QALAAI ZANIST SCIENTIFIC JOURNAL
A Scientific Quarterly Refereed Journal Issued by Lebanese French University – Erbil, Kurdistan, Iraq
Vol. (4), Issue (1), Winter 2019
ISSN 2518-6566 (Online) - ISSN 2518-6558 (Print)

A WEB BASED SYSTEM FOR ONLINE STUDENT TRANSACTION AMONG SULAIMANIYAH CITY SCHOOL APPLICATION

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ARTICLE INFO

Article History:
Received: 23/9/2018
Accepted: 15/11/2018
Published: Winter 2019

Doi:
10.25212/lfu.qzj.4.1.30

Keywords:
Online system, Web technology, School manager, ransaction, paperless

ABSTRACT

Nowadays, many schools provide a different level of education for their students. The objective is to change the place of the school where the students study and change it to another college in different place. However, it is obvious that in Kurdistan Iraqi region, any documentation related to education process will need to go through the Ministry of education, and this process takes a lot of time because of the distance between the offices in the city. Some paper works need to be done in order to accomplish any kind of task related to education processing including student transition among the schools and colleges either inside the city itself or in

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the city border such as towns and villages. It also takes a lot of time.

This research tries to find out the newest methodology in Kurdistan cities that leads to provide a transformation of the old and classical system to computerized system, which can help the education sector over all the Kurdistan cities to become electronic. This can be done by providing online web pages to perform all these tasks. In addition, this kind of system will be considered as the first system for the Sulaimaniyah education center including all the schools in the cities. These changes may reduce the amount of possible traffic on the streets, as well as huge load on the organizations in education sector. Here student data can also be archived for the future use.

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INTRODUCTION

Nowadays, there is a new system in most of the developed countries, to complete their tasks in a systematic way. The wastage of a large number of papers on a daily basis can be avoided by reducing the use of paper documentation (Ooki et al, 2005).

In the same way, for schools, organizations and educational center offices, done by using a specific software which we have designed to organize daily jobs in schools. As the student data of all the schools in a country are stored in the data center (Jiuzhi andRui, 2010).

One of the most important things is that when one student changes his/her school, there is a requirement of the exchange of paper documents between the two schools. Paper documents include identity letter, last certificate of success and the acceptance letter from both schools. Figure 1 shows an example of a school computerized system (Titan et al, 2017).

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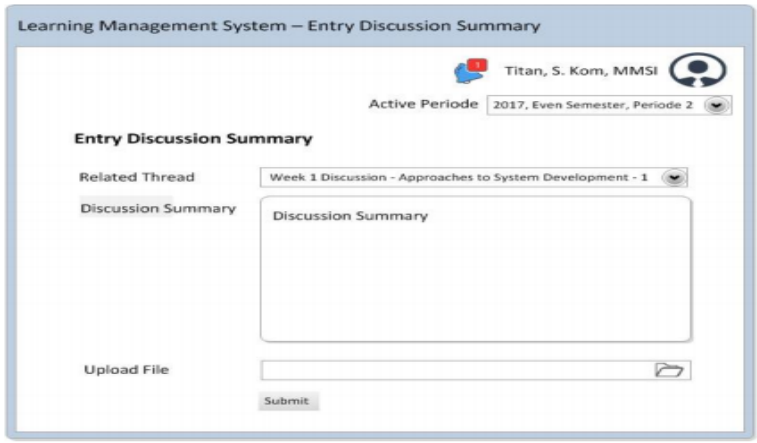

Figure 1. An example of an online system in a school

In developed countries, all these actions are done through websites. However, there is no longer need for a physical transaction between the schools, as it takes a lot of time to finish the process successfully. Figure 2 shows an example of the online school system activity chart (Kadir et al, 2008).

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Figure 2. Online school activity chart

In Sulaimani city, all schools and even the Sulaimani main educational center do not have a specific database to store data. Educational sector follows traditional paper based interactions.

The aim of this paper is to point out the issues and weak points between the traditional working process and the new proposed system. As a result, the schools can meet the new ideas of improvement in terms of being systematic and encouraging. It also makes the overall procedure faster.

In addition, the use of such a system will bring new ideas to Kurdistan in general and educational centers in a specific way. Further, this new system is not limited to the public school sector only but comprises private schools as well. Besides bringing new ideas to the country, it will become the first attempt to encourage Kurdistan offices to reduce the amount of wasting papers.

Furthermore, the research questions that are addressed in this paper is as follows: “How can the new proposed system replace old techniques and what changes can happen with the use of the new system?” The next few sections have discussed these questions and answered them with different techniques and methods.

The rest of the paper is organized as follows. The **Literature review** shows the different ideas from different sources to emphasize the idea of this paper. The **Related Work** section shows the different related ideas that have been worked in terms of the same purpose, from different papers. The **Results and Discussion** sections illustrate the distinction between different systems that are used for the same purposes through charts and surveys from school managers to show the satisfaction with the new planned system. **Implementation and Design** discuss the architecture of the system and how it is designed and implemented. Finally, the **Conclusion and Future Work** shows the final outcome of all the sections and the best way for student school transitions.

