

# A Framework and Implementation of an Online Research Management System

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## Abstract

**Objectives:** The Implementation of Research Management System (RMS) is due to the existence of major drawbacks in the present system which includes manual process for carrying out various technical tasks. To carry out such huge tasks manually may delay in time and needs for more clerical works. The major issue in the implementation of such Online Research Management System is because of non – adaptation (which takes care of all the issues mentioned in legacy systems) and incorporating the latest technology in the existing system. The existing system is based on manual evaluation process. Such a manual process consists of collection of data and integration of various data in the form of black and white copies. **Findings:** To overcome these issues, the proposed system, implementation of the Online Research Management System will be helpful to overcome the above-mentioned drawbacks. The aim of the Online Research Management Systems is to make the process faster and paperless frameworks process. **Applications/Improvements:** In this regard, the implementation will be helpful in carrying out the following important tasks such as funding scheme, proposal creation, proposal administration, financial management, reports generation and tracking system. Such an automated system will be benefited to the end user side and administration side in timely base.

**Keywords:** Automated System, Financial Management, Intelligent based System, Proposal Creation, Research Management System, Reports Generation

## 1. Introduction

In many Universities, the present existing system is not based on web based application, instead of online process it exists as off-line process i.e., (black & white)<sup>1</sup>. Such legacy systems consist of enormous manual process like creation, submission reviewing, fund release, periodical status reviewing and result of acceptance were done manually. As the above process is carried out manually, the present system takes huge amount of time to complete the above-mentioned tasks. To overcome these issues, of the existing system the idea is to come up with an automated Online Research Management Systems through web based application<sup>2-5</sup>. Such an application should be developed with some additional features are like edit proposal,

cancellation of proposal, modify proposal, withdraw proposal, modify / update investigators, know the status of the proposal, fund release status and statistical report of overall submitted proposal<sup>4,6</sup>. In addition to the above mentioned automated process, the proposed system also provides user friendly environment which needs less knowledge to operate the system with better results oriented when comparing with present existing system is an added advantage<sup>7,8</sup>. Thus, automation of the proposed modules in the developing system overcomes the issues of the present (legacy) system.

The objective of the proposed research work is to create a user-friendly system to provide an online web based solution system for Online Research Management System. The proposed system wraps the complete process

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of the identified tasks like proposal creation, proposal submission, proposal evaluation, proposal approval and finance approval by the administrator. The proposed research work deeply analyzes the importance of online web based system for creating, compiling, developing, sustaining and propelling new technology compared with existing system. The proposed system also includes tracking process about the submitted proposal with respect to user profile and point out the status of the submitted proposal through message alert system. From these aspects, the proposed system strengthens each and every phase of the proposed system by enhances them with more intelligent<sup>9,10</sup>.

The proposed Online Research Management System will open up a vast amount of possibilities by providing better and more flexible solution which regards to submission of proposals in comparison with traditional legacy approaches<sup>9-11</sup>. The proposed system is decorated with a centralized and seamless console with an array and options for users to maneuver within the system. The proposed system will be a user-friendly system by incorporating the cutting-edge technology in the web based application. The system which will be rolled out has double blended benefits for both academics and research community. The system will prove highly intuitive and seamless among others to withstand the demands of

proposals and its related issues. The developers are going to put together a well-thought out application which not only automates the manual process but is highly scalable to suit future requirements and other challenges which may arise in future (such as fitting the application on the mobiles). It is worth mentioning that the system is not merely automation of manual tasks but it addressed concerns outbreak most other manual submission mechanism with regards to compliance with process workflow which the user feel is one of the major hallmarks of the system. It also consists some trap door provisions for further development. It could be injected with an SMS facility for tracking and to embed various alerts regarding the submission.

The paper is organized as follows. Section 2 introduces the proposed design. Section 3 discusses about the various modules in the proposed research management system. Section 4 discusses about the implementation details with snapshots of the Online Research Management system. Finally, we conclude the paper.

## 2. Proposed System Design

In this section, we discuss about the proposed system design of the Online Research Management System.



Figure 1. Generalized flow process of Online Research Management System

Figure 1 depicts the generalized flow process of a developed Online Research Management System. Figure 2 depicts the detailed framework of the proposed design.



