

WEB BASED INWARD-OUTWARD REGISTRATION MANAGEMENT SYSTEM (WIORMS): THROUGH PROJECT BASED LEARNING (PBL) PEDAGOGY

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Abstract— Organizations and employees officially communicate to exchange information by sending and receiving related information regarding regulations, announcements, events and all that through letters most often in hard copy form and are called as Inward letters and Outward letters. These letters are recorded manually into a register book and provided with an identification for future reference. The processing of an Inward letters of an organization involves manual entry of details of the letter into the register, identifying the concerned department, taking remarks of the concerned authority, forwarding the Inward letter to concerned department or person and maintaining the receipt, which is done manually and is also similar for processing the Outward letters. The process of Inward and Outward letters at Rajarambapu Institute of Technology (RIT) till date is manual, involves supporting staff, requires stationary, time consuming, delay in the communication and reach out to intended recipients, difficult to track, analyze and requires maintaining backup of the registers. The time, cost and man hours required in processing the Inward-Outward letters must be reduced and the information maintained must be easily accessible for analysis. To address the problems of manually processing of Inward-Outward letters to its best, a solution is proposed by developing a Web application that will ease the process and provide additional functionalities to effectively communicate, maintain and track the process. The developed application automated the entire process by drastically reducing the time required to pass the information to the intended recipient, eased the process of tracking the letter, created a centralized database, achieved zero percent involvement of supporting staff, eliminated the paper work and also provided utilities like downloading daily reports and monitoring status of letters. The Web application provided both tangible and intangible benefits and can be used by any organizations to improve their Inward-Outward process. The system is designed and developed using the Project Based Learning pedagogy during the vacation period by actively exploring the Inward-Outward Register Book problem. The Web application will be enhanced in future by providing exchange of letters between organizations, redundancy of data, email and SMS notifications and apps for mobiles and explore the cloud platforms.

Keywords— Automate, Inward-Outward, letters, recipients, Web Application, Project Based Learning, Cloud.

I. INTRODUCTION

The official communication between the organizations and departments in the organization happens through the exchange of letters. These letters may be broadly classified into Inward Letters and Outward Letters. Inward Letters are those that are received from the external agencies or the letters to be circulated inside the organization and need to be forwarded to the intended recipient in the organization itself. Outward letters are those that are intended for communication with the external organizations. Maintaining the record of these letters is important for any organization. The processing of these letters involves the following activities:

A. Inward letter registration:

Once an organization receives a letter, it is capitulated to the receptionist. The receptionist then makes an entry of the letter by recording the details like: date of arrival, date on the letter, from details, subject, description, delivery service details and all that into a register by assigning a unique identification called inward number. The letter is then send for the verification to the concerned authority for getting remarks. The remarks indicate to whom or

to which department the letter has to be forwarded for further actions. A supporting staff carries the letter to the concerned and a confirmation is collected in the form of a signature by the recipient, confirming that the letter is received. Once the supporting staff receives the confirmation, another entry is made into the register mentioning that to whom the letter is handed over and at what date. This completes the processing of the Inward letter.

B. Outward letter registration:

Any information that an organization or employee of an organization wants to communicate to the external agencies is drafted in to a letter and assigned a unique identification number after approval of the concerned authorities. The letter is brought to the receptionist to record the details of the letter like: letter's identification number, date on the letter, name of the writer, details to whom the letter is addressed, subject, description, courier service details, date of forwarding and all these are recorded into the register. Figure 1.1 shows the organizational structure of Rajarambapu Institute of Technology (RIT) which is used to understand and get insights of an official communication flow.

This paper discusses the proposed and developed web based solution which has automated the processing of maintaining Inward-Outward Register Book. The following sections are reserved for discussion: related work done in second section, problem statement and proposed solution in third section, results in fourth section and conclusion & future work in fifth section.

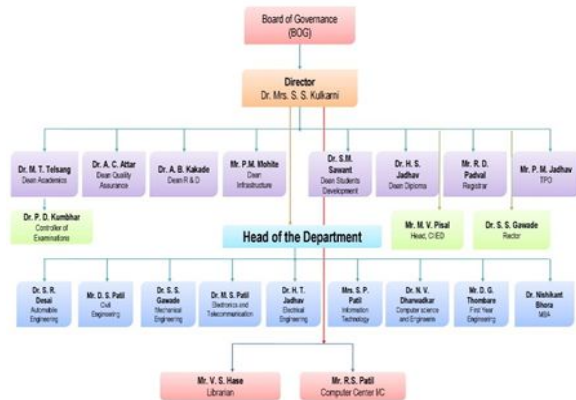


Fig. 1.1 Organizational Structure of RIT.