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LITERATURE REVIEW

There are many organizations in developed countries that process their daily tasks through computerized systems. Some of them work through the online process while other function offline.

Online systems are those that do their work through online processes; for example, websites and web pages or even through API systems (Application Programming Interface). For instance, governmental document processes in some developed countries, such as the United Kingdom, is such that people put in their official requests through specific websites, which are supported by the British government, known as the E-Government; figure 3 shows an example of online learning application systems (Beel et al, 2013).

On the other hand, the other kind of system is called an offline system through which a specific government or private organization translate all their daily working process from using traditional paper based system to computerized systems. For example, the User Identity information card, the User Passport Identity information center, tax data organizations—in developed countries which are related to people's documents. So that, all these tasks are stored in a databank for future use and especially for any kind of updating requirements (Zhong, 2015).

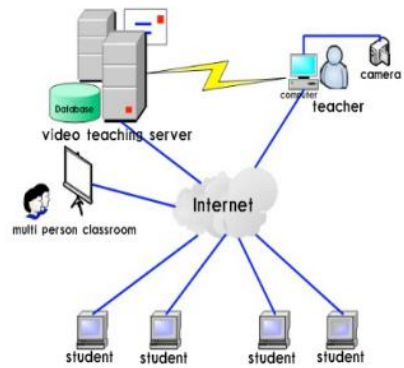

Figure 3. Online school learning materials

There are many other examples that are related to the online process; one of the most important examples, those systems that are used in schools and

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colleges for educational center purposes. In most countries, all school work, especially in terms of student panels, are done through an online systematic process, as well as an offline system (Fergusson et al, 2008).

Schools use offline systems to store student personal information; for example, student names, addresses, email ids, phone numbers, and other personal data. This data will be used in the future in case changes or deletion is required. However, in the online school system, there is a student panel by which they can view school resources such as lectures and other educational materials. In addition to materials, students can interact with the system by uploading assignments, and instructors can give immediate grades to students, and students can view the grades (Mishra and Vimal, 2011).

Figure 4. Offline school system software

In the same way, most schools have a specific number of students each year, and this number varies from one school to another in a particular country. Sometimes, a student may ask for a change of school at any education level (primary, secondary or college-level) to another school in another place. This kind of action can be easily done in developed countries without the use of a large number of papers while avoiding the spending of a long time for the process to be finished.

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Further, such a system of online document processing reduces the possibility of traffic accidents and traffic jams; this is because people will not use the transporting system or visit offices. Also, by solving this problem, another common issue, which is the crowding of offices and the stress of employees, will be solved (Wang et al, 2015).

Pollution is another factor that can have an effect on countries due to the usage of all these transportation methods during working days with large demands on offices. Another such factor relates to when there is a huge increase in population in a country so that the number of those visiting will also be increased (Pešić, and R. Kojić, 2012).

According to the manager of Sulaimani main educational directorate office center, there is no electronic data storage method to store students' data and details in educational centers in general and schools and colleges in particular.

In addition, the Information technology center in the Sulaimani education main office illustrates that in the Iraq-Kurdistan region, there is no such system that can perform the same processes electronically, whereas students have to follow all the required steps, physically. There are physical actions that students need to follow to complete the transaction process. In addition, the working governmental system in the Iraq-Kurdistan region is slow and the requester needs to wait for a long time.

Moreover, within the Sulaimani area boundaries, there are many private and governmental offices. There are a different number of people visiting to see their working status or to start a new documentation process. However, in general, there are no electronic systems that lead to change from physical action to a computerized system for documents.

Therefore, there are a large number of transport vehicles on the roads, highways, and offices. Sometimes, this leads to traffic jams in most Sulaimani roads as people struggle to drive and walk along the roads.

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IMPLEMENTATİON AND DESİGN

This system is designed to solve the main question of this research, which deals with how proposing a new system for student transition from one school to another can change the old system. To answer this question, there are many techniques that can be used. However, in this research, a new system is introduced with many processes in terms of functionality, which can help the school in Sulaimani to become computerized and get a location to save all the required data related to student personal data (Khatterand Kalia, 2013).

SYSTEM DESIGN

This system has been built using both software, and hardware. In the software section, there are many programming codes and applications with utility software that are used. Each of them has its own effect on the system.

On the other hand, hardware parts that are used to build and use this system include servers, client computers, and internet routers or cables, which allows access to the online system.

However, there are other main requirements that are important to operating the system successfully without getting errors or faults. For example, using the appropriate web browser that operates on operating systems such as Linux, Windows, and MacBook.

Figure 5. Proposed system: Supporting operating system

In addition, different kinds of programming languages are used such as PHP, JQuery, AJAX, HTML, and CSS. Each of them has their own value in terms of creating the system; for example, PHP is used to create a dynamic web page to exchange data between the pages and the database. Additionally, users can also

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request form data or insert information into the database. While, JQuery and AJAX work on providing action servers to create full web pages that control actions such as synchronizing pages, avowing page caches and other important processes that help pages to function well.

For data storage and DBMS (Database Management System), this proposed system uses MYSQL as a database and PHPMyAdmin as an interface. In this database, there are different tables which are used to store student and school information.

