Paperless Transaction for Publication Incentive System

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Abstract. Within the Malaysian context, incentive system in scientific publishing rewards authors for publishing journal articles or conference papers that are indexed by Scopus. At Universiti Tun Hussein Onn Malaysia, the incentive system is going into its third year in operational. The main challenge lies in preparing the evidences as required by the application guideline. This paper presents an online module for publication incentive within the University Publication Information System (SMPU). The module was developed using the Scrum methodology based on the existing workflow of paper-based application. The module is hoped to increase the quality of the system deliverables of SMPU as well as having the ability to cope with change of university requirements in the future.

1. Introduction and Related Work

Publication incentive is one form of incentive payments to the academic staff as motivation or inspiration for publishing in indexed journals. According to [1], incentive is a type of variable reward that is granted to individuals or groups as a mean to distinguish differences in performance. Incentive is designed to stimulate or motivate greater employee effort on productivity. However, existing implementation of the incentive application for publications at Universiti Tun Hussein Onn Malaysia (UTHM) follows a manual process. The main challenge dealing with monetary-based process is the time frame. Paperwork takes too much time to prepare because evidence is mandatory. Next, it also takes time to verify paperwork due to limited automation capability such as sorting, searching or finding sum.

To address the issues faced by researchers, this project proposes for a paperless implementation of the incentive application system. The incentive module is proposed to ride on existing publication information system called the SMPU (http://smpu.uthm.edu.my). The advantage is two-fold. One, it saves the applicants from having to key-in the publication details twice; in SMPU as well as in the incentive application form. Two, it also reduce half of the approval process, which is document verification that is a mandatory step in SMPU.

Before the system development process proceeds, two existing publication systems from Research University (RU) in Malaysia are studied; Universiti Sains Malaysia (USM) and Universiti Kebangsaan Malaysia (UKM). Figure 1 shows the front page of Penerbit Information System at USM [2]. It has four modules, which are My Application, New Application, MS Submission Checklist and Book Evaluation. There is no incentive module available. Next, Figure 2 shows publication system in UKM, which is ePenerbitan [3]. Based on the two systems, the proposed incentive application module is imperative in strengthening UTHM's mission to empower research and development at the universities.
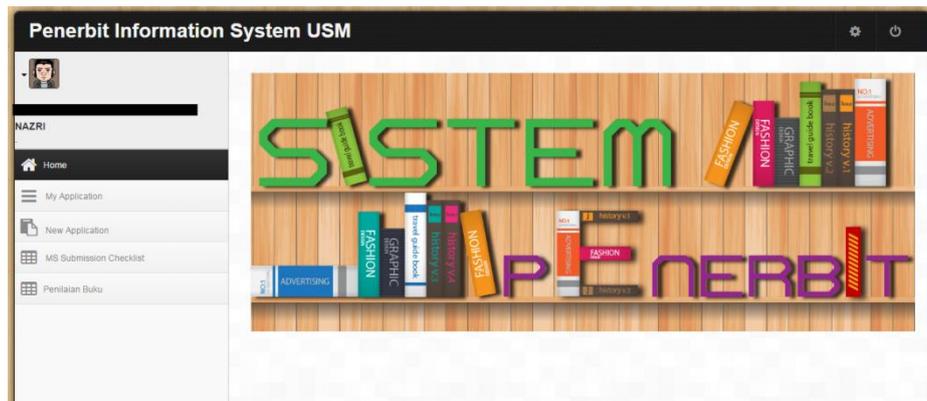
Figure 1. USM publication system (ePenerbit USM).

Figure 2. UKM publication system (ePenerbitan).

The remainder of this paper proceeds as follows. Section 2 presents the Scrum methodology adopted to develop the incentive publications system. Section 3 details out its prototype implementation, and finally Section 4 discusses findings during the development process.

2. Scrum Methodology

The proposed online publication incentive system is integrated within the University Publication Information System (SMPU). SMPU is a web-based platform for keeping all publications records including journal articles, conference proceedings, books, book chapters as well general publications such as newspaper articles and creative writing. Via the SMPU, researchers are able to (1) claim their expertise by tagging each publication according to the ministry's code of Field of Research (FOR); (2) add their co-authors by tagging other authors to enjoy simultaneous update in individual curriculum vitae at the UTHM community page (https://community.uthm.edu.my/); and (3) upload the evidence to form a single-point data entry centralized with UTHM e-print system.

