Implementing a Students' Survey System in Iraqi Universities: A Case Study in Basra University

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ABSTRACT: This work deals with total quality management as a method that has been described as the third revolution after the industrial and technological revolutions. The present case study was undertaken to implement a survey system to provide a predefined survey by the Iraqi universities for testing and establishing the dimensions in order to measure the service quality in the higher education sector. The aim of the proposed system is to implement a survey system to collect academic surveys in specific subjects to measure the students' satisfaction with the services provided by the academic institutions. As a result of the work, it has been found a considerable relationship among the service quality dimensions (students' satisfaction, reliability, tangibility, assurance, and responsiveness). According to students' satisfaction, in general, and overall satisfaction toward the proposed system from the students which make the implementation of such systems will improve the overall performance of academic institutions.

1. INTRODUCTION

Iraq uses at the local level a set of national standards and indicators that used in advanced government and private universities and colleges. These standards represent a firm position and commitment by the Ministry of Higher Education and Scientific Research (MOHESR) in achieving the goals set for the development of our university institutions and the elevation of them to the refineries of global institutions. The intended goals are based on quality standards and academic accreditation as a curriculum to evaluate and improve all university institutions.

Providing universities with qualified scientific and technical frameworks, curriculums, and all the requirements and modern methods for implementation becomes a need. The developed plans include the needs of the student, the labor market, and society, therefore, universities around the world seeking modernization, renewal, and development due to the fast development in different sectors in the surrounding academic environment. Different mechanisms are taken in order to achieve this transformation process, include adjusting policies and methods, developing behaviors, focusing on quality control of their output [1, 2].

The tools and technologies should not only be employed in facilitating and managing the teaching process but also should be employed in the field of aid-teaching and measuring progress in the academic collaborative environment. On the other hand, the sector of educational marketing faced a huge challenge and competition among universities across the world to attract different students from different disciplines [3,

4]. However, educational marketing becomes an important issue due to the sustainable growth in this field [5]. The students' satisfaction and service quality are considered in this work due to their huge importance in the academic sector [6, 7].

There are many factors that make academic institutions and universities turn their policies into student orientation such as increasing the competition, the technology advancement, and the services introduced. Students, on the other hand, are considered as an important factor in the success of academic institutions where they always better services [8-11]. According to all the above, students' satisfaction is considered an important and critical factor that ensures the existence of academic institutions. In a huge range of university-industry, since the student is the only income source for them, so it takes the attention of all managerial staff. According to that, the students' desires, tastes, and viewpoints are taken into consideration from producing service to supplying it to students [12, 13].

Many things make the students satisfied and loyal to their universities such as giving importance to their beliefs and ideas. These things can also make them feel like active members of their university. The key success of developed universities is ensuring students' satisfaction and hence, all the universities compete in making many steps to attract new students and gain their satisfaction. The key success of a university in the competitive market is coordinating the students' activities with desires and needs which lead to increasing their profits and interests [14].

In this paper, the purpose and objectives of the system will be declared. The planning and implementation framework will be explained. The system objectives are:

• The ability to fast retrieve the intended data when required.

• Fast implementation of customizable questionnaires for any number of students.

• Application with easy access to the system and easily fill in the data.

• Secure system with a secure methodology that prevents resubmitting questionnaires from the same platform.

• Ensuring each student will have one questionnaire to answer.

• The questionnaire can't be taken only by the students that are limited to each class.

• The possibility of opening a questionnaire using a barcode or by using the questionnaire's unique number.

• Displaying reports and charts for each questionnaire's results with the possibility of printing them.

The rest of the paper is organized as follows: section two lists the literature review and discussed the weakness points in each system conducted. Section three discussed the model implementation framework and the design methodology. Section four lists the concluded points and future works.

2. LITERATURE REVIEW

A beneficial learning experience can be got from the learning environment and the provision of quality education while poor conditions of education lead to high cost, missing opportunities of learning, and students' dissatisfaction. Consequently, the experience of students becomes the significant tenet of higher education quality assurance. The surveys of the students become the most used data sources for assessment the higher education quality[10, 15-18]. Besides, the students' surveys become the base stone in the decision-making process of the academic stakeholders and the main part of the research field. The stakeholders in the universities always ask the officials to seek better intelligence on students to improve the learning quality [19]. Most parts of these data are in these surveys. As a notation to David Radwin in Chronicle of Higher Education [20], " the use of surveys is one of the fastest-growing and most pervasive trends on campuses". The proposed systems make the data collection from students very cheap easy, and fast. The students are most of the worldwide populations that they faced the surveys [21,22].

In [23] S. Roopa and M. Rani developed a system for giving analytical information about different requests like implementing and creating surveys, standardizing them, performing tests on them, and recreating the questions. Pretesting and examining your survey against a small set of respondents considered a good practice. The user can highlight the routing errors and confusion areas, estimate the time taken for surveys to complete before deploying them to people to measure the ability to understand and answer the questions.