Figure 6. Coding program used for the new proposed system

Obviously, any developer or company that develops software or any type of system has hardware requirements besides the software requirements. In this system, the software works on any type of hardware (CPU, Memory, and Graphics), as it is an online system that does not need a large amount of computer space or the processing of big data with a CPU.

Figure 7. Illustration about supporting all kinds of computer hardware

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SYSTEM FUNCTIONALITY

In creating a system for all types, there are two main ideas behind the process of system creation, which include functional and non-functional systems. Each of them has a particular meaning and achievement.

The functional requirements describe how the system should perform and illustrates the behavior of the system. For example, in a particular system, whenever a user logs in to the system, an email should be sent to the user account in order to confirm user identity (Boehm, 1984).

Non-functional requirements are considered a secondary requirement in terms of creating systems and explains the performance or characteristics of the system. Additionally, this kind of requirement is mostly related to the usability and accessibility of the system by the system users. Further, there are two main parts of the evolution of these requirements, which include evaluating the system in the term of testability and maintainability as well as usability and security (Dabbagh et al, 2015).

In the new proposed system, there are both functional and non-functional requirements; as part of the functional requirements, the working system as a use - case diagram that is shown below, is used.

The first step starts with the student, who begins the application by submitting a request form for changing from the first school to another school. The student first needs to log into the system and then fill all the required fields in the form, then submit the data to the main database center in the Sulaimani directorate of education. Figure 8 shows the diagram for the student request form.

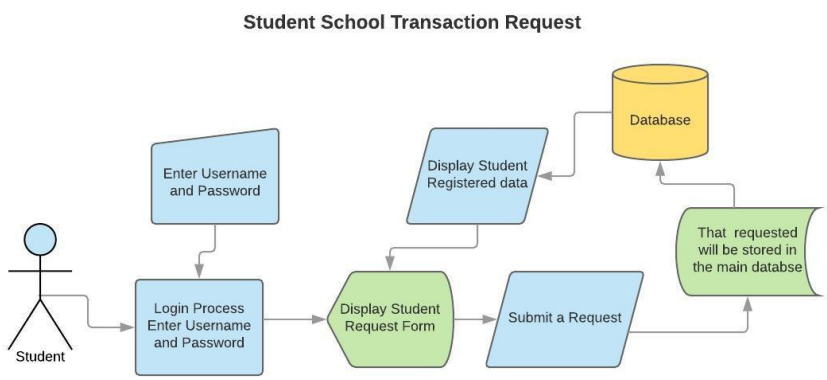

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Figure 8. Use case diagram: Student requesting form

On the other hand, the school manager double checks all request from each student in terms of meeting all conditions for the change of schools. Therefore, the manager logs in to the system as the school website director then view all the student transaction data to the school and checks for the required documents as well as, whether the data meets the conditions.

After that, the school makes the final decision; later, in case of acceptance or rejection, the decision is sent back to the main database as updated data for the student. Figure. 9 shows the diagram for the school manager checking request form.

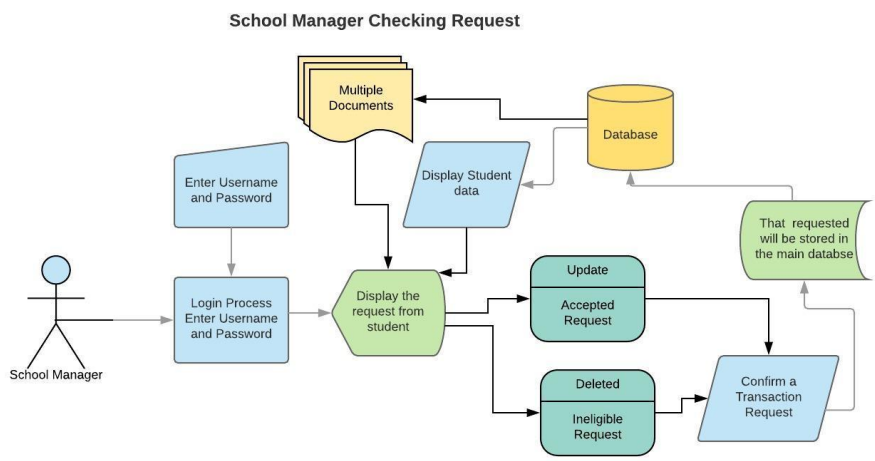

Figure 9. Use the case diagram: School manager managing request form

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THE GENERAL PROCESS OF THE SYSTEM

The general functionality in this software is that there are two parts that comprise the whole process in the system, which is front –end and back-end. Additionally, there are some relevant component parts, which include the web browser (this is on the client's side) on one side and the web server (the web file container) and database on the other side, which is called the backend. Figure 10 illustrates these two sides.

Obviously, this kind of system requires a network connection in order to perform the exchange of data between the server–database and the client. In this case, the main server that contains all the data is set up at the main directorate Sulaimani educational office and in return, all the school's data is stored in the central database.

