

An Automated Web-Based System for Follow up on the Scholarships of Faculty Members: A Case Study Based on Shaqra University

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Abstract

An automated system to follow up the scholarships of faculty members is proposed in this paper. This framework provides a simple interface for the college coordinators to apply for scholarships in language, master and PhD training. They can fill the information of faculty members who are working in their respective colleges. The proposed system helps the coordinators to manage the file of applicant and then he can follow it. This system can also be used by post graduate college and their higher management to follow the requests of scholarships and also it can generate reports based on the application. The proposed framework depends on many criteria's which can be used by the management for evaluating the requests to decide on accept/reject the respective request. It can increase the productivity and also reduces the time and effort to review the file of the applicant. This paper describes the overall feature of the proposed framework, ideas about the various phases of development and the effect of the system on its work follow is also explained.

Key words:

Information System, Scholarships Management, Web-Based System, Shaqra University, Higher Education.

1. Introduction

Shaqra University is one of the new universities in the kingdom of Saudi Arabia. It is located in the middle of the kingdom. It is one of the biggest universities in the Arabic gulf region in terms of geographic area. The university has nine campuses within the central region of the kingdom. The university consists of twenty four faculties. The colleges are distributed over nine cities in which each college has many departments and each department has various faculty members [1]. An online scholarship system is proposed and about to implement in the deanship of Postgraduate studies at Shaqra University. This framework is proposed to assist the college-level supervisors of the scholarship and the scholarship department of university's to follow up the faculty members who are sent abroad to study the subjects such as English language, Masters, Doctorate, and other training courses etc. The system is also proposed to monitor the follow-up of all the stages of scholarship applications from the initial procedures up to the final stage of approval. This also facilitates the

processes of submission of application and retrieval time, by saving the processing time and effort.

In General, supervisors of scholarship at college-level [2, 3] use the proposed framework to fill information about faculty. comprises of six sections as follows. Section I consists of personal information including the applicants name, phone number, e-mail, etc. Section II has all the information about his academic data and last qualification such as the bachelor's, masters and doctoral degrees etc. Section III contains the complete occupational data, i.e. the college, department, title of the job title (Demonstrator, Lecturer, Assistant Professor) etc. of the faculty member. Section IV consists of the family details such as name of husband/wife, number and names of children and emergency contacts etc. Section V has the information about stage of study in which the applicant has joined or intends to join (language course in applicable for the master's or doctorate, master's, PhD) and the country of scholarship, etc. Section VI includes the option of Selection of Type of Application, i.e. New Scholarship, Upgrading the existing Scholarship, Extension of Scholarship, Postponement of Scholarship, Termination of the Scholarship, Online Study, Scientific Trip, Termination of Sabbatical (with on-job completion of thesis) etc. Different types of attachments are required for the respective options. For example, in the case of a New Scholarship, it is required to attach the (certificates from the university, admission and university classification, minutes of the department and college councils mentioning the approval of scholarship). In the case of request for Postponement of the existing Scholarship, the attachments include a letter of the academic supervisor clarifying the required procedure, a letter of approval of the cultural attaché, etc. is required.

After the supervisor of scholarship at the college-level has filled all the required information, choose the type of application and attach the documents which as required for each type of application. Then, the system allows for a review of the given information and attachments. There is still a possibility of editing the entered data at this stage. The supervisor has a privilege of performing slighter modifications in the data of the faculty members in his/her college\). This can be done at the time of processing their

applications right from submission until the final approval. He can also extract all necessary reports for the status of scholarship of the faculty members of his/her college. The proposed framework allows the Deputy Director for educational affairs to review all the applications received from various colleges and he can take the necessary action further. When the complete data, attachments and approval of the department and college councils are available, he may endorse the file and forward it to the University Director for further processes. In case of lack of proper documentation, he may turn down the application. The proposed framework also provides him the access to all reports which are related to scholarships in the university which are based on the college, specialization, type of application and status, but without the authority of amendment. Following are the salient features of the proposed framework:

