

## Faculty Promotion System: ALHOSN University Case Study

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**Abstract.** To this current day, most academic organizations use a manual process for promoting faculty members to the succeeding rank according to their criteria. This is both a monotonous and time-inefficient technique. This paper presents an innovative and modern system to help organize, ease, and simplify the tasks of the promotion process, committee members, as well as the applicants for faculty promotions in ALHOSN University. The system also provides adequate information regarding the criteria required for promotion application, status and application tracking system, necessary documents required.

**Keywords:** Faculty promotion, Online management, Software application.

### 1. Introduction

Throughout the years, many academic institutions have employed a relatively inefficient and time-consuming process of tracking and organizing applications in order to manually promote its faculty. In order to remedy this inefficiency, we have decided to introduce an online Faculty Promotion System, which aims to ease and organize the applicants and the committee members' workload. In addition to the previously mentioned, the system will assist with the application status tracking and monitoring.

The paper is organized as follows: Section 2 presents a literature review of faculty promotion online applications. Section 3 describes the methodology adopted to develop the online management system. Section 4 presents the requirements analysis for the application. The implementation steps for the application are given in section 5. Finally, section 6 provides our conclusion and suggestions for future work.

### 2. Literature Review

#### 2.1. Definition of the Faculty Promotion

Faculty promotion here refers to the advancement in academic rank from Assistant Professor to Associate Professor and from Associate Professor to Full Professor Status. According to the criteria set by the organization, consisting of research, teaching performance and community services, faculty members may apply for a promotion in rank.

#### 2.2. Significance of the Faculty Promotion

Without the opportunity of promotion, faculty members may find themselves exhibiting signs of disinterest and low motivation to learn. Lacking this passion of learning, they can neither improve themselves nor the society around them. With the prospect of promotion, many faculty members would become motivated to gain knowledge in their field of discipline and achieve meritorious accomplishments. Searching through the Internet resources provided two types of promotion systems: Army promotion systems and only an online promotion system [1] similar to that of the Faculty Promotion System. The online promotion system was found to be of benefit. The analysis of the screen-shots made available on the website, helped in building precise knowledge about the required features of an online promotion system.

### 3. Application Development Methodology

#### 3.1. The Research Methodology

To the best of our knowledge, software for managing faculty promotion is a relatively new idea. A great deal of research of an exploratory and descriptive nature is needed, and any research method chosen should reflect this. A combination of the case study and the personal interview is deemed appropriate for this research. The case study is an in-depth examination of a behaviour, concept, or phenomenon. Complementary aspects of the case study are experiments and surveys. This research approach can be helpful in analyzing a real situation, and can serve as a strong basis for debate. However, since the information collected is about a real situation, the results may not be generic [2]. For this case study, the faculty promotion manual process undertaken in ALHOSN University was examined. The purpose of the personal interview is to encourage the interviewee to relate experiences and attitudes relevant to the research problem [3]. It is a flexible technique, in that the interviewer can probe into any interesting details that emerge during the interview, and focus on particular aspects. It should be noted that a spontaneous approach was deliberately allowed in the interview phase adopted in this study. Responses to certain questions can stimulate new awareness and interest in particular issues, which may then require additional probing [4]. In this research, a series of formal and informal interviews was conducted over a two-month period with promotion committee members and faculty members from ALHOSN University in the UAE.

### **3.2. Technology and Tools Used in this Research**

The scheduled development and progress phases of the application were handled and monitored using Openproj [5]. In order to model the software requirements, the developers used the Unified Modeling Language (UML) [6, 7]. Microsoft Office Visio 2003 allowed the developers to visualize the requirements analysis and design of the software. In this research, the team also used Eclipse, which is a multi-language software development environment comprising an integrated development environment (IDE) [8]. Dreamweaver [9] was used to create some parts of the Web page interfaces. Adobe Photoshop [10] was used to draw the graphical components of the application's interface. The system, which is deployed on ALHOSN University servers, runs on a Windows 2003 server platform.

## **4. Requirements Analysis**

### **4.1. Requirements Gathering Process**

"The requirements for a system are the descriptions of the services provided by the system and its operational constraints" [11]. In other words, the functional requirements describe what the system must do. The system requirements set out the system's functions, services, and operational constraints in detail, and they should be precisely expressed, and define exactly what is to be implemented. They are often classified as functional requirements and non-functional requirements.