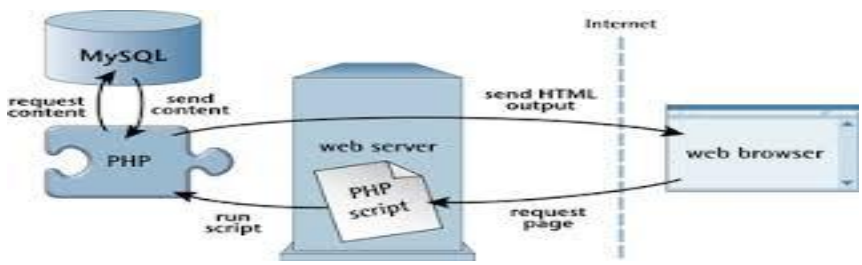

Figure 10. The general process of the working system

RESULTS AND DISCUSSION

In order to support this research, a survey has been conducted in some schools in the city of Sulaimani and in different education directorate sectors. The survey is designed with random questions relating to computer knowledge and whether users are happy with the new system in comparison to the existing old system.

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The following are the statistical results from the conducted survey; it can be seen there are random answers and rates with different opinions towards the application system.

The first question in the survey asks users or school members if they are familiar with using a computer. This is done so that the researcher can estimate the number of participants and calculate the rate using different answers. Figure 11 shows that the number of school members who use computer devices is about 69%, which is much more than those who do not use it. Thus, this will show that this system can be used efficiently in schools.

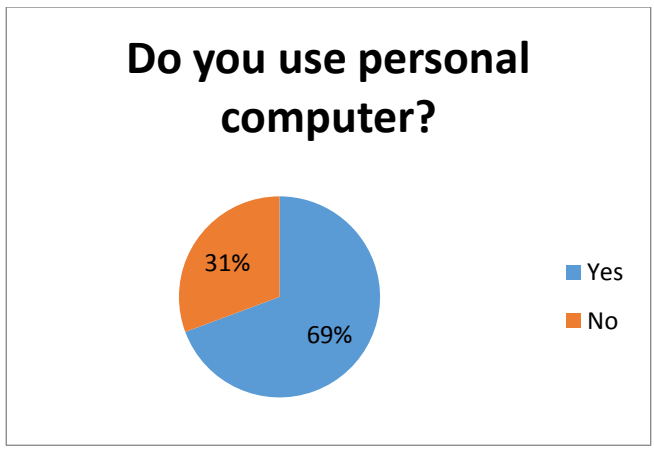

Figure. 11. The computer usage rates

Additionally, along with the survey questions, there is another type of inquiry on the purposes of using computer devices in schools. Figure 12 clearly shows the diversion rates of numbers with each answer. The given options were about the main school's usages except for internet purposes, which has the lowest rate as compared to the two other options, which are student affairs and school administration affairs.

In the same context, the schools that use computers for student affairs' purposes and usages are slightly more than those that use them for administrative procedures. Therefore, from this pie chart (Figure 12), it is obvious that most schools have a place to save their students' and staffs' data in the

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school computer; in the meantime, employees, such as school staff, can refer to the basic information, whenever it is required.

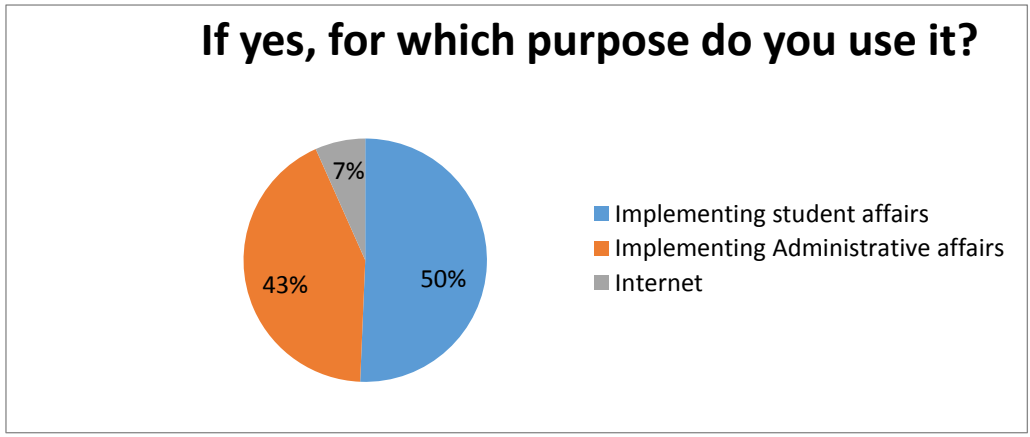

Figure. 12. The purpose of using a computer

As one of the system requirements is to use the Internet connection in servers and schools, one of the survey questions was based on whether users in schools are familiar with using an internet connection in general.

The answers showed that most of the school staff is acquainted with using the internet, and this is another good reason for conducting this research since a number of people who can use internet connections are more than those who could not use it. Therefore, users can use the proposed system without getting into problems in terms of network usage. Figure 13 shows the average number of internet users per each school in a statistical bar chart.