II. LITERATURE SURVEY

This section discusses the literature studied and used to understand the terminology of Inward-Outward Letters.

In [1], the organizational structure of the RIT is understood and analyzed the flow of the communication shown in figure 1.1. Inputs were collected from the administrative office on how these letters are processed like: its flow as mentioned in the introduction section, difficulties faced by the staff due to the existing methodology and further were studied for addressing these difficulties. Decision was made to develop a web based application to automate the process and provide additional functionalities such as date wise summary report generation.

In [2], the available description was studied to understand the terminology like: Inwards-Outwards Register Book is a register of letters and other communications, both inwards and outwards that are recorded in a specific format.

In [3], the use of technology in automating the inward and outward letters is briefed. The solution is provided to the organizations by Auromeera Technomatrix Pvt. Ltd. through their policies. The product is beneficial to the organizations who had purchased their product. Though the process is not available to study in detail, the proposed system is of the same kind.

III. PROBLEM DEFINITION AND PROPOSED SYSTEM

1. Problem definition:

The processing of Inward letters of an organization involves manual entry of its details into register, identifying the concerned department, taking remarks of the concerned authority, forwarding the Inward

letter to concerned department or person and maintaining the receipt, which is done manually and is also similar for processing the Outward letters. The process of Inward and Outward letters at Rajarambapu Institute of Technology (RIT) till date is manual, involves supporting staff, requires stationary, time consuming, delay in the communication and reach out to intended recipients, difficult to track, analyze and requires maintaining backup of the registers. The time, cost and man hours required in processing the Inward-Outward letters must be reduced and the information maintained must be easily accessible for analysis.

2. Proposed solution:

To address the problems of manual processing of Inward-Outward letters to its best, a solution is proposed by developing a Web application that will ease the process and provide additional functionalities to effectively communicate, maintain and track the process. Project Based Learning pedagogy is used to study the problem and address the same. Since this activity is not a part of academics, only assessment of the work was carried out without any summative-assessment or allocation of grades. Tasks were identified, categorized and was assigned to the team members. Every day members are called for a meeting to share the findings. A diary and an activity chart is maintained to record the daily updates. The figure 3.1 depicts the overview of the WIORMS architecture.

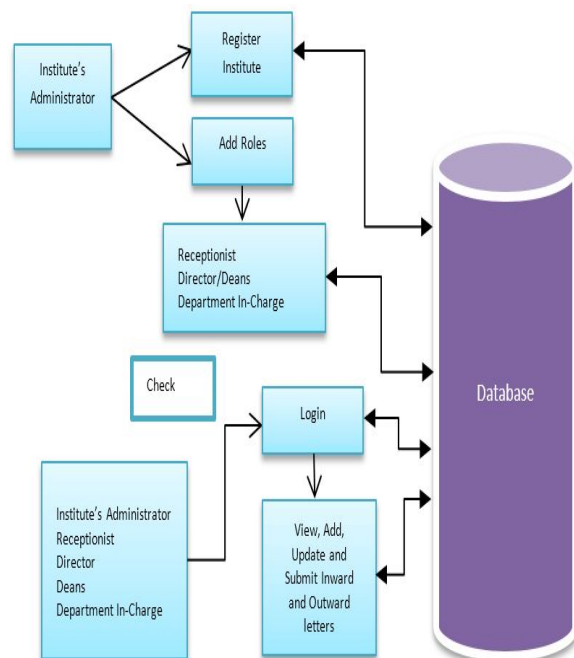


Fig. 3.1 Architecture overview of WIORMS.

The system has defined roles intended for different users. The following are the roles and their respective functionalities. Though there are several other administrative functionalities provided, this paper restricts its discussion to Inward-Outward Register

Book functionalities. The functional requirements of WIORMS are shown graphically in Figure 3.2.

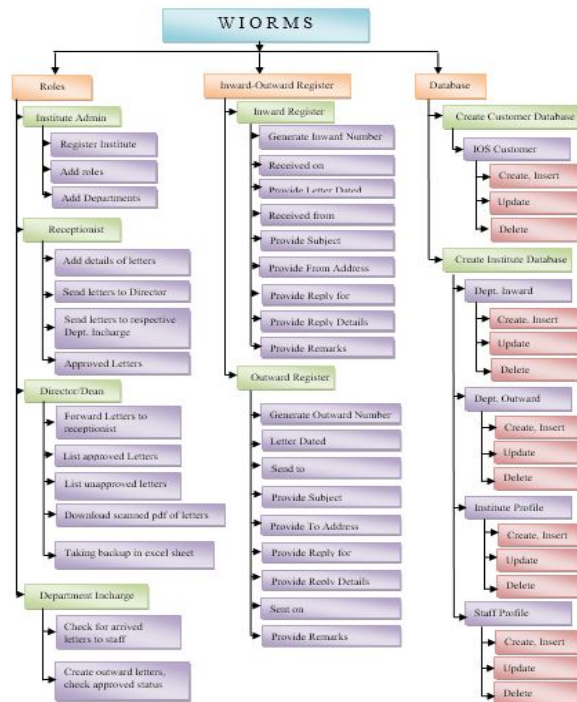


Fig. 3.2 Modular chart of WIORMS

The step-by-step process of Inward-Outward Register Book at RIT is shown in the figure 3.3.

