institutes of high challenges. One design or program could not be suitable for all conditions and education environments. Therefore, programs that work in one university may not work in another. The sponsored programs or designs may not last once funding ends. Multi resources are required for such design and know-how than individual researchers and educators can provide to make them work and acceptable by all users (students, administration and academic staffs).

Accordingly, the Design-Based Implementation Research (DBIR) is an approach to organizing research and development intended to solve those obstacles and challenges. It is an integration approach to relating research and practice that is collaborative, iterative, and grounded in systematic inquiry. DBIR mostly builds the capacity of systems to engage in continuous improvement, that is give rise to best methods in transformation of teaching and learning towards new developed phases.

This web site provides effective resources and links to assist users learn about DBIR. It is aimed at researchers, students and educational leaders in departments (and /Or College) districts, and out of university settings. There are case examples, as well as specific tools and routines for organizing research and development projects that maintain integrity to the four principles of DBIR. (Exact words from <http://learndbir.org>)

### **3.3 Participants**

In this study the population consists of randomly selected students, instructors and administrative staff in Sulaimaniyah University of Kurdistan. According to the Table below, almost 270 participants were involved in this research. Table 1 indicates that 41.4 percent of our sampling population falls within the age range of (18-22), 27.6 percent were between (23-29) and only 10, 4 percent were between (30-37), the age range of (50-59) had only 7.5 percent and finally the age range of 60+ years old had only 1.1 percent. Table 1 shows that almost 70 percent of the population taken were less than 30 years old in age while 30 percent of the population aged above 30.

Table 1. Participant Age Demographics

Age	n/f	%
18-22	111	41.4
23-29	74	27.6
30-37	28	10.4
38-49	32	11.9
50-59	20	7.5
60+	3	1.1
<b>Total</b>	<b>268</b>	<b>100.0</b>

Table 2 shows the gender frequency of our research sample and according to the findings; male population has the majority with 51.9 percent over female population with 48.1 percent.

Table 2. Participant Gender Demographics

Gender	n/f	%
Female	129	48.1
Male	139	51.9
<b>Total</b>	<b>268</b>	<b>100.0</b>

Table 3 shows the education level of the participants and according to it only 1.1 percent of the population having Post-PhD level, 6.3 percent of the population having Diploma level, the Master degree population is only 9.0 percent and the population of PhD level is 12.7 percent. However, the participants with bachelor degree level have the majority of population with 70.9 percent.

Table 3. Participant Education Level

<b>Education Level</b>	<b>n/f</b>	<b>%</b>
Diploma	17	6.3
Bachelor	190	70.9
Master	24	9.0
PhD	34	12.7
Post-PhD	3	1.1
<b>Total</b>	<b>268</b>	<b>100.0</b>

The distribution of participants according to their department of study varies. According to Table 4, 27.6 percent of participants were studying in Physical education, and 16.0 percent were in computer science. Also, 12.3 percent were studying in English language and 10.1 percent were studying in mathematical science. The rest of the population was from Kurdish language, art education and social science with 9.7 percent, 8.2 percent and 8.6 percent had the lowest percentage in the population.

Table 4. Participants Department of study

<b>Department of study</b>	<b>n/f</b>	<b>%</b>
Computer Science	43	16.0
Art Education	22	8.2
English Language	33	12.3
Kindergarten	20	7.5
Kurdish Language	26	9.7
Mathematical Sciences	27	10.1
Physical Education	74	27.6
Social Sciences	23	8.6
<b>Total</b>	<b>268</b>	<b>100.0</b>

Table 5 shows the position of the participants in Sulaimaniyah University. According to this table, more than 57 percent of the participants were students and 34.7 percent were teachers in Sulaimaniyah University. Only 7.8 percent of the population was from administrative staff in Sulaimaniyah University.

**Table 5. Participants Position in the University**

<b>Position in the University</b>	<b>n/f</b>	<b>%</b>
Administrative staff	21	7.8
Student	154	57.5
Instructor	93	34.7
<b>Total</b>	<b>268</b>	<b>100.0</b>

The experience level of the participants varies. As it is shown in Table 6, majority of population with 40.7 percent had only (1-3) years of experience in the university and around 23 percent had no experience at all. Also, 13.4 percent of population had (4-8) years of experience. However, 11.9 percent of participants had more than 16 years of experience in the university.

**Table 6. Participants Experience Level**

<b>Experience Level</b>	<b>n/f</b>	<b>%</b>
No experience	62	23.1
1-3	109	40.7
4-8	36	13.4
9-12	15	5.6
13-19	14	5.2
+16	32	11.9
<b>Total</b>	<b>268</b>	<b>100.0</b>

Almost 90 percent of the participants believed that they have gotten sufficient computer skills, and only 10 percent believed they were not familiar with computer literacy.

**Table 7. Computer Literacy Skill of Participants**

<b>Computer Literacy Skill</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>
Yes	239	89.2	89.2
No	29	10.8	10.8
<b>Total</b>	<b>268</b>	<b>100.0</b>	<b>100.0</b>

Combination of demographic information above shows that our sample is majorly people who are young, medium level educated, less experience and familiar with computers.

### **3.4 Data Collection Method**

For the design based implementation, the researcher links the functionality of the implemented application with the registration process needs of Sulaimaniyah University. The university follow manual procedure for registration and student information. In the design based, the researcher automates the manual procedure. After designing and implementing the SIS, the researcher rechecks the functionality and verify it with existing manual process with the help of administrative staff.

In this research, only quantitative methods have been chosen to gather data. The data used in this research was collected through 14 questions. Questions 1-8 were designed to gather information about the demographic of the participants. Questions 9-12 were about current student information system of the Sulaimaniyah University



and the last two questions were likert scale based and each one had 15 and 13 question and the perception of the participants about proposed system functionality.

### **3.5 Data Collection Procedure**

For understanding the complex issue or objectives of the study, case study is used to emphasize detailed contextual analysis in limited number of participants, events or condition. According to Yin (1984), case study research is an empirical inquiry which investigates a contemporary phenomenon in real life context. The main strength of the case study is involvement of multiple sources and techniques in data gathering process. Quantitative analysis is normally used in case study data gathering. Tools to gather this data can include survey and questionnaires. In this research, the researcher has distributed questionnaire to students, instructors and administrative staff of Sulaimaniyah University. These questionnaires' were designed and gathered by paper based and then entered to SPSS application for data analysis.

#### **3.5.1 Quantitative data collection: Questionnaire**

Questionnaire is an important method of research that aids the researcher in the process gathering primary data. It is a tool for gathering numerical data and it is analyzed using mathematical and statistical methods. For this research, 14 questions were designed. The first eight questions are about demographic information of the participants and questions 9 to 12 are about experience of participants about current students' information system, the last two questions 13 and 14 are likert-type questions which provided an overview about functionality and user satisfaction about proposed system.

### **3.6 Data Analysis**

There are many statistical techniques for analyzing the quantitative data. In this research, ANOVA, T-testing and test of correlation between two or more items were

considered appropriate and used. The Researcher used SPSS (Statistics is a software package) for analyzing data and finding connection and correlation between them.

### **3.7 Validity and Reliability**

The validity and reliability of data relates to the method of data gathering and source of that data. With assessment of the data source we can be ensure from the validity and reliability of our research. According to Dochartaigh (2002), the testing of reliability and validity refers to testing the authenticity and reputation of the source.

## Chapter 4

### RESULTS AND DISCUSSIONS

#### 4.1 Implementation

This study provides framework to develop Student Information System. The Research explains in details the reason for choosing specific development tools. The structure of development is represented in three different stages (NUMBER THESE STAGES). The first stage is interface development, second stage is database development and the last stage is coding.

##### 4.1.1 Interface Development

Starting the development with interface gives advantage in controlling the code and knowing what exactly the functions needed to be developed. For example, if submit button is designed and located in specific place, it easily can be coded later on because the function is obvious. Students' and Staffs' interaction and how they think while are using web-application need to be understood clearly before design. Mostly, Students' and Staffs' work style in an online environment not different from normal users' habits. Usually, users try to find them interest subject within the page and they click on the first link that meet or related to them subject. Most of the users they don't even look at the rest of the page. Nielsen (1999) noted that web-application should meet user's expectation otherwise application fails and if the user can't get the knowledge with easy navigation he/she will leave the site. According to Friedman (2008) users don't read the content of the page, instead they scan and analyze the content. Most of online users follow them intuition to build knowledge

and experience in online environment. Krug (2014) explain that the users don't read what is in the page but they search for what they need "If we find something that works, we stick on it. It doesn't matter to us if we understand how things work, as long as we can use them. If your audience is going to act like you're designing billboard, then design great billboards."

To design and develop useable web application, Krug (2014) comes out with Krug 3 laws of usability. The 3 laws are "1. Don't make me think. 2. It doesn't matter how many times, I have to click, as long as each click is a mindless, unambiguous choice. Get rid of half the words on each page, and then get rid of half of what is left"

According to Friedman (2008), users are more comfortable and attracted to work with modern design with large buttons, images, visual effects etc... The modern web application with "keep it simple" principle can make great user friendly design. When user at the end of the day is looking for specific information or function in web application, then user interface should help them to find it.

Hyper-text markup language 5(HTML5), cascading style sheet 3(CSS3) and JavaScript (JS) will be used to design and develop the interface. HTML5 and CSS3 codes are easy to read and very simple to write and understand. With using HTML5 with CSS3, the user doesn't need any plug-ins to be installed in order to view the content. Compatibility is one of the most important subjects in web development, HTML5 and CSS help in developing a web page combatable with all browsers' version. Handling media in HTML5 and CSS3 are so efficient providing many choices for developer. Using CSS libraries that available online give an advantage of

saving time in writing hundreds of lines of codes. For this purpose, Bootstrap Library to develop modern web application is used. (WHERE IS THE SECONG STAGE)

#### **4.1.2 Database Development**

Depending on the programming language the database management system is selected. However, developer can use any database needed to implement the system. Microsoft SQL server 2014 (MsSQL 2014) was selected. Many reasons motivate to use this Database Management system (DBMS). The most important reason is using ASP.Net MVC as programming language. MsSQL works well with Asp.Net with high performance. In MsSQL 2014 there are remarkable improvement on security, backup and performance. United Airlines is one of the most famous users of MsSQL 2014. Eric Craig (Managing Director of Enterprise Architecture at United Airlines) says “We have the most comprehensive network on earth, but that’s not enough. We have to earn our customers’ business on each and every flight with the great on-time performance, excellent customer service, and innovative features our customers want...” (Microsoft, 2014). In term of security, MsSQL 2014 allows developer to create security policy and automatically can be applied to all databases.

Performance is important term to make the system success. In MsSQL 2014 unlike other DBMS, developer can modify and update the table instead recreating it. MsSQL 2014 has integrated database engine in-memory data processing in order to do transaction faster.

#### **4.1.3 Coding**

Coding is the core and main stage of development. Selection of the right programming language to develop the system can increase performance and reduce time. Developer should be comfortable with the programming language he/she choose. In this system ASP.Net MVC with C# was chosen because it is to develop

framework based on MVC concept. MVC is one model of ASP.Net programming. It is using (Model View Controller) each one of them responsible of part of the application (Fig.1).

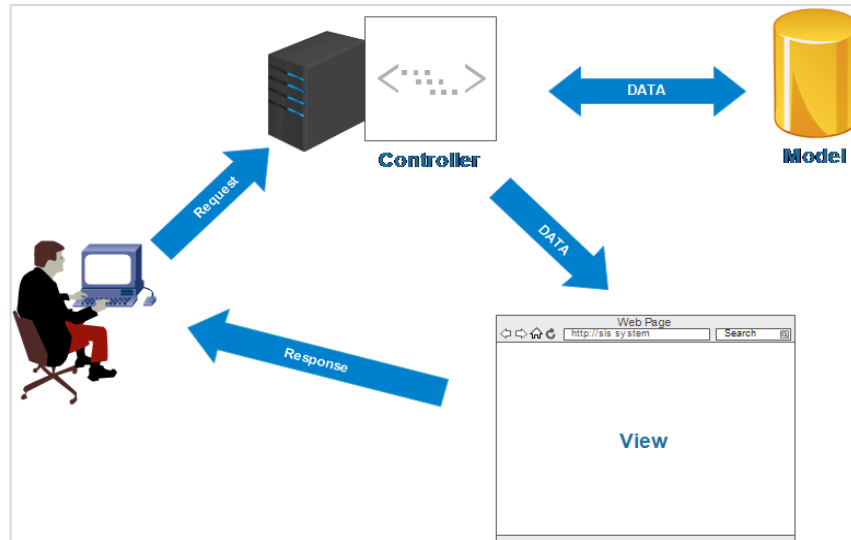


Figure 1. Implantation of Model view controller (MVC)

Using MVC model, developer brings database and records to be presented in Model which represents the core of the application. The View part displays the data received from controller (database record). Controller usually handles user interaction and input. Controller has two connection ways to the model (read and write). Controller main function is to receive request from user direct it to model then send response to view (Fig. 1). MVC model separation helps development group to manage any application with one aspect at the time. The development group can separate the task without need to interfere each other works. For example, one can work on model (data source) another member can work on view (design) while the third can work on coding.