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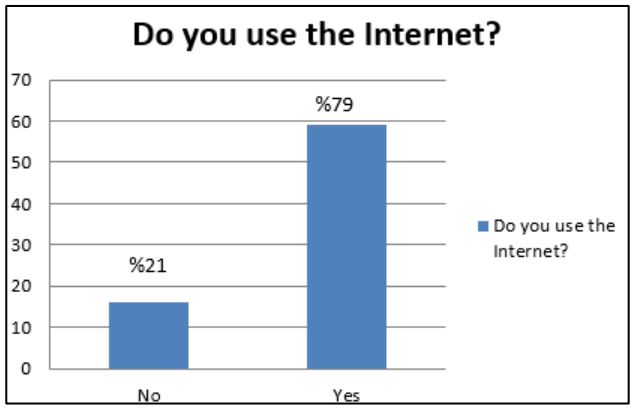

Figure 13. The rate of using the internet

Figure 14 shows the question in which three different choices were given to school staff to know what the most demand for using the internet in schools is. The popular opinion among the administrative and scientific affairs was the reading of news and entertainment. Also, it is known among employees in the Kurdistan–Iraq region that computers are used for entertainment during work time; but during our survey in different schools, the charts show the contrast of this idea. Therefore, the demand for using the online software is the first priority of the school.

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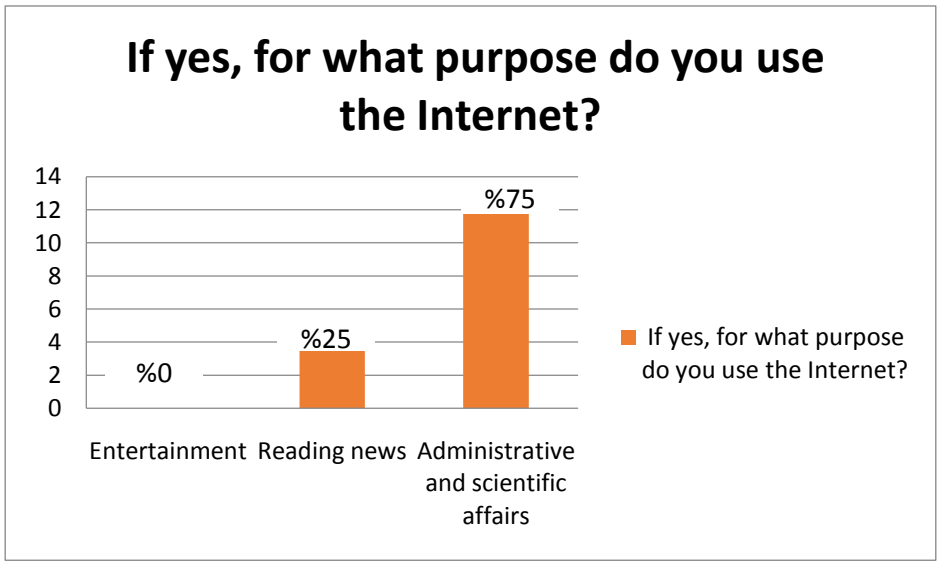

Figure 14. The rate of the three different internet usages

Figure 15 illustrates that although the number of student transactions in a year is approximately half with 39% in average as shown in the pie chart, there are still demands in terms of changing school by students. In this case, such online applications will be essential in Sulaimani city to facilitate the process of such transactions and reduce the amount of time that is wasted.

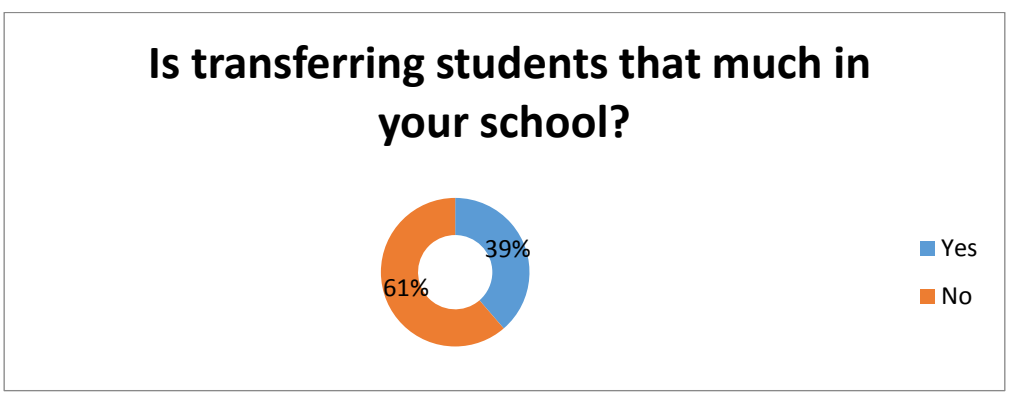

Figure 15. The rate of student transactions in a year

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Moreover, some schools show that there are databases that are used by the school to store students' data for current uses as well as future demand. As it can be seen in Fig. 16, 84% of schools use databases such as Excel and access databases for saving their students' information in school computers, which is much more than those schools that don't have a database. Further, the proposed online software also helps those schools, which do not have the database and fill that gap for them.

This is another supporting idea that can help with efficient use of the new system by users as they have a basic idea about using different databases. However, this system uses the most recent and secure database, which is the MYSQL database for the exchange of data with the system through online web pages.