### **4.2. Functional Requirements**

"These are statements of services the system should provide, how the system should react to particular inputs and how the system should behave in particular situations. In some cases, the functional requirements state what the system shouldn't do" [11]. The use case diagram below (Figure 1) illustrates the system's main functions:

### **4.3. Non-Functional Requirements**

"These are constraints on the services or functions offered by the system. They include timing constraints, constraints on the development process and standards. Non-functional requirements often apply to the system as a whole. They do not usually apply to individual system features and services" [11]. The following non-functional requirements are applied for the Faculty Promotion System:

- Usability requirements: To account for users with different IT backgrounds, the Faculty Promotion System provides its users with a friendly, easy-to-learn interface.
- Privacy and security requirements: In order to keep the Faculty Promotion System secure and all records, information and communication hidden from others, users are required to access the system using unique username and password supplied by the administrator. This ensures user authentication.
- Reliability requirements: The Faculty Promotion System exhibits low failure which ensures user satisfaction.

- Compatibility requirements: The Faculty Promotion System is made compatible to most common browsers such as Firefox, Internet Explorer, Chrome and Safari.
- Flexibility: “The ease with which a system or component can be modified for use in applications or environments other than those for which it was specifically designed” [12]. Due to the fact that different individuals have different needs and requirements, so with a flexible system, new features or modifications in the future can be easily carried out [13].



Fig. 1: Use Case of the Faculty Promotion System.

## 5. Implementation

### 5.1. Faculty Promotion System Architecture

Prior to embarking on the implementation phase, the developers accorded high significance to the design phase, which is aimed at modelling the system requirements for the users in a simple way so that they can easily understand the system's functions. The designs are created to aid the developers in the transition from the requirements analysis phase to the implementation phase, while keeping the user involved [14]. Software architecture is an important step of this transition. It is commonly defined in terms of structural elements and relationships of the system. There are three principle software architectures in use today: server-based architectures, client-based architectures, and client-server architectures. The client-server architecture attempts to balance the processing or workloads between the client and the server. This is a popular option, because it involves lower overhead and easier maintenance. Web-based systems usually follow this architecture, with the Web browser, the client, performing presentation and only minimal application logic using programming languages, such as JavaScript, while the server handles the application logic, the data access logic, and storage. The benefits of client-server architecture are threefold. First, it allows scalability, which means that it is easy to increase or decrease the server's storage and processing capabilities. Second, it can support many different types of clients and servers, which means that it is possible to connect computers that use different operating systems. Third, for a thin client server architecture that uses Internet standards, it is a simple matter to clearly separate the presentation logic, application logic, and data access logic, and design each to be somewhat independent. This means that the interface can be changed without affecting the application logic, and vice versa. For these reasons, the concept of the client-server architecture was implemented as the Faculty Promotion System's architecture, as shown in Figure 2 below.

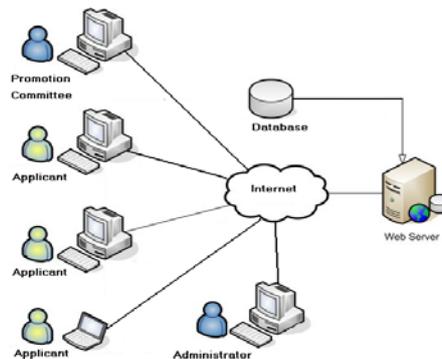


Fig. 2: Faculty Promotion System Main Architecture.

## 5.2. The System's Graphical User Interface

Interface design is the process of defining how the system will interact with the external entities such as, system users and other systems. It describes the layout of the pages and the flow of events, and is also concerned with where and how data are represented on the pages. However, in a User Interface Design, the needs, experience, and capabilities of the system users must be taken into account. In addition, the designers should be aware of users' physical and mental limitations (e.g. limited short-term memory) and should recognize that people make mistakes [11]. Figures 3, 4 and 5 below illustrate few of the system's GUIs.