- The proposed framework provides the Director of University with access to review all the applications received from and is approved by the Deputy Director for Educational Affairs. In case of any endorsement, instruction is given further, and the application is automatically transferred to the Scholarship Officer at the Deanship of Postgraduate Studies. In case of absence of endorsement, the application is automatically transferred to the Scholarship Supervisor of the College-level. The system also provides him the access to all reports for all scholarships with in the university.
- The proposed system enables the Scholarship Officer at the Deanship of Postgraduate Studies to receive and review the applications and attachments from the colleges and accordingly, he can endorse the completed applications and turn down non-complete ones to respective colleges for further updates. The system also provides the scholarship officer with access to the reports of all faculty members about the scholarships in the university which are classified by college, specialization, type of application and status etc.
- The administrator of the system can add new colleges and users, assign/withdraw powers to modify applications, and extract the necessary reports etc.

The proposed system assists the faculties in the process of submitting new application, and the supervisor for following up on the submitted scholarship applications. It also provides details about all scholarships already submitted and being in process in the university, by numbers, specialization, distribution among colleges and departments in the university. All these can be obtained through detailed reports. It also displays the applications which are late and rejected. This system also system serves

the deans of colleges and other university deanships to know the faculty members on scholarships by their numbers, status and specialization etc.

Members active in system include:

- College-level Supervisors for Scholarship
- Officer for the Scholarship (at the Deanship of Postgraduate Studies)
- Deputy Director for Educational Affairs
- Director of University
- Administrator

Features of the Proposed System:

- Shows various types of reports
- Support different platforms
- Ease of use
- Supports attachment of files in different formats, such as pdf, doc, etc.

Objectives of the Proposed System:

- Support the decision-making process of senior management for sending the faculty members on scholarships
- Reduce the time and effort involved in submitting and following up on scholarship applications.
- Reduce the time and effort required to access information about the university scholarship.
- Produce reports in time for university scholarships with a minimal effort
- Improve the performance and support the University's tendency towards electronic administration.

2. Literature Review

A scholarship is a form of financial aid that is specifically geared towards students who are attending college. It is used as a way of financing their education, and it may pay a part of their education, or it may pay the entire cost of a student's tuition. Various works [4, 6, 6-10, 14] have been done in the past to propose the online scholarship system. The study of Gonzales et al., [5] aims to develop a website of scholarship management information system with the consideration of basic requirements, components, complete and organize information and online application system of scholars for a university. The study utilizes the design and development of the website since it focuses on online application and detection of the scholarship granted to the scholars. The respondents of the study are the regular users of the scholarship office. It provides all the information that the scholarship office can give to scholars regarding the status of scholarship grants and how they will apply online [12]. Their study helps the users and scholars on being updated on price changes that might

happen unexpectedly and information about the scholarship grants.

The system developed by Villanueva [13] is a scholarship management system for CBA Scholarship Office. The first phase made by the developer is to design and implement the database that would store all the data relevant to the system. The database consists of two primary sets of data: Applicants and Scholarships. Applicants are linked to scholarships by receiving awards and scholarships are categorized into administrative units and authorizing agents. The system can also add, edit, delete and update the information of each applicant. After the database was designed, the developer implemented it using Microsoft Access 2010.

The system project of Sauser [11] was developed to provide a central storage to maintain all the data related to their university scholarship awards. The primary reason for developing Scholarship Management System for University of Northern Iowa was because the scholarship information was stored in many individual files spread across various locations. Any information related to the scholarship awarding process can be located more efficiently using the system. Wisconsin-La Crosse (2015) developed an online scholarship application system for their foundation. The foundation deals with a large number of scholarship applications as the foundation uses paper-based processing. In order to automate the task performed by this foundation, a re-engineering approach named "Evolutionary Re-engineering Approach" was used to identify all critical functionalities of the existing system