In developing the incentive application module within the SMPU, this project uses the agile Scrum methodology, which is an iterative and incremental agile software development framework for managing product development. Scrum is suitable for small and simple module development as its iterative approach to software delivery builds software incrementally from the start of the project, instead of trying to deliver it all at once near the end [5]. It focuses on short iterations between 1 to 4 weeks so that the development process is aligned with the changing business needs. Therefore, the Scrum methodology is highly recommended for short release and onsite customer practices in effort to deliver working software on time [6]. Scrum begins with product backlog, which comprises an ordered list of requirements. This process is similar to the analysis phase where all the requirements are broken down to user functionality called user stories. Figure 3 shows the processes in Scrum methodology [4].
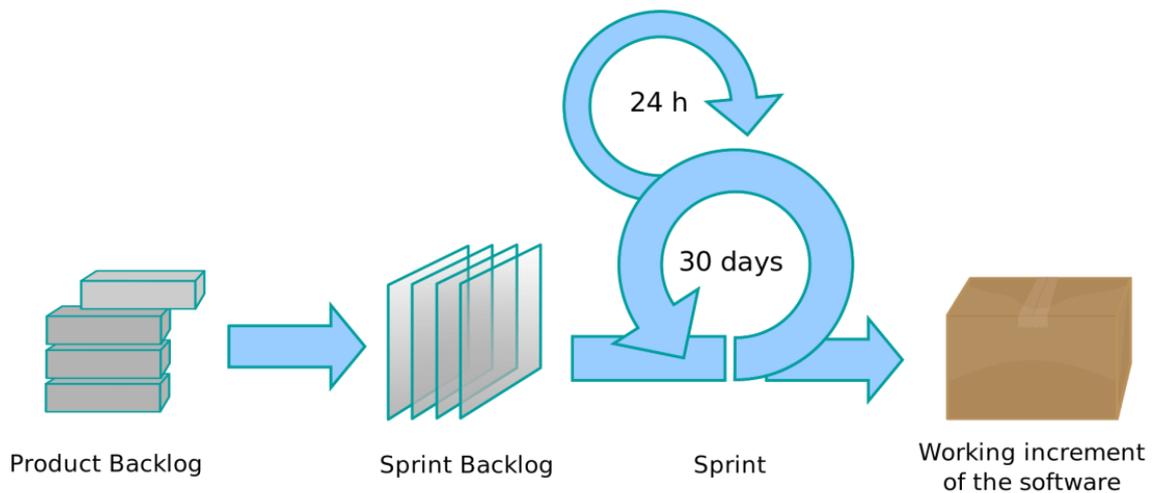
Figure 3. Scrum methodology.

However, in its simplest form, the product backlog is merely a list of items for the developers to work on. From the product backlog, several sprint backlogs are produced similar to the process during iteration planning. The sprint backlog is the list of work the development team must address during the next Sprint. The list is derived by the team by progressively selecting items in product backlog according to their priority from the top until they feel they have enough work to run a sprint. In this project, a swim lane diagram is produced to visually distinguish job sharing and responsibilities for sub-processes from the print backlogs. Figure 4 shows the swim lane diagram to develop the proposed incentive module.
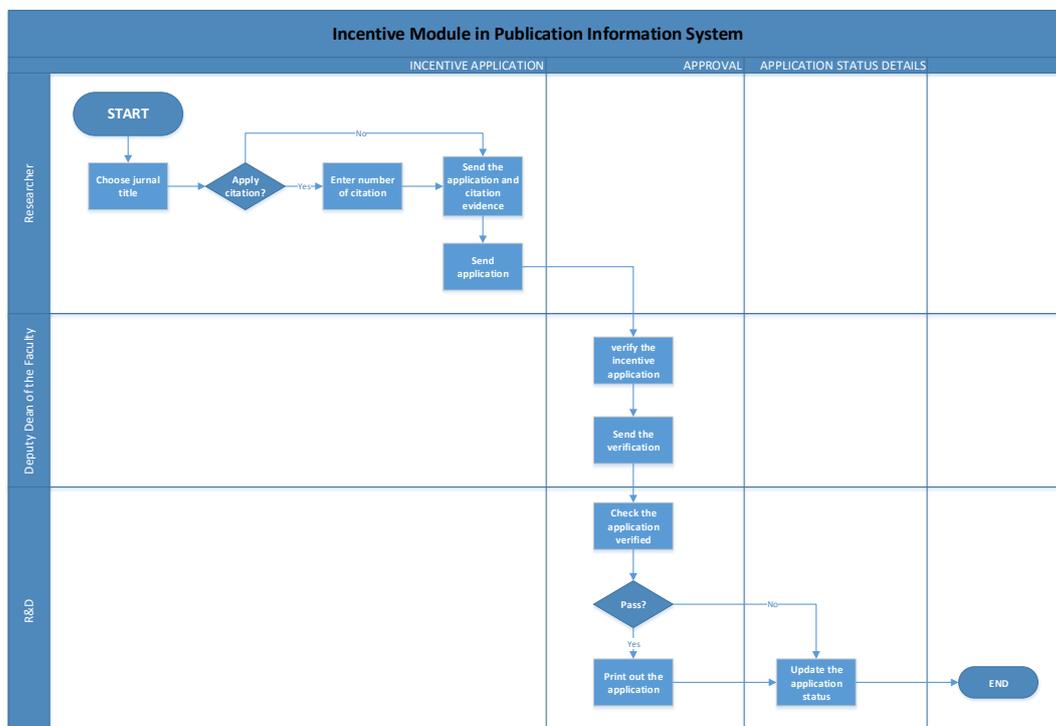
Figure 4. Swim lane for the incentive module.