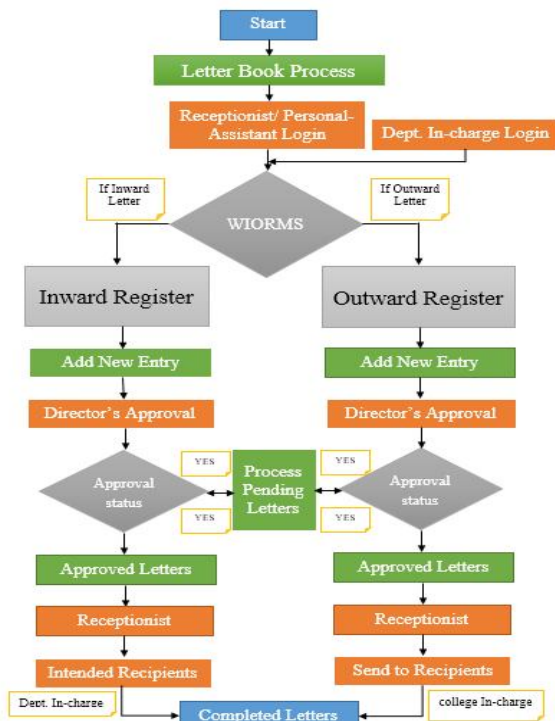


Fig. 3.3 Flow-chart of processing Inward-Outward Register Book.

a. Institute’s Administrator Activities:

Institute’s administrator is usually the one who is registering his institute for getting WIORMS service.

The following are the list of activities of Institute’s Administrator:

- i. Registering the institute by providing the details.
- ii. View or update institute’s profile.
- iii. Add or View departments.
- iv. Register staff and approve or assign roles.
- v. Creating accounts of Higher Level roles like Receptionists, Director/Dean, Department In-Charge.

Figure 3.3 shows functionalities page of Institute’s Administrator.

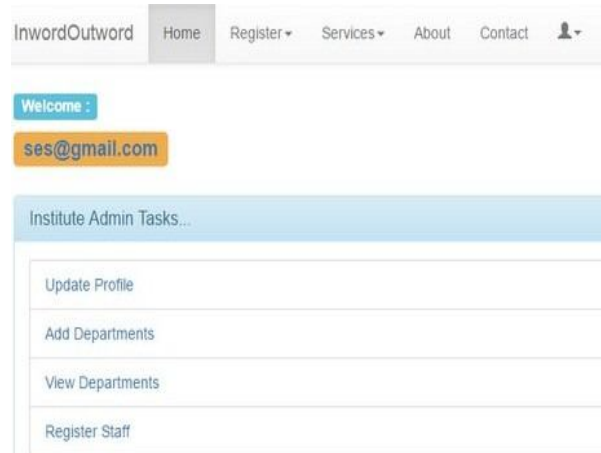


Fig. 3.4 Institute’s Administrator Functionalities page.

Using the Home page of WIORMS available at http://ravanatar.in/IIS/Home_Page.jsp, the Administrator must register the Institute by providing the necessary details. On successful completion of registration, the admin can perform the activities as listed above. In staff, there are different roles like Director, Deans, Receptionist, Department In-Charge, Teaching Staff and Non-Teaching Staff as shown in fig. 3.2. where each one is responsible for carrying out their respective activities.

b. Receptionist’s Activities:

Receptionist is the one who is responsible to add all details of the letters as well to upload scanned letters in PDF file format. Receptionist records all details of inward and/or outward letters and send to director for approval and remarks containing to whom it should be sent. Once it is approved and remarked by director it is forward to intended recipient and update the status to completed. Intended receiver may be Teaching Staff, Non-Teaching Staff, Department In-Charge. Figures 3.5 and 3.6 shows format of Inward and Outward letters respectively.

The following are the list of activities of Receptionist:

- i. Add details of letter.
- ii. Send letters to director to get approval and remarks.
- iii. View the list of unapproved/approved letters.
- iv. Forward the approved letters to intended recipient.