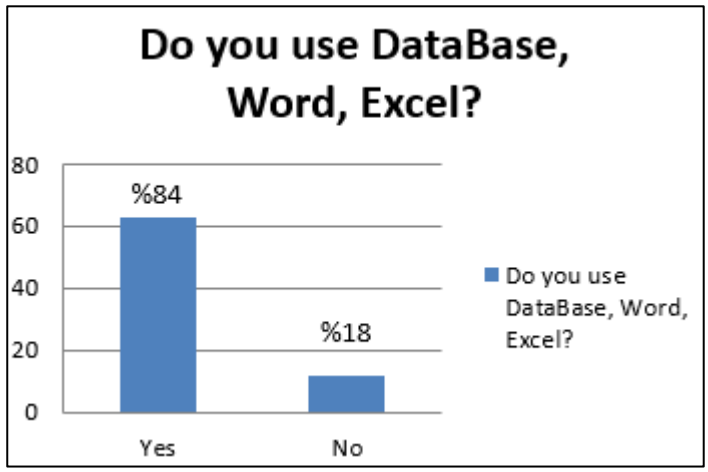

Figure 16. The rate of existing databases in school

In the same way, the school was asked for what purposes they use databases in the school. There were two answers: accounting usages and student administration. The bar chart shows that the most useful is in terms of student affairs, which is 90%. Therefore, there is a need for such a system that holds all the data related to student information.

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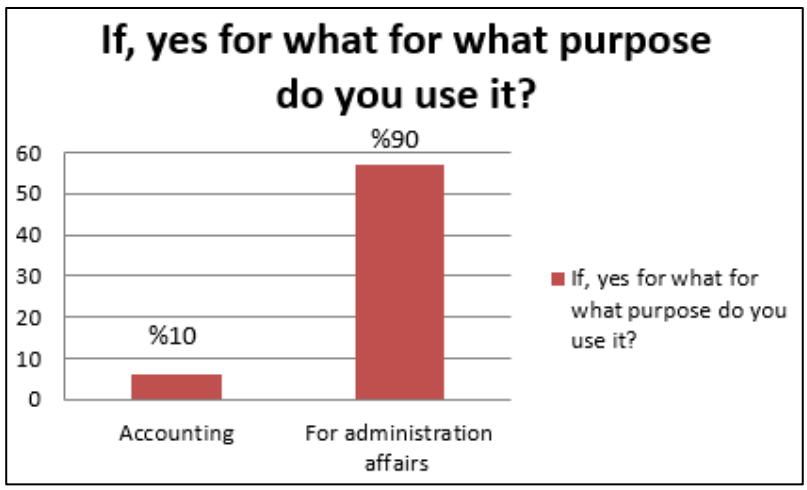

Figure 17. The two different rates of reasons for using databases

According to the conducted survey, more than half of the schools agree with the idea of performing student school transactions through an online system because of system capabilities – the ability to perform all the required processes to handle the changing of schools process. In addition, the statistical charts show that there are different views about the existence of an online system, in general, and for school and students administration, in particular. Figure 18 shows the rates of acceptance as “yes” and “no”.

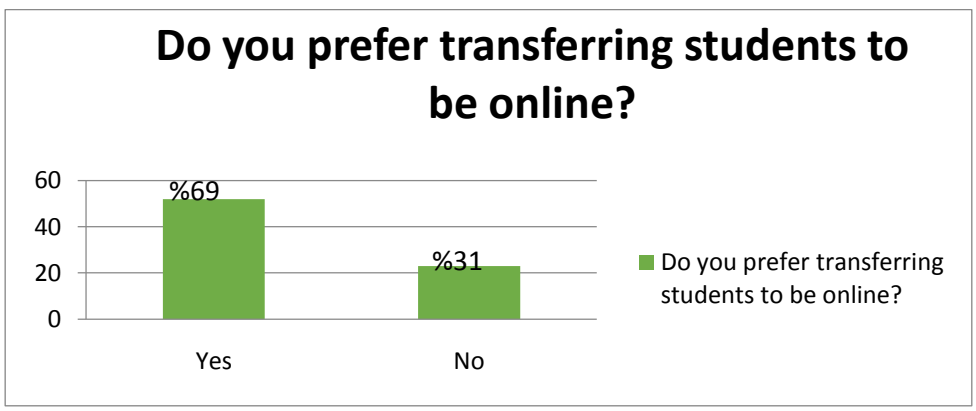

Figure 18. The acceptance rates of the system by school staff

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Further, Figure 19 (a and b) show the opinions of the school staff in two ways; most of those who accepted the system said that the system will help to provide the fastest possible time and reduces time spent. While those who did not accept the system blamed the network as being untrustworthy, these days, among people and the internet in the countryside.

However, in the system, all the security issues have already been solved because it works based on a username and password with the use of encryption algorithms that encode the passwords, which prevents hackers from accessing the account password. Moreover, nowadays there are different kinds of internet service providers (ISP) in Sulaimani city and the countryside, which cover all the area within the Sulaimani boundaries, which solves the problem of internet coverage.