Set of stages supposed to be followed as framework to develop SIS using MVC model. First we import the design inside View folder, second we import and connect

the database to system and store it in Model folder. In this stage the developer is ready to work with controller.

The actual coding will be inside the controller. Either VB or C# as programming language should be used to develop the system. In either language, the system has two different functions that can be implemented for each View. One is to read from model (database) and other to post to it.

## **4.2 Questionnaire Results**

The result of the questionnaire analysis showed us that the proposed system has more importance and functionality for the administrative staff and instructors than students, therefore the age range of participants who were satisfied with the design and functionality of the system were high. Moreover, the experience level of participants had a direct effect on the acceptance of the proposed system. That is why the participants with higher experience were more aware of contributions of such system to the academic field. Although it is understandable that participants with foundation in computer field have more knowledge and interest in the computerized systems. Interestingly, other departments except Kurdish language were in support of modernizing the current paper-based system. In part B of the questionnaire, many participants believed that web-based students' information system will be a better platform for them. This is a success for the researchers of this work since they developed their system web-based. However, participants seemed to have more expectation from a centralized student system which was not possible to implement because of the limited time of this work.

This research was conducted to investigate the perception of students, instructors and administrative staff towards online student's information system in Sulaimaniyah University. Quantitative method was used for data assessments and the results of the data analysis were discussed.

#### 4.2.1 Students' perceptions toward current student's information system

Second part of the questionnaire is focused on students' perceptions on current student information system utilized in Sulaimaniyah University. According to Table 8, only 9.3 percent of the participants always make use of the current paper-based student information system and 36.6 percent sometimes make use of this system. On the other hand, 33.2 percent of participants said they make use of this system often and 20.9 percent said they never used this system.

Table8. Participants' Perceptions on Paper Based System

How often do you have to use the Current (paper-based) student information system?	n/f	%
Always	25	9.3
Sometimes	98	36.6
Often	89	33.2
Never	56	20.9
<b>Total</b>	<b>268</b>	<b>100.0</b>

According to Table 9, around 35 percent of participants used web-based student information system before; while 64.9 percent stated that they never used such system.



Table 9. Participants' Perceptions on Using Web-based SIS

<b>Have you ever used web-based student information system before?</b>	<b>n/f</b>	<b>%</b>
Yes	94	35.1
No	174	64.9
<b>Total</b>	<b>268</b>	<b>100.0</b>

Moreover, researcher wanted to gather more data about preferred system platform for participants to base the system accordingly for future researchers. According to the results more than 53 percent of participants were interested on web-based applications, while 20.5 percent believed that mobile-based application is more functional and effective. However, 13.8 percent of participants were interested on windows-based application and only 6 percent were interested on system designed for Macintosh platform.

Table 10. Best Platform to Use SIS

<b>Which platform do you prefer to access the student information system?</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>
Windows	37	13.8	13.8
Mac	16	6.0	6.0
Web-base	143	53.4	53.4
Mobile	55	20.5	20.5
Linux	17	6.3	6.3
<b>Total</b>	<b>268</b>	<b>100.0</b>	<b>100.0</b>

Also, in the last question in part B, participants were asked to define their most used function in Student Information System (SIS). Participants were asked to choose up

to five functionalities according to their needs. According to Table 11, most of participants were focused on Student personal information (16.6%), students' course arrangement (13.7%), Students score and transcript (12.1%), Student attendance query (10.2%) and Student information announcement (10.2%). On the other hand, student campus card query with 4.8% had the minimum importance for participants.

**Table 11. Most Use function for SIS**

<b>What is the most used function for student information system?</b>	<b>N</b>	<b>%</b>
Student personal information	199	16.6%
Student Registration procedure	88	7.3%
Student education background	121	10.1%
Student score and transcript query	145	12.1%
Student course Arrangement	164	13.7%
SIS Student reward and punishment situation	117	9.8%
Student scholarship query	64	5.3%
Student campus card query	57	4.8%
Student information announcement	122	10.2%
Student attendance query	122	10.2%
<b>Total</b>	<b>1199</b>	<b>100.0%</b>

#### **4.2.2 Participants' perceptions on the contributions of proposed student Information system to the university**

According to Table 12, Speed of registration process increased after using SIS with the maximum mean of (M=4.26, SD=0.820). However, keeping the records became easier; the information asked by the upper level administrative staff can be

transmitted in a short time. Correspondence became easier; many more operations can be done compared to the past times. It is easier to correct the mistakes; it makes it easy to reach the needed information to solve the problems. Reliability of information increased after using SIS, Preparation of documents became easier. Security of information increased after using SIS with (M=4.24, SD=0.775), (M=4.22, SD=0.911), (M=4.18, SD=0.850), (M=4.16, SD=0.861), (M=4.13, SD=0.898), (M=4.12, SD=0.897), (M=4.10, SD=0.844), (M=4.09, SD=0.837), (M=4.07, SD=0.880), (M=4.06, SD=0.899). With respect to their order they all had a mean more than an average mean (M=4.1) of the table. On the other hand, participants were less interested on how Information related to the students can be transmitted to the parents easily with (M=3.75, SD=1.185).

**Table 12. Participant's Perceptions on Contributions of SIS**

<b>Question (13.1-15) Participants' perceptions on the contributions of proposed student Information systems to the university</b>	<b>N</b>	<b>Sum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q13.1. Preparation of documents became easier	268	1090	4.07	.88
Q13.2. Keeping the records became easier	268	1135	4.24	.77
Q13.3. Correspondence became easier	268	1119	4.18	.85
Q13.4. Many more operations can be done compared to the past times	268	1115	4.16	.86
Q13.5. It is easier to correct the mistakes	268	1108	4.13	.89
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	268	1130	4.22	.91
Q13.7. It is easy to detect the mistakes	268	1044	3.90	.98
Q13.8. Information related to the students can be transmitted to the parents easily.	268	1004	3.75	1.18

Q13.9. It makes it easy to reach the needed information to solve the problems	268	1105	4.12	.89
Q13.10. The data that are input in the computer are effective in making managerial decisions	268	1051	3.92	.88
Q13.11. My workload and responsibilities has reduced.	268	1033	3.85	1.00
Q13.12. Reusability of information increased after using SIS	268	1095	4.09	.83
Q13.13. Reliability of information increased after using SIS	268	1099	4.10	.84
Q13.14. Security of information increased after using SIS	268	1089	4.06	.89
Q13.15. Speed of registration process increased after using SIS	268	1142	4.26	.82
<b>Valid N (listwise)</b>	<b>268</b>	<b>Average Mean = 4.1</b>		

#### **4.2.2.1 Participants' perceptions on the contributions of proposed student Information systems to the university regarded to their age**

According to Table 14 results, the age range of (30-37), (38-49) and (50-59) indicates the most interest about proposed system. This may be due to the fact that these participants had more experience using current paper based system. Therefore, they understand the importance and contribution of computerized system to do all this process faster and easier. Although the age range of (60+) had a higher mean in most cases but the small size of this population (N=3) make the data related to this age range not reliable.

#### **4.1.1.2 Participants' perceptions on the contributions of proposed student Information systems to the university regarded to their gender**

According to the results of Table 14, in most of cases female participants were more interested in the contribution of proposed system than the male participants. More

specifically the “Speed of registration process increased after using SIS” with (Mean=4.28, SD=0.783) in female population had the most favorable perception in this table.

Table 13. Participant’s Perceptions on Contributions of SIS

		<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Q13.1. Preparation of documents became easier	Female	129	4.06	.899	.079
	Male	139	4.07	.865	.073
	Total	268	4.07	.880	.054
Q13.2. Keeping the records became easier	Female	129	4.12	.810	.071
	Male	139	4.34	.728	.062
	Total	268	4.24	.775	.047
Q13.3. Correspondence became easier	Female	129	4.21	.845	.074
	Male	139	4.14	.856	.073
	Total	268	4.18	.850	.052
Q13.4. Many more operations can be done compared to the past times	Female	129	4.19	.836	.074
	Male	139	4.14	.886	.075
	Total	268	4.16	.861	.053
Q13.5. It is easier to correct the mistakes	Female	129	4.09	.960	.085
	Male	139	4.18	.836	.071
	Total	268	4.13	.898	.055
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	Female	129	4.14	.982	.086
	Male	139	4.29	.836	.071
	Total	268	4.22	.911	.056
Q13.7. It is easy to detect the mistakes	Female	129	3.91	1.019	.090
	Male	139	3.88	.956	.081
	Total	268	3.90	.985	.060
Q13.8. Information related to the students can be transmitted to the parents easily.	Female	129	3.78	1.207	.106
	Male	139	3.72	1.167	.099
	Total	268	3.75	1.185	.072
Q13.9. It makes it easy to reach the needed information to solve the problems	Female	129	4.14	.933	.082
	Male	139	4.11	.866	.073
	Total	268	4.12	.897	.055
Q13.10. The data that are input in the computer are effective in making managerial decisions	Female	129	3.93	.912	.080
	Male	139	3.91	.864	.073
	Total	268	3.92	.885	.054
Q13.11. My workload and responsibilities has reduced.	Female	129	3.86	.982	.086
	Male	139	3.85	1.035	.088
	Total	268	3.85	1.008	.062

Q13.12. Reusability of information increased after using SIS	Female	129	4.11	.822	.072
	Male	139	4.06	.853	.072
	Total	268	4.09	.837	.051
Q13.13. Reliability of information increased after using SIS	Female	129	4.14	.836	.074
	Male	139	4.06	.853	.072
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.844</b>	<b>.052</b>
Q13.14. Security of information increased after using SIS	Female	129	4.15	.867	.076
	Male	139	3.99	.925	.078
	Total	268	4.06	.899	.055
Q13.15. Speed of registration process increased after using SIS	Female	129	4.29	.783	.069
	Male	139	4.24	.856	.073
	<b>Total</b>	<b>268</b>	<b>4.26</b>	<b>.820</b>	<b>.050</b>

#### 4.2.2.3 Participants' perceptions on the contributions of proposed student Information systems to the university regarded to their education

Interestingly, according to Table 15, participants with higher education had more interest to proposed system and better perception about it. However, the participants with bachelor degree showed the least interest in computerizing current system.

Table 14. Participants' perceptions on SIS regard to their education

		N	Mean	Std. Deviation	Std. Error
Q13.1. Preparation of documents became easier	Diploma	17	4.18	.728	.176
	Bachelor	190	3.93	.923	.067
	Master	24	4.38	.576	.118
	PhD	34	4.56	.660	.113
	Post-PhD	3	4.33	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.880</b>	<b>.054</b>

Q13.2. Keeping the records became easier	Diploma	17	4.24	.752	.182
	Bachelor	190	4.12	.795	.058
	Master	24	4.54	.509	.104
	PhD	34	4.62	.652	.112
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.24</b>	<b>.775</b>	<b>.047</b>
Q13.3. Correspondence became easier	Diploma	17	4.41	.870	.211
	Bachelor	190	4.08	.869	.063
	Master	24	4.25	.676	.138
	PhD	34	4.44	.786	.135
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.18</b>	<b>.850</b>	<b>.052</b>
Q13.4. Many more operations can be done compared to the past times	Diploma	17	4.12	.781	.189
	Bachelor	190	4.05	.901	.065
	Master	24	4.46	.721	.147
	PhD	34	4.50	.615	.106
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.16</b>	<b>.861</b>	<b>.053</b>
Q13.5. It is easier to correct the mistakes	Diploma	17	4.18	1.015	.246
	Bachelor	190	4.03	.931	.068
	Master	24	4.50	.659	.135
	PhD	34	4.35	.691	.119
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.13</b>	<b>.898</b>	<b>.055</b>
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	Diploma	17	4.47	.874	.212
	Bachelor	190	4.08	.950	.069
	Master	24	4.46	.721	.147
	PhD	34	4.59	.657	.113
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.22</b>	<b>.911</b>	<b>.056</b>
Q13.7. It is easy to detect the mistakes	Diploma	17	4.00	1.000	.243
	Bachelor	190	3.78	1.029	.075
	Master	24	4.13	.797	.163
	PhD	34	4.26	.710	.122
	Post-PhD	3	4.33	1.155	.667
	<b>Total</b>	<b>268</b>	<b>3.90</b>	<b>.985</b>	<b>.060</b>
Q13.8. Information related to the students can be transmitted to the parents easily.	Diploma	17	4.29	.686	.166
	Bachelor	190	3.58	1.252	.091
	Master	24	4.08	.974	.199
	PhD	34	4.03	.937	.161
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>3.75</b>	<b>1.185</b>	<b>.072</b>