In [24], Lund proposed a study that used the USE Questionnaire and other questionnaires like SUMI or QUIS to evaluate applications. In [25], the goal of the study was to implement reliable, customizable, and short surveys to assess the health application usability. Further, Felton et al. [20] explain the current

developments and investments based web-based teaching evaluation such as "Ratemyprofessors.com". However, this work is considered as one of the studies that focused on the surveys of institutions that collect the national-based surveys data to address the student's experience. Richardson [21], in the same way, suggests that the evaluations of the students in the course units may provide little information about student's experience. So, it is required to develop a survey with new measurement factors and tools to collect feedback regarding satisfaction with the provided services.

3. METHODOLOGY

University is the place where the society members are enlightened and educated. The students who got knowledge and education will start influencing and giving a significant contribution to developing their society. So the academic institutions' quality and reliability are important. The student's admission to universities is proportional to their satisfaction with services and education provided. The proposed system is to implement a survey system to measure the students' satisfaction as a case study in the college of computer science and information technology, university of Basrah.

The design methodology for the proposed assessment system is the Waterfall model. The selected methodology is chosen based on the system implementation cycle, the predefined requirements, the end-users (students, and academic staff), and the project team. The workflow of waterfall methodology is based on the sequential order where each stage is followed by the next one. All the requirements should be listed clearly to be implemented by the next step. The test step is implemented when the code is fully completed. The overlapping is not permitted and the documentation and testing should be implemented at the end of each phase to perform maintenance when required. The methodology is presented in figure (1) [26-31].

Figure 1: Waterfall methodology

3.1. Analysis Phase

Here, the objective of the project is to build an electronic management system to ensure the Quality Division (QD) to carry out its tasks and responsibilities. Through the analysis stage the following points were conducted to implement a successful system:

1. Easy access and information collection.

2. Conduct student questionnaires and provide the necessary reports in this regard.

3. Facilitate the work of the QD and reduce time and effort.

4. Can use more sophisticated, complex, and easier surveys to motivate users.

5. Low cost and very easy to manage.

6. Permit to use user's respondents and avoid distortion and bias.

7. Good response rate with a very rigorous procedure of follow-up.

The system focused on finding an effective way to obtain the results of the students' questionnaire in a way that guarantees confidentiality and freedom to express the views of students in education within Iraqi universities. Here we will discuss some of the implementation methods used in the questionnaire with the method used to access the system and fill the survey. In the design and development stages, the system is implemented and designed based on Bootstrap4 (HTML5, CSS3, and JQuery) for the frontend and PHP and MySQL for the backend. Both the academic staff and the students should easily access the survey and fill it (if the user is a student) or create and view the survey results (if the user is an admin or academic staff).

The surveys consist of main three parts, the first part aims to collect the background information about the students such as demographic information (students age, gender, level of study, and skills in the computer). The second part collects the data related to students' perception of the quality of the university services. This part consists of forty items representing five dimensions. If the score higher than 0.7, it is considered as good. The student survey is one of the advantages of the QD Management System, as it contributes effectively to reducing effort What was done to make the questionnaires for students in addition to the difficulty of sorting and checking them, as the system worked on finding an integrated mechanism for carrying out the questionnaires, with the results of each questionnaire presented in the form of detailed plans and numbers. The system tended to find an alternative method for (username and password) that is given to each student for a purpose of filling the questionnaire, which costs effort and time in the process of creating and distributing accounts, so the system works to use Barcode technology is a modern technology that saves effort and time in addition to the accuracy of its results and confidentiality Its information, as the work of the questionnaire was based on the above-mentioned technique and was able to achieve the results required of it. The system also worked to ensure that the same questionnaire was not repeated by the same student through a set of operations. It contributed to maintaining the accuracy and correctness of the data.

3.2. Design and Development Phases

In the design phase, the system platform is prepared based on the webserver to make the access offline or online. The offline access permits the users (academic and students) to access the system throughout the Local Area Network (LAN). The student can access the system through the mobile application. In this application, the student can access the survey through a QR code or through the survey identifier. The open-source HTTP server (Apache webserver) is selected as a (web server, database management system (DBMS), PHP script language). The assessment system workflow is explained in the following steps:

1. The QD creates a new questionnaire

2. Choose the subject for which you want to create a questionnaire.

3. Determine the subject teacher.

4. Create a questionnaire and get a barcode.

5. The QD official prints the barcode for the subject for which a questionnaire is to be conducted.

6. The barcode is distributed to students.

7. The student reads the barcode through the application of the questionnaire or through the website.

8. After the student completes and completes all the questionnaire points, all the student's answers are preserved with the student's Mac Address saved (to prevent another questionnaire from being done for the same subject).