- v. Process the Outward Letters.
- vi. Back up of date wise report in excel sheet.
Inward Register

Fig. 3.5 Inward Register Format.

Fig. 3.6 Outward Register Template.

Based on the remarks of the Director, letters are forwarded to the recipient. The forwarding here is done by updating the database of the recipient. The recipient can view his/her web page and get the details of the letter.

c. Director and Dean’s Activities:

Director or Deans are the one who approve the letters if the recipient requires it and then forwarded to Receptionist. Figure 3.7 shows dashboard of the director. The following are the list of activities of Director:

- i. Approve the letters.
- ii. View the status and list of approved and pending letters.
- iii. Download the letters.
- iv. Back up of date wise report in excel sheet.

Fig. 3.7 Dashboard of Director.

d. Department In-Charge’s Activities:

Department In-Charge is one who gets concerned inward letters and simply forwards it to concerned person. The following are the list of activities of Department In-Charge:

- i. Check whether any letter has arrived for department staff or not.
- ii. Create outward letter from concerned department and check whether outward letter from department has approved or not.
- iii. Back up of date wise report in excel sheet.

The figure 3.8 shows the dashboard of the department’s in-charge.

Fig. 3.8 Dashboard of Department in-charge.

IV. RESULTS

The WIORMS was designed, developed and deployed for the use by the receptionist at RIT. WIORMS received very good feedback from the users and appreciated the automation processes adapted by the system. Also, received few modifications that will be incorporated into the system at the earliest like notifications facility and support to upload different types of files. WIORMS had achieved all the objectives mentioned in the problem statement and can be recommended to the organizations willing to automate the Inward Outward Register Book process.

Though the system was planned to be deployed on a cloud platform, the www.ravanatar.in that is already hosted in the department of IT, RIT, eased the process of the deployment and made accessible over the Web 24*7. With increase in the number of users and load in future, the application can be ported on to cloud platform to benefit from its zero-capital investment, pay-as-you-go and scalability properties. The interested readers can start using WIORMS for free and use the services by visiting the site: http://ravanatar.in/IIS/Home_Page.jsp. Figures 4.1 and 4.2 shows the home page and Registration page of WIORMS.

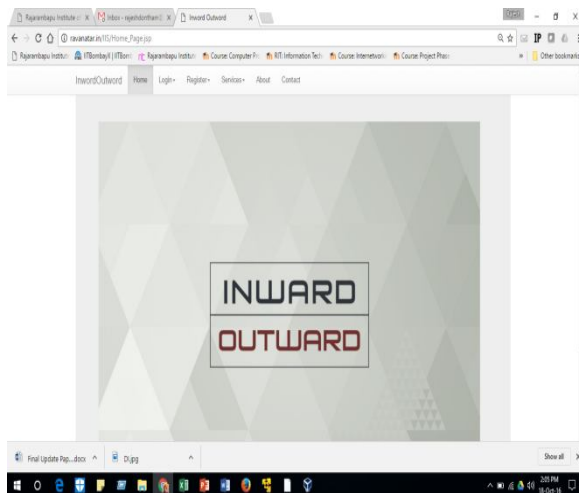


Fig. 4.1 Dashboard of Department in-charge.

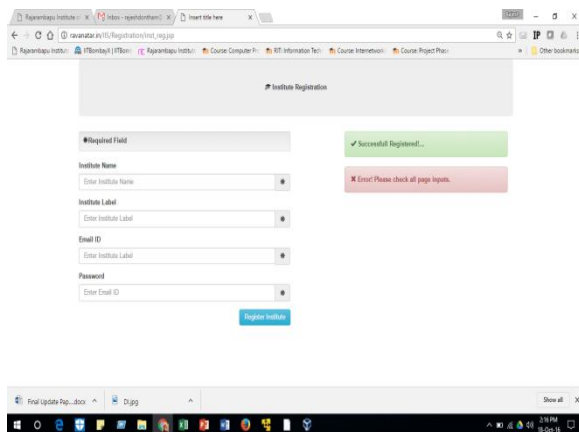


Fig. 4.2 Dashboard of Department in-charge.

CONCLUSION AND FUTURE SCOPE

The paper has provided to the reader information about WIORMS. All the drawbacks of the existing procedures for maintaining the Inward-Outward Register Book are studied and the process is analyzed. The proposed WIORMS had addressed the issues and also provided additional facilities to back-up the data date wise. WIORMS can be recommended for any organization willing to automate their Inward-Outward Register Book. The updates for WIORMS in future will be to provide facilities to exchange letters between organizations, allow redundancy of data, facilitate email and SMS notifications and develop apps for mobiles and explore the cloud platforms.

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