The Effectiveness of Online Supervision in Monitoring Programming Project

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Abstract: Project is one of the core subjects for every diploma's student in polytechnic Malaysia. In current project management procedure, most of the project's activities and project's supervision process were handled and reported manually using printed forms and log book. There are several challenges occurred in manual supervision document such as time consuming, missing log book, improper student's hand writing, limited area for storing, restricted access as it is only single copy of log book and inattentive of supervisor when they are outstation, meeting or joining courses. These issues may affect the project development as the supervisor unable to trace the students' progress. Hence, this paper's aim to investigate the effectiveness of online supervision to monitors programming project in Information Technology & Communication Department at Politeknik Tuanku Syed Sirajuddin, Malaysia. An online supervision system has been developed as one of the instruments to helps lecturer manage student's project effectively and systematically. A group of students and lecturers was chosen to use the system for four months. Then, each of them was given a questionnaire which consists of 23 questions to gather their feedback. The questionnaires were analyzed using frequency and percentages whereas the result for each question was represented in a bar graph. This study proves that online supervision is very effective to monitor students' project as it provides support in four important perspectives including learning and growth, internal business, customer and financial.

Key words: *Supervision, Monitoring, Project*

INTRODUCTION

Background of the Study

Supervision is a process of giving supports, pledges and develops knowledge, skills and values of an individual, group or team. The purpose of supervision is to improve the quality of work and to achieve targeted objectives and outcomes [1]. This supervision process usually, coordinated by a senior member of a profession to a junior member or members of that same profession [2]. In practice, supervision is a platform for the supervisees to review and reflect on their work in order to do it better. Practitioners bring their actual work-practice to another person (individual supervision), or to a group (small group or team supervision), and with their help review what happened in their practice in order to learn from that experience. Ultimately, supervision is for better quality service [3]. In polytechnic, supervision process plays major role for guiding students in their final year project

Project is a core module offered to final semester polytechnic students' in Information Technology and Communication Department. Through this module, students will complete a group project within one semester where it gives them opportunities to carry out independent application software or technical project. In completing the project, students will be involved with phases of gathering project requirements, implementation, testing to delivery and presentation of the project. The course requires students to learn new technologies and encourage them to develop the generic skills such as developing teamwork, project management, communication skills, problem solving skills and technical writing skills. Therefore, it will inculcate independent and life-long learning.

There are three Course Learning Outcomes (CLO) aimed by this module which might be vary from one program to another. The following are CLO that related with Diploma of Information Technology (Programming): (1) to propose a scheduled project task within estimated duration for the development stages; (2) to produce an end product and detail project documentation to be used in the project's maintenance and future expansion; and (3) to work effectively in

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project development team to achieve a productive collaborative work. The stated CLO is being as a guideline for lecturer to handle the project. Recently, course coordinator will distributed students into group and assign them to a potential supervisor. Then, each group is expected to prepare a proposal based on their proposed title. In completing the project, students are compulsory to meet with supervisor every week for at least fifteen weeks. This allows supervisor to monitor the project, assist the project development and provide guideline and suggestion for any circumstances occurs while completing their course.

Weekly supervision information including project tasks, reflections and supervisor's comments normally recorded in a copy log book. Students must report their weekly tasks and reflection before the supervisor verify the log book content. Supervisor will put their comments and feedbacks on every student's activities and then the book will be kept by the students and use it as their reference. At the end of the semester, this log book will be collected and graded by the supervisor based on certain criteria such us number of meeting and the content. As for the supervisor, this log book is very important to keep as it might be useful for their promotion document as well as future reference.
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Problem Statement
In spite of the efforts of supervisor in monitoring student's project, there are some issues has been point out. The hard copy log book leads to incompetency in supervision process due to factors like missing log book, improper student's hand writing, limited area for storing, restricted access as it is only single copy of log book and inattentive of supervisor when they are outstation, meeting or joining courses. These issues may affect the project development as the supervisor unable to trace the students' progress. There are also other issues in supervision especially during monitoring process and the issues will be further clarified in literature review section.