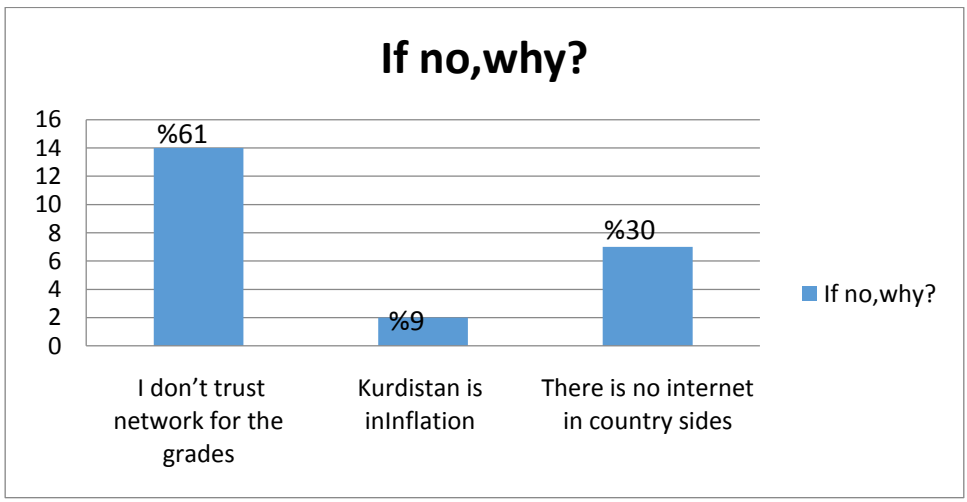

Fig. 19 (a). The rates of reasons for the lack of acceptance

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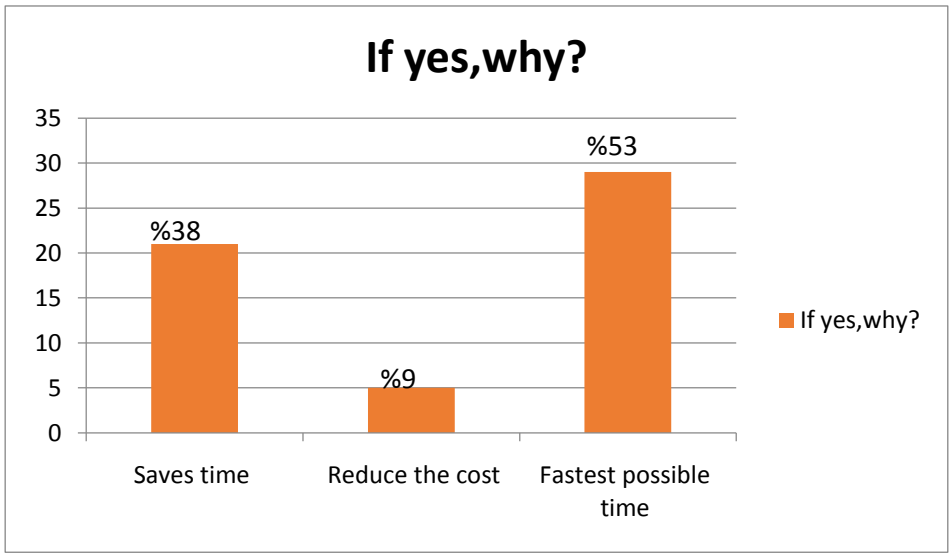

Fig. 19 (b). The rates of reasons for acceptance

Another finding from the survey is that most participants – more than half – said that they use the most recent technologies such as computers, smartphones, tablets and internet connections, in general. Also, in the survey, they said that those technologies help them most of the time, especially when they ask for assistance.

Most of them use the internet for getting information, which means that they use it less for entertainment and social networking.

This is a good point that shows that in the case of the proposed system, because users' of the system will use it efficiently, they will not make themselves busy with other things other than what is currently required, as is shown in Figs. 20 (a) and 20 (b).

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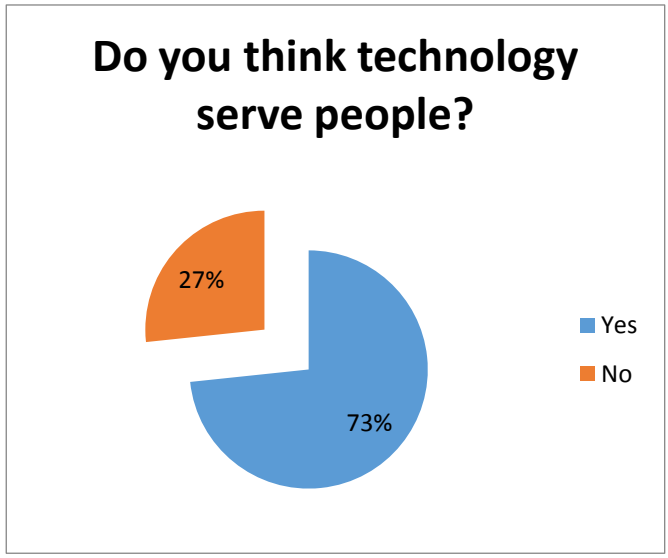