Q13.9. It makes it easy to reach the needed information to solve the problems	Diploma	17	4.35	.786	.191
	Bachelor	190	4.01	.926	.067
	Master	24	4.50	.722	.147
	PhD	34	4.29	.799	.137
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.897</b>	<b>.055</b>
Q13.10. The data that are input in the computer are effective in making managerial decisions	Diploma	17	4.35	.606	.147
	Bachelor	190	3.79	.907	.066
	Master	24	4.17	.702	.143
	PhD	34	4.18	.834	.143
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>3.92</b>	<b>.885</b>	<b>.054</b>
Q13.11. My workload and responsibilities has reduced.	Diploma	17	3.82	1.074	.261
	Bachelor	190	3.76	1.040	.075
	Master	24	4.08	.929	.190
	PhD	34	4.18	.758	.130
	Post-PhD	3	4.33	1.155	.667
	<b>Total</b>	<b>268</b>	<b>3.85</b>	<b>1.008</b>	<b>.062</b>
Q13.12. Reusability of information increased after using SIS	Diploma	17	4.35	.786	.191
	Bachelor	190	3.98	.839	.061
	Master	24	4.33	.816	.167
	PhD	34	4.26	.790	.136
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.09</b>	<b>.837</b>	<b>.051</b>
Q13.13. Reliability of information increased after using SIS	Diploma	17	4.29	.588	.143
	Bachelor	190	4.01	.864	.063
	Master	24	4.29	.859	.175
	PhD	34	4.32	.768	.132
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.844</b>	<b>.052</b>
Q13.14. Security of information increased after using SIS	Diploma	17	4.41	.712	.173
	Bachelor	190	4.01	.931	.068
	Master	24	4.17	.816	.167
	PhD	34	4.03	.834	.143
	Post-PhD	3	5.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.899</b>	<b>.055</b>
Q13.15. Speed of registration process increased after using SIS	Diploma	17	4.47	.717	.174
	Bachelor	190	4.15	.850	.062
	Master	24	4.63	.576	.118
	PhD	34	4.47	.748	.128
	Post-PhD	3	4.67	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.26</b>	<b>.820</b>	<b>.050</b>



#### 4.2.2.4 Participants' perceptions on the contributions of proposed student Information systems to the university regarded to their position

As shown in Table 16 below, the mean for perception of participants about proposed system for students is significantly lower than instructors and the administrative staff. This is the proof of the fact that SIS is an application for making the students management easier for instructors and administrative staff. And since this process does not directly influence and affect students they show least interest about the proposed system.

Table 15. Participants' perceptions on SIS regard to their position

		N	Mean	Std. Deviation	Std. Error
Q13.1. Preparation of documents became easier	Administrator staff	21	4.33	.856	.187
	Student	154	3.86	.943	.076
	Instructor	93	4.34	.667	.069
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.880</b>	<b>.054</b>
Q13.2. Keeping the records became easier	Administrator staff	21	4.48	.750	.164
	Student	154	4.06	.786	.063
	Instructor	93	4.47	.685	.071
	<b>Total</b>	<b>268</b>	<b>4.24</b>	<b>.775</b>	<b>.047</b>
Q13.3. Correspondence became easier	Administrator staff	21	4.43	.598	.130
	Student	154	4.04	.885	.071
	Instructor	93	4.34	.801	.083
	<b>Total</b>	<b>268</b>	<b>4.18</b>	<b>.850</b>	<b>.052</b>
Q13.4. Many more operations can be done compared to the past times	Administrator staff	21	4.19	.873	.190
	Student	154	4.01	.907	.073
	Instructor	93	4.40	.724	.075
	<b>Total</b>	<b>268</b>	<b>4.16</b>	<b>.861</b>	<b>.053</b>
Q13.5. It is easier to correct the mistakes	Administrator staff	21	4.24	1.044	.228
	Student	154	3.98	.918	.074
	Instructor	93	4.37	.777	.081
	<b>Total</b>	<b>268</b>	<b>4.13</b>	<b>.898</b>	<b>.055</b>
Q13.6. The information asked by the upper institutions can be	Administrator staff	21	4.33	1.155	.252
	Student	154	4.06	.902	.073
	Instructor	93	4.45	.814	.084

transmitted in a short time.	<b>Total</b>	<b>268</b>	<b>4.22</b>	<b>.911</b>	<b>.056</b>
	Administrator staff	21	4.05	.921	.201
Q13.7. It is easy to detect	Student	154	3.75	1.013	.082
the mistakes	Instructor	93	4.11	.914	.095
	<b>Total</b>	<b>268</b>	<b>3.90</b>	<b>.985</b>	<b>.060</b>
Q13.8. Information related	Administrator staff	21	4.05	1.161	.253
to the students can be	Student	154	3.43	1.246	.100
transmitted to the parents	Instructor	93	4.20	.891	.092
easily.	<b>Total</b>	<b>268</b>	<b>3.75</b>	<b>1.185</b>	<b>.072</b>
Q13.9. It makes it easy to	Administrator staff	21	4.29	1.007	.220
reach the needed	Student	154	3.97	.896	.072
information to solve the	Instructor	93	4.34	.827	.086
problems	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.897</b>	<b>.055</b>
Q13.10. The data that are	Administrator staff	21	4.29	.784	.171
input in the computer are	Student	154	3.71	.907	.073
effective in making	Instructor	93	4.19	.770	.080
managerial decisions	<b>Total</b>	<b>268</b>	<b>3.92</b>	<b>.885</b>	<b>.054</b>
	Administrator staff	21	4.14	.964	.210
Q13.11. My workload and	Student	154	3.71	1.054	.085
responsibilities has reduced.	Instructor	93	4.03	.902	.094
	<b>Total</b>	<b>268</b>	<b>3.85</b>	<b>1.008</b>	<b>.062</b>
Q13.12. Reusability of	Administrator staff	21	4.29	.784	.171
information increased after	Student	154	3.97	.836	.067
using SIS	Instructor	93	4.24	.826	.086
	<b>Total</b>	<b>268</b>	<b>4.09</b>	<b>.837</b>	<b>.051</b>
	Administrator staff	21	4.24	.768	.168
Q13.13. Reliability of	Student	154	3.99	.824	.066
information increased after	Instructor	93	4.26	.871	.090
using SIS	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.844</b>	<b>.052</b>
Q13.14. Security of	Administrator staff	21	4.43	.926	.202
information increased after	Student	154	3.99	.936	.075
using SIS	Instructor	93	4.11	.814	.084
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.899</b>	<b>.055</b>
Q13.15. Speed of	Administrator staff	21	4.33	.856	.187
registration process	Student	154	4.14	.841	.068
increased after using SIS	Instructor	93	4.45	.745	.077
	<b>Total</b>	<b>268</b>	<b>4.26</b>	<b>.820</b>	<b>.050</b>

#### 4.2.2.5 Participants' Perceptions on the Contributions of Proposed Student Information Systems to the University regarded to their experience

According to the Table 17, almost all the participants who had more experience were more interested about proposed system. On the other hand, participants with little or no experience or minimum of (1-3) years of experience had the least mean in the table. This shows that for understanding the benefits of proposed computerized system, it is better to have more experience in academic field.

Table 16. Participants' perceptions on SIS regard to their experience

		N	Mean	Std. Deviation	Std. Error
Q13.1. Preparation of documents became easier	No experience	62	3.85	1.006	.128
	1-3	109	3.94	.880	.084
	4-8	36	4.11	.785	.131
	9-12	15	4.27	.884	.228
	13-19	14	4.50	.519	.139
	+16	32	4.56	.564	.100
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.880</b>	<b>.054</b>
Q13.2. Keeping the records became easier	No experience	62	4.06	.847	.108
	1-3	109	4.09	.752	.072
	4-8	36	4.39	.728	.121
	9-12	15	4.40	.910	.235
	13-19	14	4.71	.469	.125
	+16	32	4.59	.560	.099
	<b>Total</b>	<b>268</b>	<b>4.24</b>	<b>.775</b>	<b>.047</b>
Q13.3. Correspondence became easier	No experience	62	4.05	.876	.111
	1-3	109	4.03	.876	.084
	4-8	36	4.33	.756	.126
	9-12	15	4.53	.834	.215
	13-19	14	4.57	.514	.137
	+16	32	4.41	.798	.141
	<b>Total</b>	<b>268</b>	<b>4.18</b>	<b>.850</b>	<b>.052</b>
Q13.4. Many more operations can be done compared to the past times	No experience	62	3.94	.973	.124
	1-3	109	4.11	.885	.085
	4-8	36	4.22	.760	.127
	9-12	15	4.53	.640	.165
	13-19	14	4.50	.650	.174
	+16	32	4.38	.707	.125

	<b>Total</b>	<b>268</b>	<b>4.16</b>	<b>.861</b>	<b>.053</b>
Q13.5. It is easier to correct the mistakes	No experience	62	3.82	.984	.125
	1-3	109	4.17	.845	.081
	4-8	36	4.00	.986	.164
	9-12	15	4.33	1.113	.287
	13-19	14	4.71	.469	.125
	+16	32	4.44	.564	.100
	<b>Total</b>	<b>268</b>	<b>4.13</b>	<b>.898</b>	<b>.055</b>
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	No experience	62	3.98	.949	.121
	1-3	109	4.11	.916	.088
	4-8	36	4.28	.974	.162
	9-12	15	4.73	.799	.206
	13-19	14	4.50	.855	.228
	+16	32	4.59	.560	.099
	<b>Total</b>	<b>268</b>	<b>4.22</b>	<b>.911</b>	<b>.056</b>
Q13.7. It is easy to detect the mistakes	No experience	62	3.56	1.276	.162
	1-3	109	3.90	.902	.086
	4-8	36	3.86	.762	.127
	9-12	15	4.20	1.014	.262
	13-19	14	4.07	.829	.221
	+16	32	4.34	.653	.115
	<b>Total</b>	<b>268</b>	<b>3.90</b>	<b>.985</b>	<b>.060</b>
Q13.8. Information related to the students can be transmitted to the parents easily.	No experience	62	3.73	1.133	.144
	1-3	109	3.46	1.302	.125
	4-8	36	3.86	1.125	.188
	9-12	15	4.27	.884	.228
	13-19	14	4.07	.917	.245
	+16	32	4.25	.880	.156
	<b>Total</b>	<b>268</b>	<b>3.75</b>	<b>1.185</b>	<b>.072</b>
Q13.9. It makes it easy to reach the needed information to solve the problems	No experience	62	3.97	.940	.119
	1-3	109	4.00	.923	.088
	4-8	36	4.25	.874	.146
	9-12	15	4.40	.910	.235
	13-19	14	4.36	.929	.248
	+16	32	4.47	.567	.100
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.897</b>	<b>.055</b>
Q13.10. The data that are input in the computer are effective in making managerial decisions	No experience	62	3.71	.948	.120
	1-3	109	3.81	.897	.086
	4-8	36	3.92	.770	.128
	9-12	15	4.27	.799	.206
	13-19	14	4.36	.842	.225
	+16	32	4.38	.660	.117

	<b>Total</b>	<b>268</b>	<b>3.92</b>	<b>.885</b>	<b>.054</b>
	No experience	62	3.76	1.019	.129
	1-3	109	3.71	1.083	.104
	4-8	36	3.97	.910	.152
Q13.11. My workload and responsibilities has reduced.	9-12	15	3.93	1.163	.300
	13-19	14	4.07	.829	.221
	+16	32	4.28	.683	.121
	<b>Total</b>	<b>268</b>	<b>3.85</b>	<b>1.008</b>	<b>.062</b>
	No experience	62	3.97	.768	.097
	1-3	109	3.95	.886	.085
Q13.12. Reusability of information increased after using SIS	4-8	36	4.25	.841	.140
	9-12	15	4.13	.990	.256
	13-19	14	4.29	.726	.194
	+16	32	4.47	.621	.110
	<b>Total</b>	<b>268</b>	<b>4.09</b>	<b>.837</b>	<b>.051</b>
	No experience	62	3.82	.897	.114
	1-3	109	4.08	.818	.078
Q13.13. Reliability of information increased after using SIS	4-8	36	4.11	.919	.153
	9-12	15	4.40	.828	.214
	13-19	14	4.29	.726	.194
	+16	32	4.47	.621	.110
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.844</b>	<b>.052</b>
	No experience	62	3.95	.965	.123
	1-3	109	4.00	.892	.085
Q13.14. Security of information increased after using SIS	4-8	36	4.00	.956	.159
	9-12	15	4.20	.941	.243
	13-19	14	4.43	.646	.173
	+16	32	4.34	.745	.132
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.899</b>	<b>.055</b>
	No experience	62	4.10	.882	.112
	1-3	109	4.17	.822	.079
Q13.15. Speed of registration process increased after using SIS	4-8	36	4.31	.822	.137
	9-12	15	4.53	.990	.256
	13-19	14	4.50	.519	.139
	+16	32	4.63	.554	.098
	<b>Total</b>	<b>268</b>	<b>4.26</b>	<b>.820</b>	<b>.050</b>

#### 4.2.2.6 Participants' perceptions on the contributions of proposed student Information systems to the university regarded to their department

According to Table 18, the participants who study in Kurdish language department had the least interest to the proposed system. This can be attributed to the fact that system language level was not according to their language skills. However, participants in Computer science, English language and social science had the most interest about the proposed system.