The swim lane diagram models the entire process of incentive application for three categories, which are (1) Scopus-indexed journal publications, (2) Scopus-indexed proceeding papers, and (3) citations in Scopus. In the first lane, the applicants first choose the publication eligible for incentive followed by the process flow for approving the applications. Finally in the third lane prepares for update on the application status by the Research and Development (R&D) unit at RMC, UTHM.

Next, the Scrum software development process progress into the sprint period. This is a time period of typically 1–4 weeks in which development occurs on a set of product backlog items that the team has committed to. The process is commonly referred to as a time-box or iteration. Finally, after a number of iterations, the working increment of the software is ready to be delivered. Note that Scrum processes are designed to embrace change and are customer-centric so it emphasize on shorter and consistent releases for an active feedback loop.

3. Prototype Implementation

The sprint process within Scrum deals with iterative process of actual system implementation. As shown in Figure 5, the incentive application process is integrated within the existing SMPU interface. In SMPU, the interface contains the researcher details, journal details and incentive application details. The menu for incentive application is added to the left panel on the page and the applicant has to choose the category for either journal articles, conference proceedings or citation to claim.

To proceed, the applicant clicks on the claim button tagged to each publication that is eligible for incentive claim. Eligibility depends on three main requirements; (1) the article or proceeding paper is indexed by Scopus, (2) the incentive application is within three months after publication, and (3) the applicant is the main author or the corresponding author from UTHM.
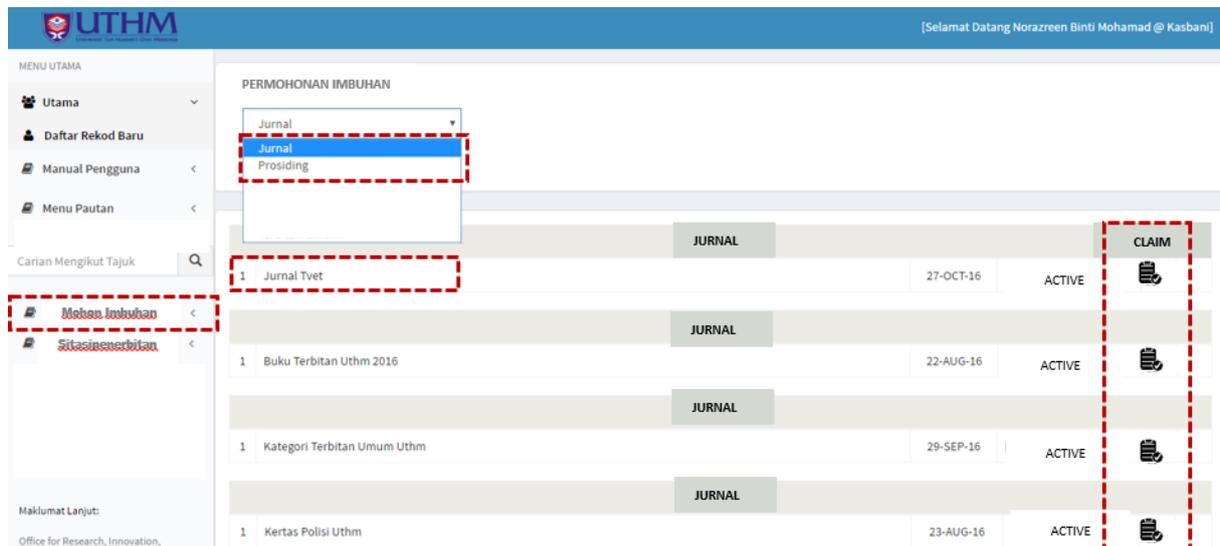

Figure 5. Interface for choosing the category.

Once the researcher selected the particular publication and the claim button, the details of the category chosen will be displayed. The applicant needs to verify all the details and submit the application via the Send button as shown in Figure 6. This interface is important because the applicants are not required to fill in the application details anymore, but instead the information is provided by the existing record in SMPU. Next, the application will then be submitted to the Deputy Dean of Faculty for endorsement as shown in Figure 7. Once endorsed, the application will be submitted to R&D at UTHM Research Management Center (RMC) for review and approval by the head of RMC. The final step is to update the application status whether approved or rejected. The R&D unit will print out the form status to be forwarded to the Finance department.

Figure 6. Application form details.

Figure 7. Endorsement by Deputy Dean at faculty level.

4. Discussions and Future Work

The benefit of the online incentive application system is two-sided; it helps alleviate the load of both researcher and staffs in the R&D unit at UTHM. Researchers are no longer required to fill in the incentive application form and supply the evidences, but instead they choose from existing records in the UTHM Publication Information System (SMPU). This way half of the manual process could be saved because prior document verification has been guaranteed. Meanwhile, the R&D staffs only print one-page application as opposed to an average or 10-pages application including the actual paper as part of the evidence. This helps the department to improve its customer charter by having a shorter processing time. The agile Scrum methodology is also proven to integrate a small module development such as the publication incentive module within the UTHM Publication Information System.

Acknowledgement

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