Figure 20 (a). The rates of reasons for acceptance

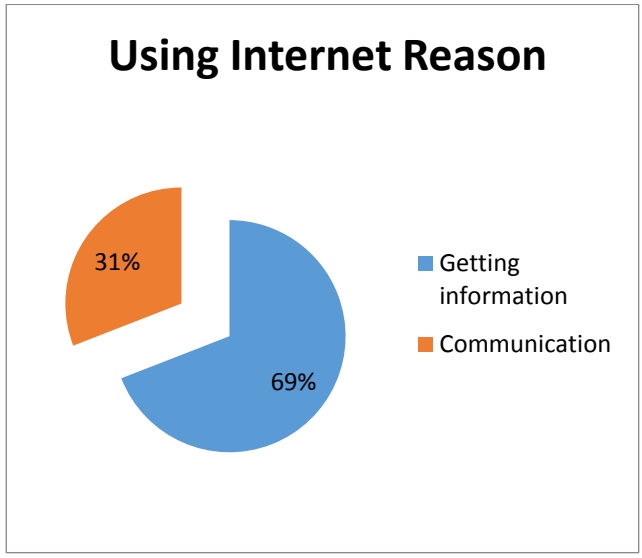

Figure 20 (b). The rates of reasons for acceptance

QALAAI ZANIST SCIENTIFIC JOURNAL
A Scientific Quarterly Refereed Journal Issued by Lebanese French University – Erbil, Kurdistan, Iraq
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CONCLUSION

To sum up, most of the organizations in cities in the Kurdistan region in Iraq, in general, and Sulaimani city, in particular, lacks a system that can computerize all the required working process. The same thing can be noticed clearly among different education directorate sections in the city and among schools.

Especially, in the educational section, there is a great need for work to be done using paperwork and physical action in order to perform student requests to transfer from one school to another. This means that both students and schools must go along with these long processes using working actions and consuming a long time, which could be weeks or months. This also devours a lot of paper.

The conducted survey, in this research, shows that most participants agree with the proposal of a system that helps the education sector and schools to manage student data. Moreover, they think that this system will make all the required data, regarding the student details, to be saved in a database that can be used for future action.

Further, all the processes of working documents will be computerized, and this will lead to a reduction of the use of paper, time and effort. Furthermore, this will become the first system that will be used in the Iraq-Kurdistan region. Another advantage is that most of the users are at high education levels in terms of using a computer, which means there will be no problems with using the system efficiently. This is the first attempt to create such a system for education organizations, which provides facilities for students who want to change their schools. There will be a plan to expand this system to the educational sectors in Kurdistan-Iraq region. Additionally, there will be possibilities for students from other cities other than Sulaimani city – for example, Hawler, Halabja, Dohuk, and Kirkuk – to move from one city to another, based on their choice of schools.

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پووختە

لە شارە کانی هە رێمی کوردستان، هە تا ئێستا شێوازی گواستنە وەی خوێندکار لە قوتابخانەیەکەوە بۆ قوتابخانەیەکی تر لە هەمان شار یان لە نێوان دوو شاری جیاوازدا بە شیوازێکی کۆن مامەڵەکان بەڕێوە دەچن. وە ئەمەش وای کردووە کە ئاستەنگی و گرفت لە زۆربە ی کاتەکاندا دروووست ببێت بۆ خوێندکار و کە س و کاری خوێندکار، بە تایبە تی لە کاتی هاتوو چۆ کردن لە نێوان دوو قوتابخانەدا، کە هەندێك کات شوێنەکانیان بە شێوازێکی بەرچاو دوورن لە یەکترەوە .

جگە لە دووری نێوان قوتابخانە کان، کێشەی درنگکەوتنی ئەنجامدانی مامە ڵەکان و ووردبینی کردنیان، کە هە ندێ جار وادەکات مامەڵەکان پشتگوێ بخرێن و کاری تە واویان لە سەر نەکرێت. بەهەمان شێواز، گرفتی گرانی و پێدانی پارە یەکی زۆر بە هاتووچۆ کە لە سەر خوێندکار و کە س و کاری خوێندکار بار گرانیەکی زۆر دەبێت.

هەروەها، بەکارهێنانی گواستنە وەکان لە شوێنێکە وە بۆ شوێنێکی تر، مە ترسی رووداوی هاتووچۆی لەسەرە، کە وادەکات شەقامەکان زۆر قە ڵەباڵغ بن و سە یارەیەکی زۆر لە سەر شەقام دەبێت و ئەمەش وادەکات کە ببێتە هۆکارێك بۆ پیس بوونی ژینگە و دروووست بوونی کەشێکی نا تەندروووست.

بۆ چارە سەرکردنی ئە وگرفتانە یان بە شێکی، وا پێویست دە کات، کە بە شێوازێکی ئلیکترۆنی مامەڵەکان ئەنجام بدرێت بە تایبە تی، ئلیکترۆنیکردنی سیستمی قوتابخانە کان و سیستمی گواستنە وەی خوێندکارەکان، کە وادەکات هەموو مامەڵەکان بە شێوازی ئۆنڵاین ئەنجام بدرێت، کە ئەمەش درفەتێکە بۆ چارەسەکردنی بە شێك لە و گرفتانە، هە روەها کە مکردنەوەی هاتووچۆی زۆر، دروووست بوونی ئاستە نگی لەسەر قوتابخانەکان.