Table 17. Participants' perceptions on SIS regard to their experience

		N	Mean	Std. Deviation	Std. Error
	Computer Science	43	4.21	.709	.108
	Art Education	22	4.05	.575	.123
	English Language	33	4.21	.820	.143
	Kindergarten	20	4.05	.826	.185
Q13.1. Preparation of documents became easier	Kurdish Language	26	3.92	.935	.183
	Mathematical Sciences	27	4.00	1.209	.233
	Physical Education	74	3.95	.949	.110
	Social Sciences	23	4.26	.810	.169
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.880</b>	<b>.054</b>
	Computer Science	43	4.23	.751	.114
	Art Education	22	4.14	.774	.165
	English Language	33	4.39	.659	.115
	Kindergarten	20	4.20	.834	.186
Q13.2. Keeping the records became easier	Kurdish Language	26	4.12	.864	.169
	Mathematical Sciences	27	4.44	.751	.145
	Physical Education	74	4.12	.843	.098
	Social Sciences	23	4.39	.583	.122
	<b>Total</b>	<b>268</b>	<b>4.24</b>	<b>.775</b>	<b>.047</b>
Q13.3.	Computer Science	43	4.35	.783	.119

Correspondence became easier	Art Education	22	4.27	.703	.150
	English Language	33	4.42	.663	.115
	Kindergarten	20	4.10	.912	.204
	Kurdish Language	26	4.00	.894	.175
	Mathematical Sciences	27	4.15	1.099	.212
	Physical Education	74	4.05	.826	.096
	Social Sciences	23	4.09	.949	.198
	<b>Total</b>	<b>268</b>	<b>4.18</b>	<b>.850</b>	<b>.052</b>
Q13.4. Many more operations can be done compared to the past times	Computer Science	43	4.35	.686	.105
	Art Education	22	4.14	.834	.178
	English Language	33	4.33	.736	.128
	Kindergarten	20	4.10	.968	.216
	Kurdish Language	26	4.04	.916	.180
	Mathematical Sciences	27	4.07	1.035	.199
	Physical Education	74	4.05	.920	.107
	Social Sciences	23	4.22	.795	.166
<b>Total</b>	<b>268</b>	<b>4.16</b>	<b>.861</b>	<b>.053</b>	
Q13.5. It is easier to correct the mistakes	Computer Science	43	4.33	.644	.098
	Art Education	22	3.82	1.006	.215
	English Language	33	4.30	1.075	.187
	Kindergarten	20	4.30	.923	.206
	Kurdish Language	26	3.92	.935	.183
	Mathematical Sciences	27	3.96	1.091	.210
	Physical Education	74	4.09	.830	.097
	Social Sciences	23	4.26	.752	.157
<b>Total</b>	<b>268</b>	<b>4.13</b>	<b>.898</b>	<b>.055</b>	
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	Computer Science	43	4.37	.926	.141
	Art Education	22	4.32	.780	.166
	English Language	33	4.21	1.219	.212
	Kindergarten	20	4.00	1.170	.262
	Kurdish Language	26	3.73	1.116	.219
	Mathematical Sciences	27	4.33	.734	.141
	Physical Education	74	4.26	.663	.077
	Social Sciences	23	4.30	.765	.159
<b>Total</b>	<b>268</b>	<b>4.22</b>	<b>.911</b>	<b>.056</b>	

Q13.7. It is easy to detect the mistakes	Computer Science	43	4.02	.886	.135
	Art Education	22	3.95	.950	.203
	English Language	33	4.24	.792	.138
	Kindergarten	20	3.80	1.105	.247
	Kurdish Language	26	3.62	1.235	.242
	Mathematical Sciences	27	3.85	.989	.190
	Physical Education	74	3.70	1.030	.120
	Social Sciences	23	4.17	.717	.149
	<b>Total</b>	<b>268</b>	<b>3.90</b>	<b>.985</b>	<b>.060</b>
Q13.8. Information related to the students can be transmitted to the parents easily.	Computer Science	43	3.95	.975	.149
	Art Education	22	4.09	.811	.173
	English Language	33	4.06	.998	.174
	Kindergarten	20	4.05	.945	.211
	Kurdish Language	26	3.58	1.391	.273
	Mathematical Sciences	27	3.41	1.279	.246
	Physical Education	74	3.31	1.354	.157
	Social Sciences	23	4.30	.765	.159
	<b>Total</b>	<b>268</b>	<b>3.75</b>	<b>1.185</b>	<b>.072</b>
Q13.9. It makes it easy to reach the needed information to solve the problems	Computer Science	43	4.21	.742	.113
	Art Education	22	4.23	.813	.173
	English Language	33	4.30	.984	.171
	Kindergarten	20	4.15	.813	.182
	Kurdish Language	26	3.85	1.084	.213
	Mathematical Sciences	27	4.00	1.074	.207
	Physical Education	74	4.03	.906	.105
	Social Sciences	23	4.35	.647	.135
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.897</b>	<b>.055</b>
Q13.10. The data that are input in the computer are effective in making managerial decisions	Computer Science	43	4.00	.873	.133
	Art Education	22	4.00	.690	.147
	English Language	33	4.00	.935	.163
	Kindergarten	20	3.80	.834	.186
	Kurdish Language	26	3.65	.977	.192
	Mathematical Sciences	27	3.89	.974	.187
	Physical Education	74	3.89	.945	.110
	Social Sciences	23	4.13	.626	.130



	<b>Total</b>	<b>268</b>	<b>3.92</b>	<b>.885</b>	<b>.054</b>
	Computer Science	43	3.95	.950	.145
	Art Education	22	3.64	1.049	.224
	English Language	33	4.18	.846	.147
	Kindergarten	20	3.80	.894	.200
Q13.11. My workload and responsibilities has reduced.	Kurdish Language	26	3.77	1.032	.202
	Mathematical Sciences	27	3.85	1.199	.231
	Physical Education	74	3.72	1.104	.128
	Social Sciences	23	4.00	.739	.154
	<b>Total</b>	<b>268</b>	<b>3.85</b>	<b>1.008</b>	<b>.062</b>
	Computer Science	43	4.21	.773	.118
	Art Education	22	3.91	.921	.196
	English Language	33	4.42	.663	.115
	Kindergarten	20	4.10	.788	.176
Q13.12. Reusability of information increased after using SIS	Kurdish Language	26	3.73	.919	.180
	Mathematical Sciences	27	4.07	.958	.184
	Physical Education	74	3.99	.868	.101
	Social Sciences	23	4.26	.619	.129
	<b>Total</b>	<b>268</b>	<b>4.09</b>	<b>.837</b>	<b>.051</b>
	Computer Science	43	4.14	.804	.123
	Art Education	22	4.00	.816	.174
	English Language	33	4.45	.617	.107
	Kindergarten	20	4.10	.788	.176
Q13.13. Reliability of information increased after using SIS	Kurdish Language	26	3.73	1.041	.204
	Mathematical Sciences	27	4.11	.892	.172
	Physical Education	74	4.03	.906	.105
	Social Sciences	23	4.26	.619	.129
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.844</b>	<b>.052</b>
	Computer Science	43	3.93	.910	.139
	Art Education	22	4.23	.752	.160
Q13.14. Security of information increased after using SIS	English Language	33	4.33	.736	.128
	Kindergarten	20	4.05	1.050	.235
	Kurdish Language	26	3.92	.935	.183
	Mathematical Sciences	27	4.11	.974	.187

	Physical Education	74	3.99	.972	.113
	Social Sciences	23	4.13	.694	.145
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.899</b>	<b>.055</b>
Q13.15. Speed of registration process increased after using SIS	Computer Science	43	4.30	.741	.113
	Art Education	22	4.27	.703	.150
	English Language	33	4.42	.792	.138
	Kindergarten	20	4.25	.786	.176
	Kurdish Language	26	4.08	.935	.183
	Mathematical Sciences	27	4.26	.859	.165
	Physical Education	74	4.16	.907	.105
	Social Sciences	23	4.48	.665	.139
	<b>Total</b>	<b>268</b>	<b>4.26</b>	<b>.820</b>	<b>.050</b>

#### 4.2.2.7 Participants' perceptions on the contributions of proposed student Information systems to the university regarded to their computer literacy

According to Table 19, all of participants with more computer literacy level had better perception about proposed system. This could be because of the fact that they are more comfortable and confident in using computers and therefore they like the computerized system more.

Table 18. Question Participants' perceptions on SIS regard to their gender computer literacy

		N	Mean	Std. Deviation	Std. Error
Q13.1. Preparation of documents became easier	Yes	239	4.10	.890	.058
	No	29	3.76	.739	.137
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.880</b>	<b>.054</b>
Q13.2. Keeping the records became easier	Yes	239	4.28	.762	.049
	No	29	3.86	.789	.147
	<b>Total</b>	<b>268</b>	<b>4.24</b>	<b>.775</b>	<b>.047</b>
Q13.3. Correspondence became easier	Yes	239	4.20	.859	.056
	No	29	4.00	.756	.140
	<b>Total</b>	<b>268</b>	<b>4.18</b>	<b>.850</b>	<b>.052</b>
Q13.4. Many more operations can be done compared to the past times	Yes	239	4.19	.868	.056
	No	29	3.90	.772	.143

	<b>Total</b>	<b>268</b>	<b>4.16</b>	<b>.861</b>	<b>.053</b>
	Yes	239	4.17	.912	.059
Q13.5. It is easier to correct the mistakes	No	29	3.83	.711	.132
	<b>Total</b>	<b>268</b>	<b>4.13</b>	<b>.898</b>	<b>.055</b>
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	Yes	239	4.30	.875	.057
	No	29	3.52	.911	.169
	<b>Total</b>	<b>268</b>	<b>4.22</b>	<b>.911</b>	<b>.056</b>
	Yes	239	3.92	1.006	.065
Q13.7. It is easy to detect the mistakes	No	29	3.66	.769	.143
	<b>Total</b>	<b>268</b>	<b>3.90</b>	<b>.985</b>	<b>.060</b>
Q13.8. Information related to the students can be transmitted to the parents easily.	Yes	239	3.75	1.221	.079
	No	29	3.72	.841	.156
	<b>Total</b>	<b>268</b>	<b>3.75</b>	<b>1.185</b>	<b>.072</b>
Q13.9. It makes it easy to reach the needed information to solve the problems	Yes	239	4.18	.884	.057
	No	29	3.62	.862	.160
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.897</b>	<b>.055</b>
Q13.10. The data that are input in the computer are effective in making managerial decisions	Yes	239	3.97	.879	.057
	No	29	3.48	.829	.154
	<b>Total</b>	<b>268</b>	<b>3.92</b>	<b>.885</b>	<b>.054</b>
Q13.11. My workload and responsibilities has reduced.	Yes	239	3.89	1.035	.067
	No	29	3.55	.686	.127
	<b>Total</b>	<b>268</b>	<b>3.85</b>	<b>1.008</b>	<b>.062</b>
Q13.12. Reusability of information increased after using SIS	Yes	239	4.11	.830	.054
	No	29	3.86	.875	.163
	<b>Total</b>	<b>268</b>	<b>4.09</b>	<b>.837</b>	<b>.051</b>
Q13.13. Reliability of information increased after using SIS	Yes	239	4.14	.831	.054
	No	29	3.79	.902	.167
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.844</b>	<b>.052</b>
Q13.14. Security of information increased after using SIS	Yes	239	4.10	.876	.057
	No	29	3.79	1.048	.195
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.899</b>	<b>.055</b>
Q13.15. Speed of registration process increased after using SIS	Yes	239	4.30	.805	.052
	No	29	3.93	.884	.164
	<b>Total</b>	<b>268</b>	<b>4.26</b>	<b>.820</b>	<b>.050</b>

### 4.2.3 Participants' perceptions on the quality of proposed system

According to Table below, "Computerizing registration procedure increases the user's satisfaction, the most importance reason for participant's satisfaction from proposed system could be from (Mean=4.12, SD=0.835). However, I am satisfied with the overall system quality of SIS and I am satisfied with SIS ease of use", "I am satisfied with the speed of SIS". "I find it easy to use SIS because I am computer literate". "Design of the proposed system is user friendly"; "I am satisfied with how quickly the SIS loads pages and images". "The language used in proposed system is easy to understand." with (Mean=4.10, SD=0.873), (Mean=4.10, SD=0.894), (Mean=4.07, SD=0.953), (Mean=4.07, SD=0.884), (Mean=4.06, SD=0.908), (Mean=4.03, SD=0.871) and (Mean=4.03, SD=0.797) respectably, all had mean higher than the average mean (M=4.02) in the table. From other hand, the user interface of SIS measures up to global standard. With (Mean=3.85, SD=0.919) showed the least satisfaction of participants about interface of proposed system.