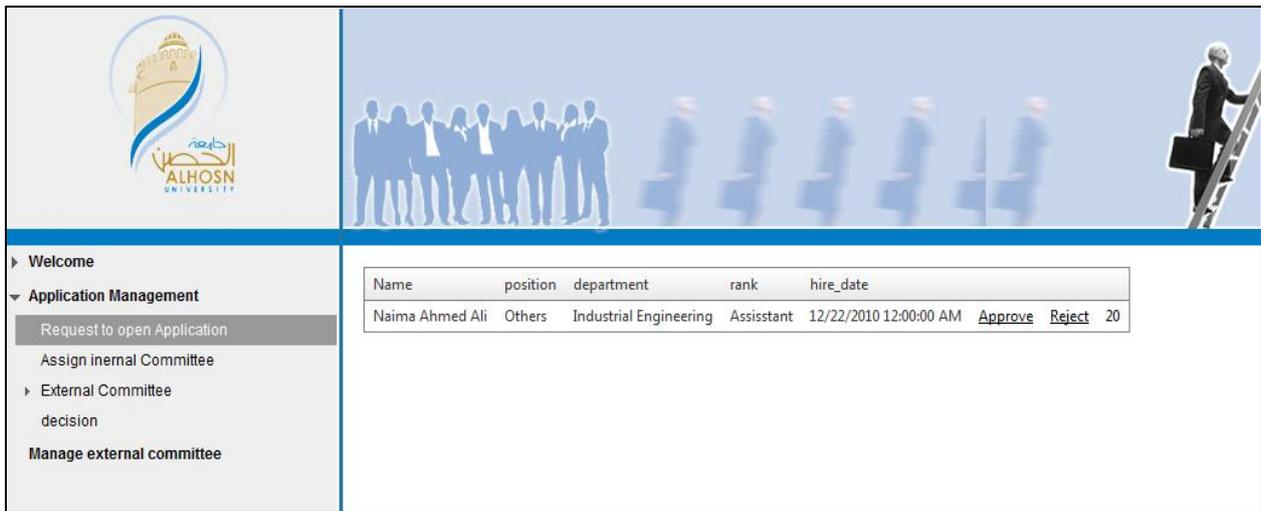


Fig. 3: Committee Chair to Approve/Reject Application.

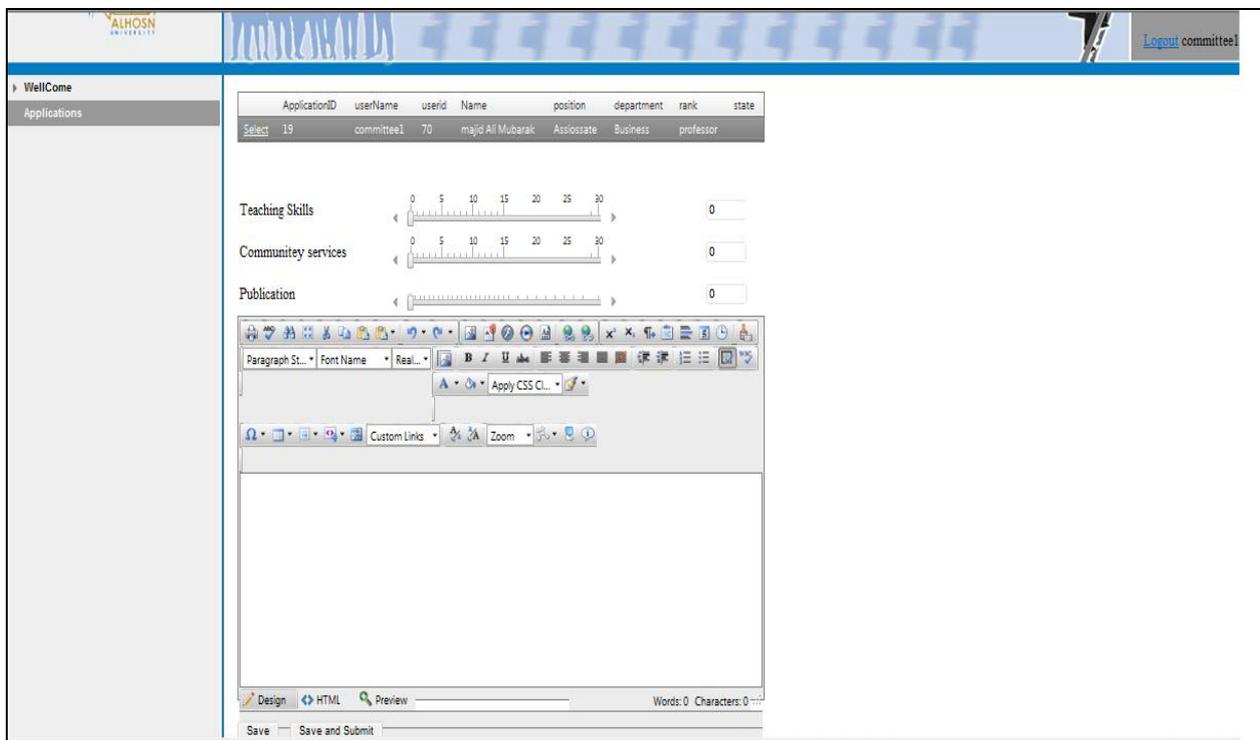


Fig. 4: Committee Member Evaluation Page.