Lopez [6] developed a system that aimed to form a system which stores details of students, courses, year and section. It may also be used for local assessment of the college of nursing for their college fees. The database is designed to be used by staff and other authorized user in the college to enable them to easily produce information required by users. The database is organized to produce queries about students' names, programs, year levels and sections. A study was conducted by [15] on "Increasing Efficiency in a Community College Scholarship Program", the research was designed to increase the efficiency of a community college scholarship program. The research was developed in response to a desire to increase numbers of scholarship applications from students and to streamline the selection and financial reconciliation processes at the research site. Data was gathered through surveys, interviews, and observations. The data analysis [16] suggests that passive information on the part of colleges, lack of student confidence in qualifications, and lack of student awareness of the differences in scholarship criteria are significant contributing factors leading to low rates of application. Data related to recipient selection processes show that committee training, the use of multiple reviewers, and the use of consistently-applied scoring rubrics increase selection efficiency. Results suggests that, further research

possibilities to determine the extent to which various scholarship marketing strategies, and the manner in which individual scholarship criteria are presented, influence application rates. Further research is suggested to determine the factors influencing student confidence and motivation related to scholarship application.

In addition, [17] develops "An Online Scholarship Application System" for a foundation at University of Wisconsin-La Crosse. The foundation deals with a large number of scholarship applications as the foundation uses paper-based processing. In order to automate the task performed by this foundation, a re-engineering approach named "Evolutionary Re-engineering Approach" was used to identify all critical functionalities from the existing system. This evolution focuses on replacement in which portions of the existing system is substituted for reengineered system portions. The system was developed under java development platform using java in the business logic layer, JSP in the presentation layer and Oracle 10g Express Edition in the database layer. It was run under IIS application server.[reference 1.pdf]

3. Methodology

Waterfall approach was first the software development life cycle model which is used widely in the process of Software or project developing to ensure success of the software of project. In this approach, the whole process of software development is divided into separate phases. In this model, outcome of one phase acts as the input for the next phase vice versa. The waterfall model of the proposed framework is shown in figure 1.

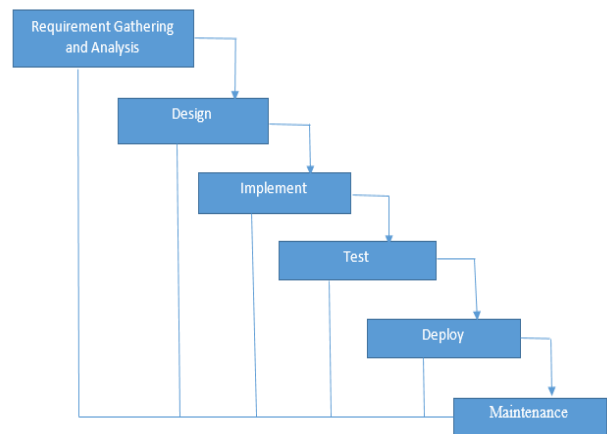


Fig. 1 Waterfall Model

3.1 Use Case Diagram

The Use Case Diagram shown in Figure 2 has five actors. First actor is the administrator. Initially, he should login to the system and add colleges and departments, create/modify all user accounts etc. He is also responsible for resetting the lost passwords; extract all necessary reports of scholarship candidates for English / Master's / PhD; and of colleges / departments etc. He can follow / edit / delete / cancel any task(s) which are assigned to any other employee. He can check and change the status of task, make comments, attach files etc. In general, he can perform all the functions assigned to other system actors who are below him.

Second actor is the Scholarship Supervisor of the College-level. After logging into the system, he can fill all the information of the candidate such as personal, academic, occupational, family, and the scholarship etc. which belongs to. English language as a prerequisite of Master's, English language as a prerequisite of PhD, Master's, and PhD and selects the type of application. In each case, relevant attachments must be added along with the approvals from department/college councils. After all the above mentioned process is done, the supervisor can review the added information and attachments, edit them if necessary. After all are confirmed, the college supervisor can follow up the application until the final approval is obtained. Access to candidates' files and reports for a college supervisor is limited to the candidates of his/her college only.