Table 19. Participants' perceptions on the quality of proposed system

	N	Sum	Mean	Std. Deviation
Q14.1. The language used in proposed system is easy to understand	268	1080	4.03	.797
Q14.2. The links between the pages are clear and easy to follow	268	1073	4.00	.819
Q14.3. Design of the proposed system is user friendly	268	1089	4.06	.908
Q14.4. Computerizing registration procedure increases the user's satisfaction	268	1104	4.12	.835
Q14.5. I am satisfied with SIS ease of use	268	1098	4.10	.894
Q14.6. I am satisfied with the speed of SIS	268	1092	4.07	.953

Q14.7. I am satisfied with how quickly the SIS loads pages and images	268	1081	4.03	.871
Q14.8. The user interface of SIS measures up to global standard	267	1027	3.85	.919
Q14.9. The information on the SIS is more timely	268	1069	3.99	.863
Q14.10. The information on the SIS is more accurate	267	1060	3.97	.804
Q14.11. The information on SIS is more relevant	268	1065	3.97	.827
Q14.12. I find it easy to use SIS because I am computer literate	267	1087	4.07	.884
Q14.13. I am satisfied with the overall system quality of SIS	268	1098	4.10	.873
Valid N (listwise)	265	Average Mean = 4.02		

#### **4.2.3.1 Participants' perceptions on the quality of proposed system regarded to their age**

According to Table 21, the following are the subjects under this question; “The language used in proposed system is easy to understand”, “The links between the pages are clear and easy to follow”, “Design of the proposed system is user friendly” and “Computerizing registration procedure increases the user’s satisfaction”. The age range of 30 and above show more satisfaction about the quality of system. However, in rest of the questions the mean with the age range of 18-29 has a mean lower than average mean of the table. But in age range of 30 to 59 the mean significantly increases. Finally, in the age range of (60+) there is dramatic decrease which shows that elder participants had some problem connecting to the design and utilization of the SIS.

Table 20. Participants' perceptions on the quality of proposed system regarded to their age

		N	Mean	SD	SE
Q14.1. The language used in proposed system is easy to understand	18-22	111	3.95	.784	.074
	23-29	74	3.88	.843	.098
	30-37	28	4.07	.813	.154
	38-49	32	4.25	.718	.127
	50-59	20	4.60	.503	.112
	60+	3	4.33	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.03</b>	<b>.797</b>	<b>.049</b>
Q14.2. The links between the pages are clear and easy to follow	18-22	111	3.93	.794	.075
	23-29	74	3.96	.835	.097
	30-37	28	4.11	.916	.173
	38-49	32	4.06	.716	.127
	50-59	20	4.30	.923	.206
	60+	3	4.33	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.00</b>	<b>.819</b>	<b>.050</b>
Q14.3. Design of the proposed system is user friendly	18-22	111	4.17	.819	.078
	23-29	74	3.88	1.006	.117
	30-37	28	4.14	.803	.152
	38-49	32	3.94	.948	.168
	50-59	20	4.20	1.056	.236
	60+	3	4.33	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.908</b>	<b>.055</b>
Q14.4. Computerizing registration procedure increases the user's satisfaction	18-22	111	4.08	.776	.074
	23-29	74	4.08	.918	.107
	30-37	28	4.14	.932	.176
	38-49	32	4.19	.821	.145
	50-59	20	4.30	.801	.179
	60+	3	4.33	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.835</b>	<b>.051</b>
Q14.5. I am satisfied with SIS ease of use	18-22	111	4.14	.773	.073
	23-29	74	3.96	.971	.113
	30-37	28	4.11	1.066	.201
	38-49	32	4.16	.847	.150
	50-59	20	4.30	1.081	.242
	60+	3	3.67	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.894</b>	<b>.055</b>
Q14.6. I am satisfied with the speed of SIS	18-22	111	4.04	.933	.089
	23-29	74	3.96	1.026	.119
	30-37	28	4.29	.897	.169

	38-49	32	4.22	.832	.147
	50-59	20	4.25	1.070	.239
	60+	3	3.67	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.953</b>	<b>.058</b>
	18-22	111	4.08	.776	.074
	23-29	74	3.88	.936	.109
	30-37	28	4.18	.905	.171
Q14.7. I am satisfied with how quickly the SIS loads pages and images	38-49	32	4.00	.880	.156
	50-59	20	4.20	1.105	.247
	60+	3	4.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>4.03</b>	<b>.871</b>	<b>.053</b>
	18-22	111	3.94	.845	.080
	23-29	73	3.73	.976	.114
	30-37	28	3.96	.922	.174
Q14.8. The user interface of SIS measures up to global standard	38-49	32	3.69	.965	.171
	50-59	20	3.95	1.050	.235
	60+	3	3.33	.577	.333
	<b>Total</b>	<b>267</b>	<b>3.85</b>	<b>.919</b>	<b>.056</b>
	18-22	111	4.01	.879	.083
	23-29	74	3.96	.766	.089
	30-37	28	4.18	.819	.155
Q14.9. The information on the SIS is more timely	38-49	32	3.88	.942	.166
	50-59	20	4.05	1.050	.235
	60+	3	3.00	.000	.000
	<b>Total</b>	<b>268</b>	<b>3.99</b>	<b>.863</b>	<b>.053</b>
	18-22	110	3.95	.799	.076
Q14.10. The information on the SIS is more accurate	23-29	74	3.93	.800	.093
	30-37	28	4.07	.813	.154
	38-49	32	4.00	.718	.127

#### 4.2.3.2 Participants' Perceptions on the Quality of Proposed System Regarded to their Gender

The participants' perception about quality of the SIS is quite different from question to question according to the participant's gender. They are, "The language used in proposed system is easy to understand", "The links between the pages are clear and easy to follow", "I am satisfied with the speed of SIS", "I find it easy to use SIS because I am computer literate" and "I am satisfied with the overall system quality of

SIS". The mean of the female participants was significantly lower than the male participant. Even in some cases less than the average mean but in rest of the questions the female participants' mean is higher than males.

Table 21. Participants' perceptions on the quality of proposed system regarded to their gender

		N	Mean	SD	SE
Q14.1. The language used in proposed system is easy to understand	Female	129	3.97	.865	.076
	Male	139	4.09	.727	.062
	<b>Total</b>	<b>268</b>	<b>4.03</b>	<b>.797</b>	<b>.049</b>
Q14.2. The links between the pages are clear and easy to follow	Female	129	3.94	.864	.076
	Male	139	4.06	.773	.066
	<b>Total</b>	<b>268</b>	<b>4.00</b>	<b>.819</b>	<b>.050</b>
Q14.3. Design of the proposed system is user friendly	Female	129	4.10	.959	.084
	Male	139	4.03	.859	.073
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.908</b>	<b>.055</b>
Q14.4. Computerizing registration procedure increases the user's satisfaction	Female	129	4.12	.835	.074
	Male	139	4.12	.838	.071
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.835</b>	<b>.051</b>
Q14.5. I am satisfied with SIS ease of use	Female	129	4.12	.944	.083
	Male	139	4.07	.848	.072
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.894</b>	<b>.055</b>
Q14.6. I am satisfied with the speed of SIS	Female	129	4.04	.995	.088
	Male	139	4.11	.914	.078
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.953</b>	<b>.058</b>
Q14.7. I am satisfied with how quickly the SIS loads pages and images	Female	129	4.09	.857	.075
	Male	139	3.99	.885	.075
	<b>Total</b>	<b>268</b>	<b>4.03</b>	<b>.871</b>	<b>.053</b>
Q14.8. The user interface of SIS measures up to global standard	Female	128	3.89	.924	.082
	Male	139	3.81	.916	.078
	<b>Total</b>	<b>267</b>	<b>3.85</b>	<b>.919</b>	<b>.056</b>
Q14.9. The information on the SIS is more timely	Female	129	4.01	.964	.085
	Male	139	3.97	.761	.065
	<b>Total</b>	<b>268</b>	<b>3.99</b>	<b>.863</b>	<b>.053</b>
Q14.10. The information on the SIS is more accurate	Female	128	3.92	.866	.077
	Male	139	4.01	.742	.063
	<b>Total</b>	<b>267</b>	<b>3.97</b>	<b>.804</b>	<b>.049</b>
Q14.11. The information on SIS is more relevant	Female	129	3.95	.891	.078
	Male	139	3.99	.766	.065



	<b>Total</b>	<b>268</b>	<b>3.97</b>	<b>.827</b>	<b>.051</b>
Q14.12. I find it easy to use SIS because I am computer literate	Female	128	4.04	.926	.082
	Male	139	4.10	.845	.072
	<b>Total</b>	<b>267</b>	<b>4.07</b>	<b>.884</b>	<b>.054</b>
Q14.13. I am satisfied with the overall system quality of SIS	Female	129	4.07	.903	.080
	Male	139	4.12	.847	.072
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.873</b>	<b>.053</b>

#### 4.2.3.3 Participants' perceptions on the quality of proposed system regarded to their education

According to Table 23 results, participants with master degree had the most satisfaction about the design and functionality of the system, moreover the participants with diploma in some cases were also having significant satisfactory from the designed system. However, the Bachelor degree participants seemed like having the least interest and satisfaction about the system and PhD and Post-PhD participants were not impressed by the speed and design of the system.

Table 22. Participants' perceptions on the quality of proposed system regarded to their education

		<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Q14.1. The language used in proposed system is easy to understand	Diploma	17	4.24	.752	.182
	Bachelor	190	3.92	.796	.058
	Master	24	4.50	.590	.120
	PhD	34	4.24	.781	.134
	Post-PhD	3	3.67	1.155	.667
	<b>Total</b>	<b>268</b>	<b>4.03</b>	<b>.797</b>	<b>.049</b>
Q14.2. The links between the pages are clear and easy to follow	Diploma	17	3.88	.928	.225
	Bachelor	190	3.95	.812	.059
	Master	24	4.42	.584	.119
	PhD	34	4.09	.866	.148
	Post-PhD	3	3.67	1.155	.667
	<b>Total</b>	<b>268</b>	<b>4.00</b>	<b>.819</b>	<b>.050</b>
Q14.3. Design of the proposed system is user friendly	Diploma	17	4.18	.809	.196
	Bachelor	190	4.05	.901	.065

	Master	24	4.42	.776	.158
	PhD	34	3.85	1.019	.175
	Post-PhD	3	3.67	1.155	.667
	<b>Total</b>	<b>268</b>	<b>4.06</b>	<b>.908</b>	<b>.055</b>
Q14.4. Computerizing registration procedure increases the user's satisfaction	Diploma	17	4.24	.970	.235
	Bachelor	190	4.07	.830	.060
	Master	24	4.33	.761	.155
	PhD	34	4.18	.869	.149
	Post-PhD	3	4.33	.577	.333
	<b>Total</b>	<b>268</b>	<b>4.12</b>	<b>.835</b>	<b>.051</b>
Q14.5. I am satisfied with SIS ease of use	Diploma	17	3.88	1.317	.319
	Bachelor	190	4.12	.836	.061
	Master	24	4.29	.751	.153
	PhD	34	3.94	1.043	.179
	Post-PhD	3	4.00	1.000	.577
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.894</b>	<b>.055</b>
Q14.6. I am satisfied with the speed of SIS	Diploma	17	4.24	1.091	.265
	Bachelor	190	4.03	.953	.069
	Master	24	4.38	.824	.168
	PhD	34	4.03	.969	.166
	Post-PhD	3	4.00	1.000	.577
	<b>Total</b>	<b>268</b>	<b>4.07</b>	<b>.953</b>	<b>.058</b>
Q14.7. I am satisfied with how quickly the SIS loads pages and images	Diploma	17	4.29	.772	.187
	Bachelor	190	3.99	.848	.062
	Master	24	4.25	.944	.193
	PhD	34	4.00	.985	.169
	Post-PhD	3	4.00	1.000	.577
	<b>Total</b>	<b>268</b>	<b>4.03</b>	<b>.871</b>	<b>.053</b>
Q14.8. The user interface of SIS measures up to global standard	Diploma	16	4.19	.911	.228
	Bachelor	190	3.88	.895	.065
	Master	24	3.88	.797	.163
	PhD	34	3.50	1.022	.175
	Post-PhD	3	3.33	1.528	.882
	<b>Total</b>	<b>267</b>	<b>3.85</b>	<b>.919</b>	<b>.056</b>
Q14.9. The information on the SIS is	Diploma	17	4.35	.702	.170