LITERATURE REVIEW

Project monitoring is synonym to project supervision [4]. It records all project activities while the project being accomplished [5]. Currently, in polytechnic, the monitoring information is recorded in student log book. There is only a copy of student log book for each group. Students firstly must record their weekly project activities in the log book before their supervisor gives their comment and approval. Sometimes, there were cases where the students forgot to bring their log book or lost it. As the result, supervisor unable to track the project progress [6] and this might affects the student grade. Research from Rebenich, Gravell and Tiropanis [7] also showed that the students can perform better if

they are aware of their project progress. According to Mahdi, Ahmad, Ismail and Aziz [8], there are several challenges in manual supervision process which can be categorized following elements:

1) Time consuming – Traditional monitoring process requires students to go in personally to meet the supervisor to make an appointment. However, sometimes the supervisor unable to coup with the setting time and neglect the meeting. Yet, students already spend their time in getting to the appointment.
2) Workload – The manual monitoring was currently maintained by the lecturers and office staffs. This might upsurges the workload of the staffs and lecturers.
3) There is no specific method use to record the project information in current education institution. Therefore, previous project information is unorganized and difficult to access.
4) There is demand for a system that allows the students and supervisor to communicate with each other effectively and interactively.

Besides, refer to Shah and Ladkhedkar [6], the manual monitoring process is tedious as the supervisor might lost/mishandled the monitoring details. In order to improve the quality of project supervision, a system has been proposed to the polytechnic institution.

METHODOLOGY

Online Supervision System
An online supervision system entitled "Project & Thesis Management System" has been developed for this research instrument. Students and lecturers from subject DFT6124 (Project) were trained to use the system. Then, each group must update their weekly activities in the platform. There are three categories of users including student, supervisor and project coordinator. This system allows coordinator to register student and supervisor, assign project supervisor, upload project thesis and manage project information such as polytechnic, department and project session. Supervisor is allows to register project, update project information, upload project thesis, give comment, feedback and approve student weekly activities information. Nevertheless, student is restricted to updates their weekly project activities and only able to view information added by other group members. Then, this weekly information will be viewed, verified and approved by the supervisor. Figure 1 shows the interface for list of weekly meeting from a project and figure 2 shows an example of weekly report prepared by the students which has been approved by the supervisor. All these functionality will ease the supervision process as they can access the document online using computer or mobile phone. Currently, both groups have been using the system for almost four months. A questionnaire was designed and distributed

for the students and supervisors to collect their feedback on the performance of the online supervision system.
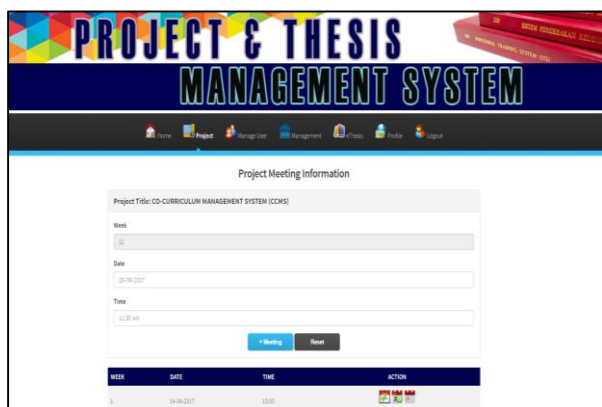

Fig 1 List of weekly project information

Fig 2 Weekly report

Questionnaire
Questionnaire by Batada and Rahman [9] has been adapted for this research. The questionnaire has been used to evaluate performance and user acceptance of the system. This questionnaire covered four important perspectives including learning and growth, internal business, customer and financial. There are 23 questions in the questionnaire which consist of a question for position, four questions for learning and growth perspective, seven questions for internal business perspective, five questions for customer perspective and five questions for financial perspective. The questionnaires have been distributed to 112 respondents from Information Technology and Communication Department, Politeknik Tuanku Syed Sirajuddin who are respectably chosen from the tester group. They are accumulated from 95 students and 17 supervisors out of which 93 (83.03%) questionnaires were returned.

Statistical Analysis
The Statistical Product and Service Solutions (SPSS) version 17 was employed in the analysis of data using frequency and percentages. A pilot test conducted on the questionnaire returned a reliability coefficient of Cronbach's alpha (α) = 0.864.