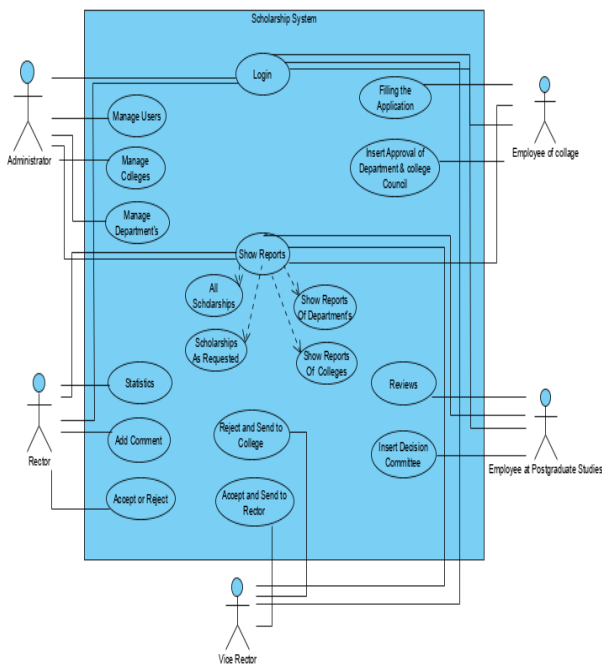


Fig. 2 Use Case Diagram of the Proposed Methodology

The third actor is the Vice Rector for Academic Affairs. After logging into the system, he has the capacity to review and forward/decline any applications sent to him from colleges. He can approve of properly completed applications and forward them to the Rector for final approval / further instructions. Otherwise, he can decline non-completed or unsupported applications. He also has access to the reports of all candidates in the university (at college, specialization, type application, and status levels) but without the power to edit files. The fourth actor is the Rector. After logging into the system, he can review the applications approved and sent to him by the Vice Rector for Academic Affairs. He can either approve or decline the application. Approved applications are automatically sent to Scholarship Officer at the Deanship of Graduate Studies. Declined applications are automatically sent to College Scholarship Supervisor. He also has access to the reports of all candidates in the university (at college, specialization, type application, and status levels) but without the power to edit files.

The last actor is the Scholarship Officer at the Deanship of Graduate Studies. With access to all applications sent by all colleges, he reviews applications and attachments. In case of non-completed info or lack of supporting documents, he sends applications to respective colleges for further processing. He also has access to the reports of all candidates in the university (at college, specialization, type application, and status levels).

The system interface for College Scholarship Supervisor is shown in Figure 3 below. He can fill up candidate's info. This information is relevant to several stages and is classified into Five sections: The first one is basic information's which is include (name, phone number, email, etc.), The second phase is Academic Info (data on last degree earned, i.e. Bachelor, Master's, PhD; country/institution of study; study major and general specialization; etc.), The third phase is Occupational Info (i.e. place of work, college, department; rank – demonstrator, lecturer, assistant prof, etc.), The fourth phase is Family Info (name of spouse, number of children, reference persons), The Fifth phase is Prospective Scholarship (English language as a prerequisite of Master's, English language as a prerequisite of PhD, Master's, and PhD), and Country of Study. After he fill his data he save his information

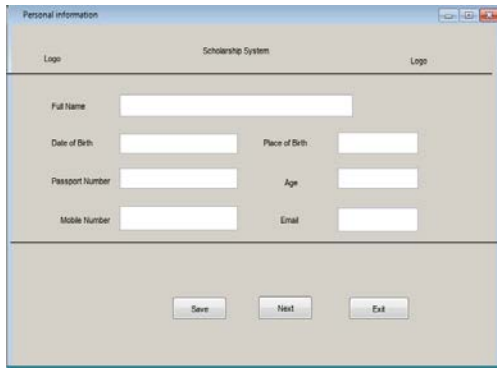


Fig. 3 User Interface for Scholarship Supervisor of the College

The interface for the Vice Rector of Academic Affairs is shown in Figure 4. He can approve all the completed and duly filled applications which are supported by proper documents and department/college council approvals. Then all the approved applications are forward to the Rector for further instructions. On the other hand, he can decline all the non-completed applications. He has access to the reports of all candidates in the university (at college, specialization, type application, and status levels) but without privilege to edit the files.

The Rector receives all the approved applications sent to him by the Vice Rector for Academic Affairs, and can either approve or decline the application. Approved applications are automatically sent to the officer of scholarship at the deanship of graduate studies. Declined applications are automatically sent to the scholarship supervisor of college. He also has access to the reports of all candidates in the university (at college, specialization, type application, and status levels) but without the privilege to edit files.