more timely	Bachelor	190	3.99	.854	.062
	Master	24	4.17	.761	.155
	PhD	34	3.71	.970	.166
	Post-PhD	3	3.67	1.155	.667
	<b>Total</b>	<b>268</b>	<b>3.99</b>	<b>.863</b>	<b>.053</b>
	<hr/>				
Q14.10. The information on the SIS is more accurate	Diploma	17	4.12	.781	.189
	Bachelor	189	3.94	.790	.057
	Master	24	4.08	.717	.146
	PhD	34	3.97	.937	.161
	Post-PhD	3	4.33	1.155	.667
	<b>Total</b>	<b>267</b>	<b>3.97</b>	<b>.804</b>	<b>.049</b>
<hr/>					
Q14.11. The information on SIS is more relevant	Diploma	17	4.00	.707	.171
	Bachelor	190	3.95	.795	.058
	Master	24	4.13	.900	.184
	PhD	34	3.97	1.000	.171
	Post-PhD	3	4.33	1.155	.667
	<b>Total</b>	<b>268</b>	<b>3.97</b>	<b>.827</b>	<b>.051</b>
<hr/>					
Q14.12. I find it easy to use SIS because I am computer literate	Diploma	17	4.18	.728	.176
	Bachelor	189	4.01	.887	.065
	Master	24	4.46	.779	.159
	PhD	34	4.09	.900	.154
	Post-PhD	3	4.00	1.732	1.000
	<b>Total</b>	<b>267</b>	<b>4.07</b>	<b>.884</b>	<b>.054</b>
<hr/>					
Q14.13. I am satisfied with the overall system quality of SIS	Diploma	17	4.12	.697	.169
	Bachelor	190	4.09	.871	.063
	Master	24	4.42	.776	.158
	PhD	34	3.94	.952	.163
	Post-PhD	3	3.67	1.528	.882
	<b>Total</b>	<b>268</b>	<b>4.10</b>	<b>.873</b>	<b>.053</b>

## **Chapter 5**

### **CONCLUSION**

Conclusively, this study offered an insight into the university staff and students perception about proposed web-based student information system. The overall assessment of computerized system was positive and showed that integration of technology has increased the utilization of system, thus it is recommended for Sulaimaniyah University and other universities in Kurdistan to change their traditional information systems to web-based information system.

Moreover, the researcher has found the answers to the research questions during her investigation:

In regard to the question one, the meaning of information system and the advantages and challenges of such system in higher education institutions of developing countries, have been explained in detail in chapter two.

In regard to question two, according to the findings, the teacher and administrator staff have more important role than students in the system. They are the one whom use the system most for enrolling and registering the students and make the query, students from other hand can access to the personal data, grades and class schedule through this system. The findings showed that the elder students with higher degree are more interested to use this system than the young ones; this can be because

system being new and students were not computer literate enough to have better connection with the system. The system did help the teacher for announcing the news and short notes in the system; however the best functionality of such system will be achieved through combination of it with e-learning which can be done for further researches. Moreover, the communication and interaction between administrator staff, lecturers and students become too much faster and easier using proposed system and according to the findings the instructor's feedback about the system was quite positive and believed that computerizing the system can help them to process the student's information much faster and more accurately. The administrator staffs were the ones most comfortable and happy about this system since according to the university regulation they are the ones responsible for enrolling students and processing their data.

Finally, it is essential for Kurdish universities to have more effective and efficient delivery in their information system. Despite the fact that paper-based student information systems in this county have been used more than hundred years but the world is changing and Kurdish society have to keep up with this changes therefore integration of technology in daily life is not escapable. Academic institution in Kurdistan has the pledge and responsibility to provoke and motivate the academic and new generation of this country to be familiar with technology.

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## **APPENDICES**

## Appendix A: More Statistical Questionnaire Tables

Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their age

	Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups	5	3.170	4.350	.001
	Within Groups	190.939	.729		
	Total	206.791	267		
Q13.2.Keeping the records became easier	Between Groups	5	2.438	4.316	.001
	Within Groups	148.000	.565		
	Total	160.190	267		
Q13.3.Correspondence became easier	Between Groups	5	1.646	2.337	.042
	Within Groups	184.528	.704		
	Total	192.757	267		
Q13.4.Many more operations can be done compared to the past times	Between Groups	5	1.393	1.909	.093
	Within Groups	191.136	.730		
	Total	198.101	267		
Q13.5.It is easier to correct the mistakes	Between Groups	5	2.215	2.844	.016
	Within Groups	204.088	.779		
	Total	215.164	267		
Q13.6.The information asked by the upper institutions can be transmitted in a short time.	Between Groups	5	2.675	3.368	.006
	Within Groups	208.072	.794		
	Total	221.448	267		

Q13.7.It is easy to detect the mistakes	Between Groups	12.492	5	2.498	2.655	.023
	Within Groups	246.582	262	.941		
	Total	259.075	267			
Q13.8.Information related to the students can be transmitted to the parents easily.	Between Groups	28.072	5	5.614	4.243	.001
	Within Groups	346.674	262	1.323		
	Total	374.746	267			
Q13.9.It makes it easy to reach the needed information to solve the problems	Between Groups	10.078	5	2.016	2.578	.027
	Within Groups	204.859	262	.782		
	Total	214.937	267			
Q13.10.The data that are input in the computer are effective in making managerial decisions	Between Groups	15.835	5	3.167	4.288	.001
	Within Groups	193.519	262	.739		
	Total	209.354	267			
Q13.11.My workload and responsibilities has reduced.	Between Groups	11.986	5	2.397	2.422	.036
	Within Groups	259.339	262	.990		
	Total	271.325	267			
Q13.12.Reusability of information increased after using SIS	Between Groups	9.789	5	1.958	2.894	.015
	Within Groups	177.237	262	.676		
	Total	187.026	267			
Q13.13.Reliability of information increased after using SIS	Between Groups	7.800	5	1.560	2.240	.051
	Within Groups	182.479	262	.696		
	Total	190.280	267			
Q13.14.Security of information increased after using SIS	Between Groups	3.896	5	.779	.963	.441
	Within Groups	212.026	262	.809		
	Total	215.922	267			
Q13.15.Speed of registration process	Between Groups	10.010	5	2.002	3.091	.010

increased after using SIS	Within Groups	169.706	262	.648		
	Total	179.716	267			

Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their gender

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups	.007	1	.007	.008	.927
	Within Groups	206.784	266	.777		
	Total	206.791	267			
Q13.2.Keeping the records became easier	Between Groups	3.067	1	3.067	5.192	.023
	Within Groups	157.123	266	.591		
	Total	160.190	267			
Q13.3.Correspondence became easier	Between Groups	.286	1	.286	.396	.530
	Within Groups	192.471	266	.724		
	Total	192.757	267			
Q13.4.Many more operations can be done compared to the past times	Between Groups	.163	1	.163	.219	.640
	Within Groups	197.938	266	.744		
	Total	198.101	267			
Q13.5.It is easier to correct the mistakes	Between Groups	.599	1	.599	.742	.390
	Within Groups	214.566	266	.807		
	Total	215.164	267			



Q13.6.The information asked by the upper institutions can be transmitted in a short time.	Between	1.470	1	1.470	1.778	.184
	Groups					
	Within	219.978	266	.827		
	Total	221.448	267			
Q13.7.It is easy to detect the mistakes	Between	.033	1	.033	.034	.855
	Groups					
	Within	259.042	266	.974		
	Total	259.075	267			
Q13.8.Information related to the students can be transmitted to the parents easily.	Between	.208	1	.208	.148	.701
	Groups					
	Within	374.538	266	1.408		
	Total	374.746	267			
Q13.9.It makes it easy to reach the needed information to solve the problems	Between	.067	1	.067	.083	.774
	Groups					
	Within	214.870	266	.808		
	Total	214.937	267			
Q13.10.The data that are input in the computer are effective in making managerial decisions	Between	.018	1	.018	.023	.879
	Groups					
	Within	209.336	266	.787		
	Total	209.354	267			
Q13.11.My workload and responsibilities has reduced.	Between	.009	1	.009	.009	.926
	Groups					
	Within	271.316	266	1.020		
	Total	271.325	267			

Q13.12.Reusability of information increased after using SIS	Between Groups Within Groups Total	.128 186.898 187.026	1 266 267	.128 .703	.183	.670
Q13.13.Reliability of information increased after using SIS	Between Groups Within Groups Total	.374 189.906 190.280	1 266 267	.374 .714	.524	.470
Q13.14.Security of information increased after using SIS	Between Groups Within Groups Total	1.749 214.173 215.922	1 266 267	1.749 .805	2.172	.142
Q13.15.Speed of registration process increased after using SIS	Between Groups Within Groups Total	.163 179.553 179.716	1 266 267	.163 .675	.242	.623

Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their education

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups Within Groups Total	14.678 192.113 206.791	4 263 267	3.670 .730	5.023	.001
Q13.2.Keeping the records became easier	Between Groups Within Groups Total	11.691 148.499 160.190	4 263 267	2.923 .565	5.176	.000

Q13.3. Correspondence became easier	Between Groups	7.105	4	1.776	2.516	.042
	Within Groups	185.653	263	.706		
	Total	192.757	267			
Q13.4. Many more operations can be done compared to the past times	Between Groups	10.404	4	2.601	3.645	.007
	Within Groups	187.697	263	.714		
	Total	198.101	267			
Q13.5. It is easier to correct the mistakes	Between Groups	9.118	4	2.280	2.910	.022
	Within Groups	206.046	263	.783		
	Total	215.164	267			
Q13.6. The information asked by the upper institutions can be transmitted in a short time.	Between Groups	12.366	4	3.092	3.889	.004
	Within Groups	209.082	263	.795		
	Total	221.448	267			
Q13.7. It is easy to detect the mistakes	Between Groups	9.013	4	2.253	2.370	.053
	Within Groups	250.062	263	.951		
	Total	259.075	267			
Q13.8. Information related to the students can be transmitted to the parents easily.	Between Groups	20.260	4	5.065	3.758	.005
	Within Groups	354.486	263	1.348		
	Total	374.746	267			
Q13.9. It makes it easy to reach the needed information to solve the problems	Between Groups	10.016	4	2.504	3.214	.013
	Within Groups	204.920	263	.779		
	Total	214.937	267			
Q13.10. The data that are input in the computer are effective in making managerial decisions	Between Groups	13.619	4	3.405	4.575	.001
	Within Groups	195.736	263	.744		
	Total	209.354	267			
Q13.11. My workload and responsibilities	Between Groups	7.071	4	1.768	1.759	.137

has reduced.	Within Groups	264.254	263	1.005		
	Total	271.325	267			
Q13.12.Reusability of information increased after using SIS	Between Groups	8.240	4	2.060	3.030	.018
	Within Groups	178.786	263	.680		
	Total	187.026	267			
Q13.13. Reliability of information increased after using SIS	Between Groups	7.356	4	1.839	2.644	.034
	Within Groups	182.924	263	.696		
	Total	190.280	267			
Q13.14.Security of information increased after using SIS	Between Groups	5.521	4	1.380	1.725	.145
	Within Groups	210.401	263	.800		
	Total	215.922	267			
Q13.15.Speed of registration process increased after using SIS	Between Groups	8.145	4	2.036	3.121	.016
	Within Groups	171.571	263	.652		
	Total	179.716	267			

Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their position

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups	14.999	2	7.499	10.362	.000
	Within Groups	191.792	265	.724		
	Total	206.791	267			
Q13.2. Keeping the records became easier	Between Groups	11.295	2	5.648	10.052	.000
	Within Groups	148.895	265	.562		
	Total	160.190	267			

Q13.3. Correspondence became easier	Between Groups	6.859	2	3.430	4.889	.008
	Within Groups	185.898	265	.702		
	Total	192.757	267			
Q13.4.Many more operations can be done compared to the past times	Between Groups	8.609	2	4.305	6.020	.003
	Within Groups	189.492	265	.715		
	Total	198.101	267			
Q13.5.It is easier to correct the mistakes	Between Groups	8.843	2	4.422	5.679	.004
	Within Groups	206.321	265	.779		
	Total	215.164	267			
Q13.6.The information asked by the upper institutions can be transmitted in a short time.	Between Groups	9.275	2	4.637	5.792	.003
	Within Groups	212.173	265	.801		
	Total	221.448	267			
Q13.7.It is easy to detect the mistakes	Between Groups	8.074	2	4.037	4.262	.015
	Within Groups	251.000	265	.947		
	Total	259.075	267			
Q13.8.Information related to the students can be transmitted to the parents easily.	Between Groups	36.961	2	18.481	14.499	.000
	Within Groups	337.785	265	1.275		
	Total	374.746	267			
Q13.9.It makes it easy to reach the needed information to solve the problems	Between Groups	8.824	2	4.412	5.672	.004
	Within Groups	206.113	265	.778		
	Total	214.937	267			
Q13.10.The data that are input in the computer are effective in making managerial decisions	Between Groups	16.702	2	8.351	11.487	.000
	Within Groups	192.652	265	.727		
	Total	209.354	267			