9. Detailed reports are presented to the QD official for each questionnaire.

10. Reports are presented as charts with the ability to print them in tabular format.

The mechanism of work and the establishment of the questionnaire in the system differs from the rest of the mechanisms used in Iraq and most of the world, where after reviewing the global sites competent on this subject, including the site Survey specialized questionnaires have been developed the idea and work on the establishment of (Barcode) in addition to recording the data of the device that does the questionnaire to prevent Performing the questionnaire again, which allowed the questionnaire to be published and done more quickly and accurately, rather than distributing accounts to students and the many problems associated with logging in, as shown in figure (2).
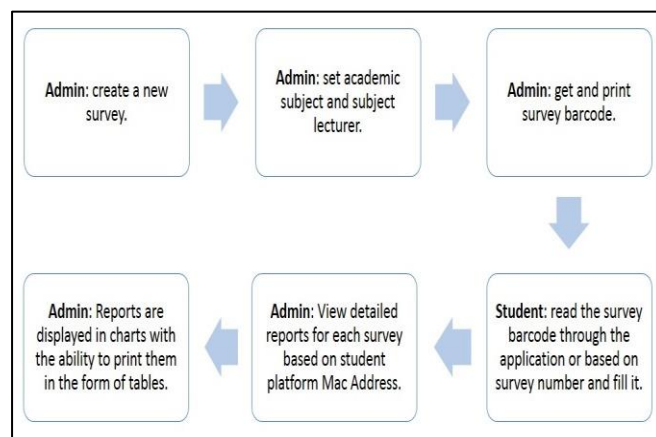

Figure 2: System operations flowchart

Figure (3) lists the assessment system framework where the users can access the system either through LAN or online when the system is implemented on the online domain. To improve the security and ensure that the student does not fill the survey more than one time, the QR code is used to access the survey through the mobile application. The student can access the survey by using

a personal computer connected to the system through LAN by using the survey ID which is already created for each survey.
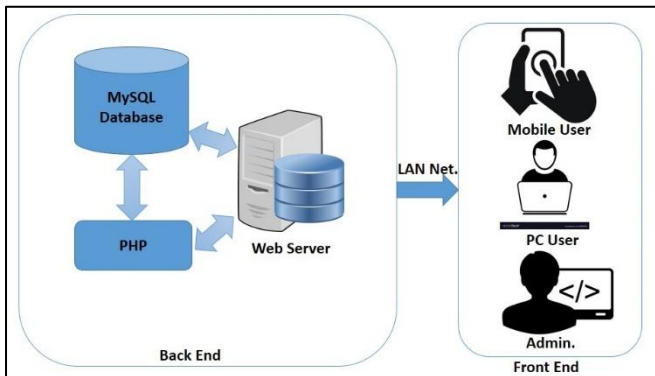

Figure 3: Assessment system framework

3.3. Testing and Implementation Phases

In the testing stage, the sample data has been collected in the academic year 2018-2019 for bachelor degree students in the college of computer science and information technology, university of Basrah. The sample data consists of 300 surveys with 250 completed respondents which represent 76% of the response rate. The result page list all the answers of the students related to each subject. The result page lists the number of each answer related to every single question in the survey besides the number of participants. The result page lists the total number of each answer (Yes, No, and Maybe Yes), see figure (4).

Figure 4: Survey results sample

3.4. Maintenance Phase

Every system needs to be updated or upgraded to enhance the performance and make it available for the new changes. This phase is required for enhancement and improving the system after implementation based on observations and user feedback. The changes in the system should ensure improve the performance and correct the problems that occur after the implementation phase. The maintenance phase makes the implementation cycle open for new changes such as adding new features, integrated with new systems, and fix the new errors.

4. CONCLUSION AND FUTURE WORK

Most international universities suffer from the problem of the paper system and what it costs effort, time, and material. Besides the difficulty of making annual surveys for students, a large number of students, and the difficulty in counting the results of the questionnaire, providing integrity and reliability in obtaining student satisfaction are considered obstacles in improving students' satisfaction and enhance the academic workflow in the universities. The main goals of this system are saving effort and time, saving data, and ensuring data retrieval when needed. After continuous research and scrutiny of similar systems that worked to solve these problems in Iraq, we reached a set of results that we have worked on and developed our system based on that most of the available quality systems. Currently, universities in Iraq suffer from problems of non-integration. The design methodology is the best choice for this kind of system implementation. The clear requirements, clear objectives, implementation cycle, and project team. For future work, the system needs to be enhanced by integrating reporting system that presents the results as charts. The system will be integrated into other open learning systems to measure the academic performance with students' satisfaction. The system can be enhanced to establish a customized survey that holds customized questions for any dimensions and different subjects.

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