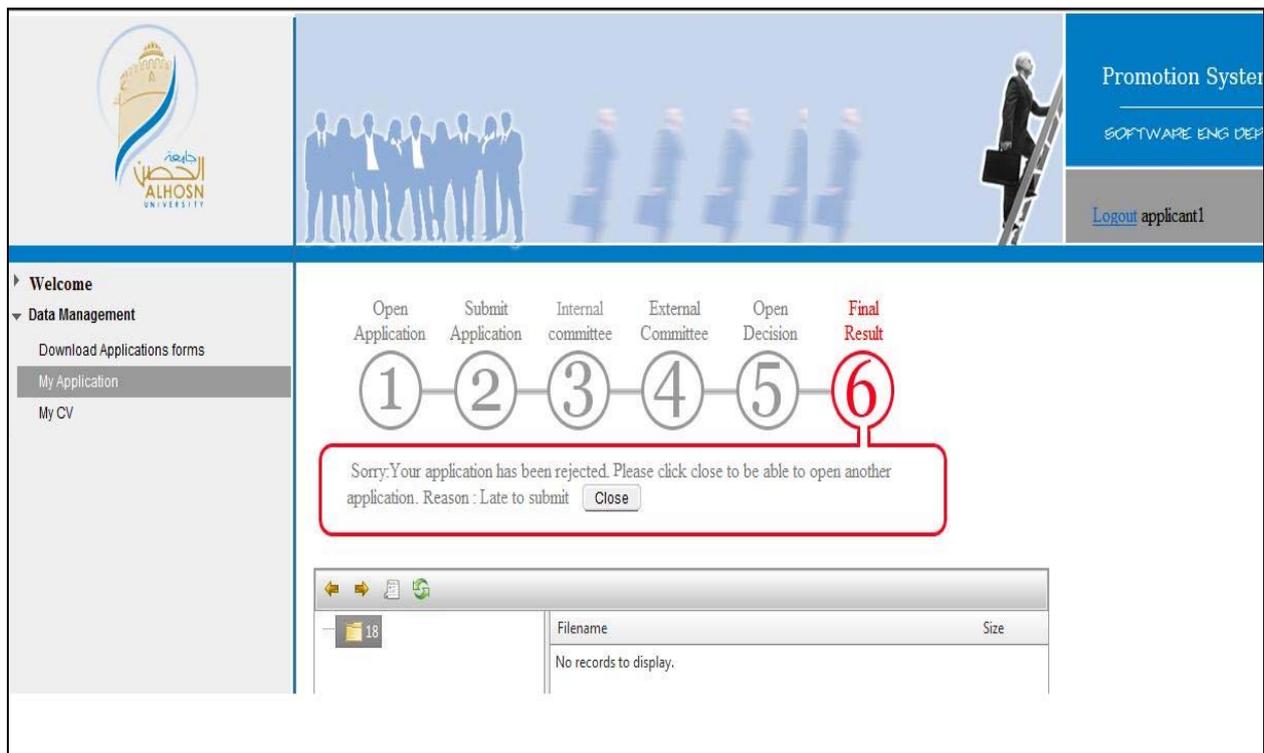


Fig. 5: Sample State of Application.

## 6. Conclusion and Future Work

As future work, adding features to the Faculty Promotion System for managing the communication between the promotion committee members and the external referees, would be of much interest for the system's ultimate users.

In conclusion, we have determined that in today's age of technology, using traditional methods of manually carrying out procedures such as faculty promotion is inefficient and in some cases unreliable. For this reason, we have determined that an online faculty promotion system is required to ease and simplify the process of promotion by offering applicants' a more convenient method of submitting their applications, as well as, organizing the promotion process for the promotion committee members. This in turn improves the performance and efficiency of the promotion process. In addition, the system assists with the application status-tracking and monitoring which allows applicants to keep aware and up-to-date with regards to their application. By creating an online Faculty Promotion System, we made the simplification of the promotion process possible. This paper included aspects such as defining system users, project scope, system requirements and design, methodology adopted, implementation of the system, screen-shots of the proposed system...etc. This report is not final; further additions or modifications may be carried out depending on the users' future need. Working on the development of an online Faculty Promotion System has confirmed the need of universities for managing such process automatically.

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