Q13.11.My workload and responsibilities has reduced.	Between Groups	7.999	2	4.000	4.025	.019
	Within Groups	263.325	265	.994		
	Total	271.325	267			
Q13.12.Reusability of information increased after using SIS	Between Groups	5.107	2	2.554	3.720	.026
	Within Groups	181.919	265	.686		
	Total	187.026	267			
Q13.13.Reliability of information increased after using SIS	Between Groups	4.690	2	2.345	3.348	.037
	Within Groups	185.590	265	.700		
	Total	190.280	267			
Q13.14.Security of information increased after using SIS	Between Groups	3.880	2	1.940	2.425	.090
	Within Groups	212.042	265	.800		
	Total	215.922	267			
Q13.15.Speed of registration process increased after using SIS	Between Groups	5.881	2	2.941	4.483	.012
	Within Groups	173.835	265	.656		
	Total	179.716	267			

Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their experience

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups	15.564	5	3.113	4.265	.001
	Within Groups	191.227	262	.730		
	Total	206.791	267			
Q13.2.Keeping the records became easier	Between Groups	12.634	5	2.527	4.487	.001
	Within Groups	147.556	262	.563		
	Total	160.190	267			
Q13.3.Correspondence became easier	Between Groups	10.105	5	2.021	2.899	.014
	Within Groups	182.653	262	.697		
	Total	192.757	267			
Q13.4.Many more operations can be done compared to the past times	Between Groups	8.724	5	1.745	2.414	.037
	Within Groups	189.376	262	.723		
	Total	198.101	267			
Q13.5.It is easier to correct the mistakes	Between Groups	15.023	5	3.005	3.933	.002
	Within Groups	200.141	262	.764		
	Total	215.164	267			
Q13.6.The information asked by the upper institutions can be transmitted in a short time.	Between Groups	14.411	5	2.882	3.647	.003
	Within Groups	207.037	262	.790		
	Total	221.448	267			
Q13.7.It is easy to detect the mistakes	Between Groups	15.090	5	3.018	3.241	.007
	Within Groups	243.985	262	.931		
	Total	259.075	267			

Q13.8.Information related to the students can be transmitted to the parents easily.	Between Groups	23.176	5	4.635	3.454	.005
	Within Groups	351.570	262	1.342		
	Total	374.746	267			
Q13.9.It makes it easy to reach the needed information to solve the problems	Between Groups	9.468	5	1.894	2.415	.037
	Within Groups	205.469	262	.784		
	Total	214.937	267			
Q13.10.The data that are input in the computer are effective in making managerial decisions	Between Groups	15.229	5	3.046	4.111	.001
	Within Groups	194.126	262	.741		
	Total	209.354	267			
Q13.11.My workload and responsibilities has reduced.	Between Groups	10.045	5	2.009	2.015	.077
	Within Groups	261.279	262	.997		
	Total	271.325	267			
Q13.12.Reusability of information increased after using SIS	Between Groups	9.011	5	1.802	2.652	.023
	Within Groups	178.015	262	.679		
	Total	187.026	267			
Q13.13.Reliability of information increased after using SIS	Between Groups	10.993	5	2.199	3.213	.008
	Within Groups	179.287	262	.684		
	Total	190.280	267			
Q13.14.Security of information increased after using SIS	Between Groups	6.019	5	1.204	1.503	.189
	Within Groups	209.902	262	.801		
	Total	215.922	267			
Q13.15.Speed of registration process increased after using SIS	Between Groups	8.897	5	1.779	2.729	.020
	Within Groups	170.819	262	.652		
	Total	179.716	267			



Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their department

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups	4.190	7	.599	.768	.614
	Within Groups	202.601	260	.779		
	Total	206.791	267			
Q13.2.Keeping the records became easier	Between Groups	4.142	7	.592	.986	.442
	Within Groups	156.048	260	.600		
	Total	160.190	267			
Q13.3.Correspondence became easier	Between Groups	5.749	7	.821	1.142	.337
	Within Groups	187.009	260	.719		
	Total	192.757	267			
Q13.4.Many more operations can be done compared to the past times	Between Groups	4.099	7	.586	.785	.601
	Within Groups	194.002	260	.746		
	Total	198.101	267			
Q13.5.It is easier to correct the mistakes	Between Groups	7.698	7	1.100	1.378	.215
	Within Groups	207.466	260	.798		
	Total	215.164	267			
Q13.6.The information asked by the upper institutions can be transmitted in a short time.	Between Groups	9.007	7	1.287	1.575	.143
	Within Groups	212.441	260	.817		
	Total	221.448	267			
Q13.7.It is easy to detect the mistakes	Between Groups	11.558	7	1.651	1.734	.101
	Within Groups	247.517	260	.952		
	Total	259.075	267			

Q13.8.Information related to the students can be transmitted to the parents easily.	Between Groups	34.607	7	4.944	3.779	.001
	Within Groups	340.140	260	1.308		
	Total	374.746	267			
Q13.9.It makes it easy to reach the needed information to solve the problems	Between Groups	5.889	7	.841	1.046	.399
	Within Groups	209.048	260	.804		
	Total	214.937	267			
Q13.10.The data that are input in the computer are effective in making managerial decisions	Between Groups	3.859	7	.551	.698	.674
	Within Groups	205.495	260	.790		
	Total	209.354	267			
Q13.11.My workload and responsibilities has reduced.	Between Groups	7.154	7	1.022	1.006	.427
	Within Groups	264.170	260	1.016		
	Total	271.325	267			
Q13.12.Reusability of information increased after using SIS	Between Groups	9.843	7	1.406	2.063	.048
	Within Groups	177.184	260	.681		
	Total	187.026	267			
Q13.13.Reliability of information increased after using SIS	Between Groups	8.972	7	1.282	1.838	.080
	Within Groups	181.307	260	.697		
	Total	190.280	267			
Q13.14.Security of information increased after using SIS	Between Groups	4.876	7	.697	.858	.540
	Within Groups	211.046	260	.812		
	Total	215.922	267			

Q13.15.Speed of registration process increased after using SIS	Between Groups	3.648	7	.521	.770	.613
	Within Groups	176.069	260	.677		
	Total	179.716	267			

Participants' perceptions on the contributions of Proposed Student Information Systems to the University regarded to their computer literacy

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q13.1.Preparation of documents became easier	Between Groups	3.096	1	3.096	4.043	.045
	Within Groups	203.695	266	.766		
	Total	206.791	267			
Q13.2.Keeping the records became easier	Between Groups	4.524	1	4.524	7.731	.006
	Within Groups	155.666	266	.585		
	Total	160.190	267			
Q13.3.Correspondence became easier	Between Groups	1.000	1	1.000	1.387	.240
	Within Groups	191.757	266	.721		
	Total	192.757	267			
Q13.4.Many more operations can be done compared to the past times	Between Groups	2.265	1	2.265	3.076	.081
	Within Groups	195.836	266	.736		
	Total	198.101	267			
Q13.5.It is easier to correct the mistakes	Between Groups	3.060	1	3.060	3.837	.051
	Within Groups	212.104	266	.797		
	Total	215.164	267			

Q13.6.The information asked by the upper institutions can be transmitted in a short time.	Between Groups	15.897	1	15.897	20.572	.000
	Within Groups	205.551	266	.773		
	Total	221.448	267			
Q13.7.It is easy to detect the mistakes	Between Groups	1.879	1	1.879	1.943	.165
	Within Groups	257.196	266	.967		
	Total	259.075	267			
Q13.8.Information related to the students can be transmitted to the parents easily.	Between Groups	.016	1	.016	.011	.915
	Within Groups	374.730	266	1.409		
	Total	374.746	267			
Q13.9.It makes it easy to reach the needed information to solve the problems	Between Groups	8.209	1	8.209	10.563	.001
	Within Groups	206.727	266	.777		
	Total	214.937	267			
Q13.10.The data that are input in the computer are effective in making managerial decisions	Between Groups	6.264	1	6.264	8.204	.005
	Within Groups	203.091	266	.763		
	Total	209.354	267			
Q13.11.My workload and responsibilities has reduced.	Between Groups	2.981	1	2.981	2.955	.087
	Within Groups	268.344	266	1.009		
	Total	271.325	267			
Q13.12.Reusability of information increased after using SIS	Between Groups	1.628	1	1.628	2.336	.128
	Within Groups	185.398	266	.697		
	Total	187.026	267			
Q13.13.Reliability of information increased after using SIS	Between Groups	3.078	1	3.078	4.373	.037
	Within Groups	187.202	266	.704		
	Total	190.280	267			

Q13.14.Security of information increased after using SIS	Between Groups	2.376	1	2.376	2.960	.087
	Within Groups	213.545	266	.803		
	Total	215.922	267			
Q13.15.Speed of registration process increased after using SIS	Between Groups	3.545	1	3.545	5.352	.021
	Within Groups	176.172	266	.662		
	Total	179.716	267			

Participants' perceptions on the quality of proposed system regarded to their age

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Free dom)	Sig. (significant effect )
Q14.1.The language used in proposed system is easy to understand	Between Groups	10.856	5	2.171	3.580	.004
	Within Groups	158.905	262	.607		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	3.274	5	.655	.976	.433
	Within Groups	175.722	262	.671		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	5.098	5	1.020	1.244	.289
	Within Groups	214.823	262	.820		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	1.225	5	.245	.347	.884
	Within Groups	184.954	262	.706		
	Total	186.179	267			

Q14.5.I am satisfied with SIS ease of use	Between Groups	3.142	5	.628	.783	.563
	Within Groups	210.336	262	.803		
	Total	213.478	267			
Q14.6.I am satisfied with the speed of SIS	Between Groups	4.174	5	.835	.918	.470
	Within Groups	238.334	262	.910		
	Total	242.507	267			
Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	3.215	5	.643	.844	.519
	Within Groups	199.483	262	.761		
	Total	202.698	267			
Q14.8.The user interface of SIS measures up to global standard	Between Groups	4.169	5	.834	.987	.426
	Within Groups	220.535	261	.845		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	4.540	5	.908	1.224	.298
	Within Groups	194.427	262	.742		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	.618	5	.124	.189	.967
	Within Groups	171.142	261	.656		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	3.036	5	.607	.885	.492
	Within Groups	179.781	262	.686		
	Total	182.817	267			
Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	1.593	5	.319	.404	.846
	Within Groups	206.055	261	.789		
	Total	207.648	266			

Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	2.766	5	.553	.722	.607
	Within Groups	200.711	262	.766		
	Total	203.478	267			

Participants' perceptions on the quality of proposed system regarded to their gender

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q14.1.The language used in proposed system is easy to understand	Between Groups	.921	1	.921	1.451	.229
	Within Groups	168.840	266	.635		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	1.075	1	1.075	1.607	.206
	Within Groups	177.921	266	.669		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	.347	1	.347	.420	.517
	Within Groups	219.575	266	.825		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	.002	1	.002	.003	.953
	Within Groups	186.177	266	.700		
	Total	186.179	267			
Q14.5.I am satisfied with SIS ease of use	Between Groups	.182	1	.182	.226	.635
	Within Groups	213.296	266	.802		
	Total	213.478	267			
Q14.6.I am satisfied with the speed of SIS	Between Groups	.320	1	.320	.351	.554
	Within Groups	242.187	266	.910		
	Total	242.507	267			

Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	.665	1	.665	.875	.350
	Within Groups	202.033	266	.760		
	Total	202.698	267			
Q14.8.The user interface of SIS measures up to global standard	Between Groups	.480	1	.480	.567	.452
	Within Groups	224.224	265	.846		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	.089	1	.089	.119	.730
	Within Groups	198.877	266	.748		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	.570	1	.570	.883	.348
	Within Groups	171.190	265	.646		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	.103	1	.103	.151	.698
	Within Groups	182.714	266	.687		
	Total	182.817	267			
Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	.253	1	.253	.324	.570
	Within Groups	207.395	265	.783		
	Total	207.648	266			
Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	.185	1	.185	.242	.623
	Within Groups	203.293	266	.764		
	Total	203.478	267			



Participants' perceptions on the quality of proposed system regarded to their education