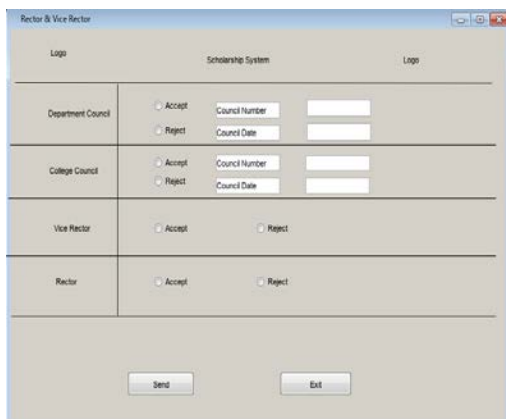


Fig. 4 User Interface for the Vice Rector for Academic Affairs & the Rector

Interface for the officer of scholarship section is shown in Figure 5. It enables the user to add reference numbers and

dates of approvals from the Rector, Vice Rector, College Council and Department Council etc. Then, he can send the application to the respective colleges.

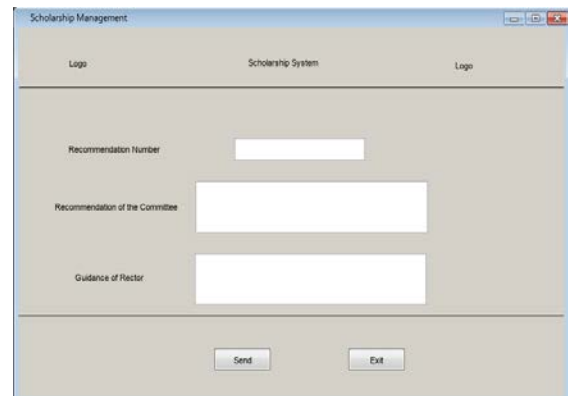


Fig. 5 User Interface for the Officer for Scholarship

The interface shown in Figure 6 provides access to all necessary reports searched as per college, department, application type and date... etc.

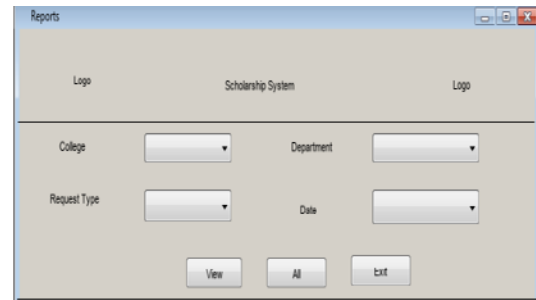


Fig. 6 Reports of the Administrator System

4. Experimental Evaluation (A case study in Shaqra University)

The proposed system is implemented in a way such that it can be used online and verified for the accuracy. Figures shown below are the various interfaces from the executed system. The experimental evaluation is carried as a case study in Shaqra University.

4.1 Data collection

All the data were collected by two methods called as the Scholarship forms & interview based by interviewing three levels of the system. It is done by asking the faculties why you need the proposed framework, what is the type of report you need it from the system? etc. Data collected were shown in table 1 which has the details about number of peoples and the type of users who were involved in the interview:

Table 1: Number and types of peoples involved in the interview

| Type of user | Total Number |
|---|--------------|
| High level manager (Vice Rector, Dean) | 2 |
| Employees at the Deanship of Graduate Studies | 5 |
| The College-level Scholarship Supervisor | 12 |

5. Conclusion and Future Enhancements

In this work, an online web-based framework for scholarship is proposed which replaces the paper-based traditional method. The online web-based application allows the faculties to apply for scholarship online irrespective of their department and major and also provide them with fast processing time reduced services. The proposed framework was develop using object oriented analysis and design. This system can also be used by post graduate college and their higher management to follow the requests of scholarships and also it can generate reports based on the application. The proposed framework depends on many criteria's which can be used by the management for evaluating the requests to decide on accept/ reject the respective request. It can increase the productivity and also reduces the time and effort to review the file of the applicant. . It is hoped that effective implementation of this software product would eliminate many problems discovered during system's investigation as a future work.

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