**Figure 2.** Framework for development of online research management system.

### 3. Modules in the Design

In this section, we will discuss about the various modules considered in the online Research Management System. The proposed Online Research Management System consists of 7 phases among which each phase is more significant to proceed to next phase in the system. Each phase has its own limitations to interfere with other phases and also to coordinate with other phases of the systems. The important aspect to be considered is there should not be any overlapping of the process in the proposed system. The proposed system consist of 7 important phases with different tasks are listed below.

- User Registration
- Funding Scheme
- Proposal Creation
- Proposal Approval
- Proposal Follow up
- Financial Management
- Statistical Report Management

#### 3.1 User Registration

The new user has to create his own profile for login process. Each user is identified based on a unique number (IQAMA) residential ID or Staff ID. The complete user profile is collected and stored by the system for managing the user.

#### 3.2 Funding Scheme

This phase of the project contains the details about the

announcement of funded projects. It also contains the rules and regulations of the proposal, published data, deadline, status of the project, budgets and reference code of each project for future reference.

#### 3.3 Proposal Creation

In this phase creation of online proposal will be taken care. The proposal creation process will contain the complete information about the proposal such as abstract, methodology, walkthrough and milestones, budget, results, copyright form, annexure and invigilators bio-data. In addition to these, this phase also concern more about pre-format, post format, pre – evaluation, policy & agreement and downloading of final version before submission. In addition to the above-mentioned tasks, in this phase, some more features are also invoked. They are draft proposal, edit, withdraw, cancel, and continue with the existing proposal. Finally, at the end of this process an acknowledgement for submitting a proposal is generated by the system for each proposal as a reference document.

#### 3.4 Proposal Approval

In this phase, the database has to be created which consists of stack of proposal for review process and also it contains reviewer dataset. The received proposals were sent to each reviewer based on the area of specialization by the approval department to the concerned reviewers for reviewing the proposal. The reviewer reviews the proposal and acknowledges the approval status to the approval department with their feedbacks and comments for suggestion. Based on the comments received from the reviewer, the report is forwarded to the concerned user for further process through approval department indicating the status (approved / not approved /pending). Apart from the above-mentioned tasks, in this phase two more important tasks are also carried out such as approval policy and contract signing. These two are the most important process for releasing the fund.

#### 3.5 Proposal Follow up

In this stage, once the proposal is approved and signing of contract is over, the developed system keeps track of the (approved) proposal status for every 3 months or 6 months within the proposal time limits. The follow up process gives a clear feedback about the current status of the proposal document, periodically report status and fund release status. This phase plays a vital role in the

proposed system which is used to track each and every stage of a project with respect to specific user profile.

### 3.6 Finance Management

In this level, the fund for each proposal is sanctioned after receiving proper approval from the approval department. The releasing of the fund is done in stage by stage process based on the comments received from approval department.

### 3.7 Statistical Report

In this stage, the fund released for each scheme under college wise, department wise and year wise report is generated. The results are displayed in graphical manner for a better understanding using visualization tools.

## 4. Implementation and Snapshots

In this section, we discuss about the implementation and various snapshots obtained for the online research management systems Figures 3-7.



Figure 3. The initial page for the investigator to register their details to submit the proposal.



Figure 4. Researcher information page.



Figure 5. Fill in page of the proposal details.



Figure 6. Successful insertion of abstract details of the proposal.



Figure 7. Register form to fill the co-investigators details.

## 5. Conclusion

In this paper, an automated intelligent system framework is designed for an Online Research Management System to perform the proposal management process faster and easier though system based with a proper implementation. The implemented system will be an automated system as early mentioned which completes the tasks quickly and efficiently by integrating the entire process with less human interactions, which gives high quality statistical results like proposal submission, proposal selected with respect

to college and department wise based on each academic year, proposal rejected, budget allocated, budget spend, status report of the selected proposal, budget sanctioned for each approved proposal and overall statistical report of research department.

## 6. Acknowledgement

The authors would like to acknowledge the Deanship of Scientific Research (DSR), Jazan University, Jazan, Kingdom of Saudi Arabia for sanctioned the project. The authors also thank the College of Computer Science and Information Systems, Jazan University, Jazan, Kingdom of Saudi Arabia.

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