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q14.1.The language used in proposed system is easy to understand	Between Groups	10.102	4	2.526	4.160	.003
	Within Groups	159.659	263	.607		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	5.423	4	1.356	2.054	.087
	Within Groups	173.574	263	.660		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	5.213	4	1.303	1.596	.176
	Within Groups	214.709	263	.816		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	2.069	4	.517	.739	.566
	Within Groups	184.111	263	.700		
	Total	186.179	267			
Q14.5.I am satisfied with ease of use	Between Groups	2.656	4	.664	.828	.508
	Within Groups	210.821	263	.802		
	Total	213.478	267			
Q14.6.I am satisfied with the speed of SIS	Between Groups	3.043	4	.761	.835	.504
	Within Groups	239.465	263	.911		
	Total	242.507	267			
Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	2.689	4	.672	.884	.474
	Within Groups	200.008	263	.760		
	Total	202.698	267			

Q14.8.The user interface of SIS measures up to global standard	Between Groups	7.022	4	1.756	2.113	.080
	Within Groups	217.682	262	.831		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	6.046	4	1.512	2.061	.086
	Within Groups	192.920	263	.734		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	1.287	4	.322	.494	.740
	Within Groups	170.473	262	.651		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	1.081	4	.270	.391	.815
	Within Groups	181.736	263	.691		
	Total	182.817	267			
Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	4.505	4	1.126	1.453	.217
	Within Groups	203.143	262	.775		
	Total	207.648	266			
Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	3.852	4	.963	1.269	.283
	Within Groups	199.626	263	.759		
	Total	203.478	267			

Participants' perceptions on the quality of proposed system regarded to their position

	Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)	
Q14.1.The language used in proposed system is easy to understand	Between Groups	3.085	2	1.542	2.452	.088
	Within Groups	166.676	265	.629		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	1.602	2	.801	1.196	.304
	Within Groups	177.395	265	.669		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	2.808	2	1.404	1.714	.182
	Within Groups	217.114	265	.819		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	2.951	2	1.476	2.134	.120
	Within Groups	183.228	265	.691		
	Total	186.179	267			
Q14.5.I am satisfied with SIS ease of use	Between Groups	8.956	2	4.478	5.802	.003
	Within Groups	204.521	265	.772		
	Total	213.478	267			
Q14.6.I am satisfied with the speed of SIS	Between Groups	4.604	2	2.302	2.564	.079
	Within Groups	237.904	265	.898		
	Total	242.507	267			
Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	2.782	2	1.391	1.844	.160
	Within Groups	199.916	265	.754		
	Total	202.698	267			

Q14.8.The user interface of SIS measures up to global standard	Between Groups	3.933	2	1.967	2.352	.097
	Within Groups	220.771	264	.836		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	2.731	2	1.365	1.844	.160
	Within Groups	196.236	265	.741		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	1.148	2	.574	.888	.413
	Within Groups	170.612	264	.646		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	1.800	2	.900	1.317	.270
	Within Groups	181.017	265	.683		
	Total	182.817	267			
Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	2.201	2	1.101	1.414	.245
	Within Groups	205.447	264	.778		
	Total	207.648	266			
Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	6.948	2	3.474	4.684	.010
	Within Groups	196.530	265	.742		
	Total	203.478	267			

Participants' perceptions on the quality of proposed system regarded to their experience

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q14.1.The language used in proposed system is easy to understand	Between Groups	8.330	5	1.666	2.704	.021
	Within Groups	161.431	262	.616		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	3.027	5	.605	.901	.481
	Within Groups	175.969	262	.672		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	2.753	5	.551	.664	.651
	Within Groups	217.169	262	.829		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	3.916	5	.783	1.126	.347
	Within Groups	182.263	262	.696		
	Total	186.179	267			
Q14.5.I am satisfied with ease of use	Between Groups	10.595	5	2.119	2.736	.020
	Within Groups	202.883	262	.774		
	Total	213.478	267			
Q14.6.I am satisfied with the speed of SIS	Between Groups	9.447	5	1.889	2.124	.063
	Within Groups	233.061	262	.890		
	Total	242.507	267			
Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	7.477	5	1.495	2.007	.078
	Within Groups	195.220	262	.745		
	Total	202.698	267			

Q14.8.The user interface of SIS measures up to global standard	Between Groups	7.915	5	1.583	1.906	.094
	Within Groups	216.789	261	.831		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	.439	5	.088	.116	.989
	Within Groups	198.527	262	.758		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	2.563	5	.513	.791	.557
	Within Groups	169.198	261	.648		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	2.381	5	.476	.692	.630
	Within Groups	180.436	262	.689		
	Total	182.817	267			
Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	8.090	5	1.618	2.116	.064
	Within Groups	199.558	261	.765		
	Total	207.648	266			
Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	2.928	5	.586	.765	.576
	Within Groups	200.550	262	.765		
	Total	203.478	267			

Participants' perceptions on the quality of proposed system regarded to their department

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q14.1.The language used in proposed system is easy to understand	Between Groups	5.146	7	.735	1.161	.326
	Within Groups	164.615	260	.633		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	2.572	7	.367	.541	.803
	Within Groups	176.424	260	.679		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	4.395	7	.628	.757	.624
	Within Groups	215.526	260	.829		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	3.093	7	.442	.627	.733
	Within Groups	183.086	260	.704		
	Total	186.179	267			
Q14.5.I am satisfied with SIS ease of use	Between Groups	5.578	7	.797	.996	.434
	Within Groups	207.900	260	.800		
	Total	213.478	267			
Q14.6.I am satisfied with the speed of SIS	Between Groups	5.899	7	.843	.926	.487
	Within Groups	236.608	260	.910		
	Total	242.507	267			

Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	3.359	7	.480	.626	.734
	Within Groups	199.338	260	.767		
	Total	202.698	267			
Q14.8.The user interface of SIS measures up to global standard	Between Groups	4.583	7	.655	.770	.613
	Within Groups	220.121	259	.850		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	2.688	7	.384	.509	.828
	Within Groups	196.278	260	.755		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	2.374	7	.339	.519	.820
	Within Groups	169.387	259	.654		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	5.510	7	.787	1.154	.330
	Within Groups	177.308	260	.682		
	Total	182.817	267			
Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	9.334	7	1.333	1.741	.100
	Within Groups	198.314	259	.766		
	Total	207.648	266			
Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	3.938	7	.563	.733	.644
	Within Groups	199.539	260	.767		
	Total	203.47	267			



Participants' perceptions on the quality of proposed system regarded to their computer literacy

		Sum of Squares	Df (degrees of freedom)	Mean Square	F (Freedom)	Sig. (significant effect)
Q14.1.The language used in proposed system is easy to understand	Between Groups	.915	1	.915	1.442	.231
	Within Groups	168.846	266	.635		
	Total	169.761	267			
Q14.2.The links between the pages are clear and easy to follow	Between Groups	5.669	1	5.669	8.700	.003
	Within Groups	173.327	266	.652		
	Total	178.996	267			
Q14.3.Design of the proposed system is user friendly	Between Groups	.570	1	.570	.691	.406
	Within Groups	219.352	266	.825		
	Total	219.922	267			
Q14.4.Computerizing registration procedure increases the user's satisfaction	Between Groups	.770	1	.770	1.105	.294
	Within Groups	185.409	266	.697		
	Total	186.179	267			
Q14.5.I am satisfied with SIS ease of use	Between Groups	.562	1	.562	.702	.403
	Within Groups	212.915	266	.800		
	Total	213.478	267			

Q14.6.I am satisfied with the speed of SIS	Between Groups	3.995	1	3.995	4.455	.036
	Within Groups	238.513	266	.897		
	Total	242.507	267			
Q14.7.I am satisfied with how quickly the SIS loads pages and images	Between Groups	.342	1	.342	.450	.503
	Within Groups	202.356	266	.761		
	Total	202.698	267			
Q14.8.The user interface of SIS measures up to global standard	Between Groups	.233	1	.233	.275	.601
	Within Groups	224.471	265	.847		
	Total	224.704	266			
Q14.9.The information on the SIS is more timely	Between Groups	.109	1	.109	.145	.703
	Within Groups	198.858	266	.748		
	Total	198.966	267			
Q14.10.The information on the SIS is more accurate	Between Groups	2.558	1	2.558	4.006	.046
	Within Groups	169.203	265	.639		
	Total	171.760	266			
Q14.11.The information on SIS is more relevant	Between Groups	4.887	1	4.887	7.306	.007
	Within Groups	177.930	266	.669		
	Total	182.817	267			

Q14.12.I find it easy to use SIS because I am computer literate	Between Groups	9.982	1	9.982	13.383	.000
	Within Groups	197.666	265	.746		
	Total	207.648	266			
Q14.13.I am satisfied with the overall system quality of SIS	Between Groups	1.795	1	1.795	2.367	.125
	Within Groups	201.683	266	.758		
	Total	203.478	267			

## Appendix B: Questionnaire

Questionnaire

Dear Participant,

I am currently undertaking a Master Degree in Information Communication Technology at Eastern Mediterranean University. In fulfilment of my dissertation I am required to research a topic area. The topic I have chosen is the ‘Instructors’ Perception on student information system (SIS) in Higher Education: The Case of Sulaimaniyah University in Kurdistan’.

The questionnaire only will take several minutes of your time. I would be very grateful if you could complete within one working week. The information obtained from the questionnaire will construct the basis of the scientific work and will not be used for any other purpose.

Yours Faithfully

### **Part A.**

**1. Name of your Institution: -----**

**2. Please select your Age:**

18-22 ( ) 23-29 ( ) 30-37 ( ) 37-49 ( ) 50-59 ( ) 60+ ( )

**3. Please select your Sex:**

Female ( ) Male ( )

**4. Please select your Education Level:**

Diploma ( ) Bachelor ( ) Master ( ) PhD ( ) Post-PhD ( )

**5. Please select your department:**

Department of Computer Science ( ) Department of Mathematical Sciences ( )  
Department of Art Education ( ) Department of Physical Education ( )  
Department of English Language ( ) Department of Kindergarten ( )  
Department of Kurdish Language ( ) Department of Mathematical Sciences ( )  
Others ( )

**6. Please indicate your Position:**

Administrative ( ) Student ( ) Teacher ( )

**7. Please select your years of work Experience in this position:**

I have no experience ( ) 1-3 ( ) 4-8 ( ) 9-12 ( ) 13-19 ( ) +20 ( )

**8. Do you consider yourself computer literate:**

Yes ( ) No ( )

**Part B.**

Please answer the following questions according to your university policies toward student information system.

**9. Have you ever used web-based student information system before?**

Yes ( ) No ( )

**10. How often do you have to use the CURRENT (paper-based) student information system:**

Always ( ) Often ( ) Sometimes ( ) Never ( )

**11. Which platform do you prefer to access the student information system?**

Web-base ( ) Windows ( ) Linux ( ) Mac ( ) Mobile ( )

**12. In your opinion what is the MOST used function for student information system? (You can choose up to 5 options)**

- 1.Student personal information ( )
- 2.Student Registration procedure ( )
- 3.Student education background ( )
- 3.Student score and transcript query ( )
- 5.Student course Arrangement ( )
- 6.Student reward and punishment situation ( )
- 7.Student scholarship query ( )
- 8.Student campus card query ( )
- 9.Student information announcement ( )
- 10.Student attendance query ( )

**Part C.**

13. Please answer the following question by selecting the appropriate level of agreement on the following statements. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1

Q13	<b>The contributions of Proposed Information Systems to University Information Management</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Strongly Disagree</b>	<b>Disagree</b>
1	Preparation of documents became easier					
2	Keeping the records became easier					
3	Correspondence became easier					
4	Many more operations can be done compared to the past times					
5	It is easier to correct the mistakes					
6	The information asked by the upper institutions can be transmitted in a short time.					
7	It is easy to detect the mistakes					
8	Information related to the students can be transmitted to the parents easily.					
9	It makes it easy to reach the needed information to solve the problems					

10	The data that are input in the computer are effective in making managerial decisions					
11	My workload and responsibilities has reduced.					
12	Reusability of information increased after using SIS					
13	Reliability of information increased after using SIS					
14	Security of information increased after using SIS					
15	Speed of registration process increased after using SIS					

**Part D.**

14. Please answer the following question by selecting the appropriate level of agreement on the following statements. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1

<b>Q14</b>	<b>Perception of the users about the quality of proposed system</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Strongly Disagree</b>	<b>Disagree</b>
1	The language used in proposed system is easy to understand					
2	The links between the pages are clear and easy to follow					

3	Design of the proposed system is user friendly					
4	Computerizing registration procedure increases the user's satisfaction					
5	I am satisfied with SIS ease of use					
6	I am satisfied with the speed of SIS					
7	I am satisfied with how quickly the SIS loads pages and images					
8	The user interface of SIS measures up to global standard					
9	The information on the SIS is more timely					
10	The information on the SIS is more accurate					
11	The information on SIS is more relevant					
12	I find it easy to use SIS because I am computer literate					
13	I am satisfied with the overall system quality of SIS					