RESULT

Position
The respondents of this study can be classified into two groups which are student (87.1%) and supervisor (10.8%). However, there are two respondents who did not answer the position question which contribute to 2.2% of missing value as shown in figure 3. The number of supervisor is much smaller than the student as each supervisor normally supervised more than one student's project in a semester. In addition, since that majority of the respondents are from student's category, it seems that this research result is subjective to student's perception instead of consensus option from both student and lecturer groups.
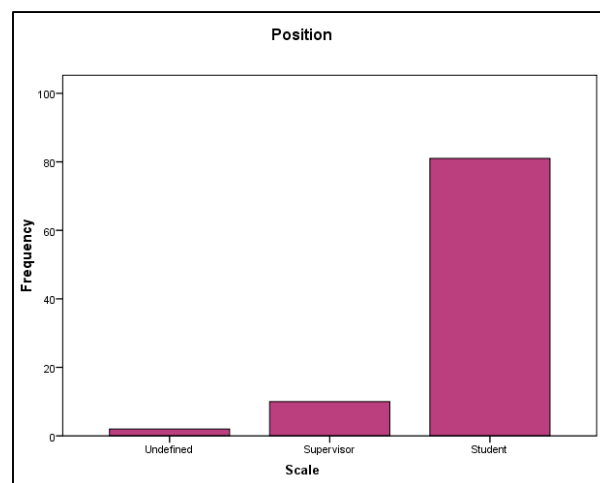

Fig 3 Position of Respondent

Learning and growth
Five questions on learning and growth have been formulated to collect user feedback on the system. Overall result shows that average 79.38 % of respondents agree and strongly agree that this system encourage learning and growth for the user. Total 86% of respondents agree and strongly agree that this system provide reliable system information. This system also increases user productivity (48.4% agreed and 32.3% strongly agreed) and allow them to retrieve required information instantly when they are needed (cumulative 82.8% agreed and strongly agreed). However, there are slightly decreasing on the percentage for up-to-date information due to increment of unsure respondents (15.1%). This system is one of strong Information System (IS) when most of the respondents (74.5%) totally agreed on this criterion. Based on the result, supervision system promote user enhancement in learning and growth. Figure 4 shows the analysis result

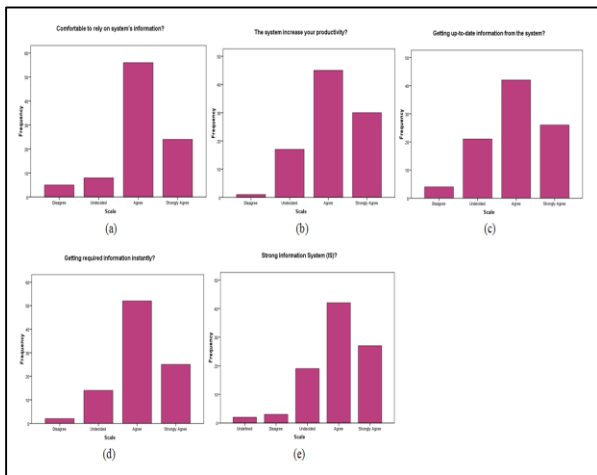for learning and growth perspective in the online supervision system.

Fig 4 Learning and growth perspective

Internal Business

In internal business perspective, the average percentage for respondents' answers is much higher as compared to learning and growth perspective. Average 81.73% of respondents conclude that this system support internal business perspective. Almost all questions in this perspective receive positive feedback from the respondents as shown in figure 5. There only two questions were graded below eighty percent when the percentage of agreed and strongly agree were combined together. These questions are related to capability of the system to cater user need (78.5%) and ease the supervision work load (73.1%). In addition, almost 90.4% of respondents conclude that this system is very advantageous for them. They believe this system will helps them in decision making (82.8%), reduce paper work (83.9%) and improve project productivity (81.7%). On the other hand, the result also shown that there is disagreement from minority of the respondents especially on the capability of this system to reduce their workload. This must be resulted from the rule that enforces every supervisor to log on into the system for reviewing, checking and giving feedback on the student's weekly activities though when they are outstation due to meeting, courses or leave. Thus, this cannot be avoided as supervisor's feedbacks are essential guideline for student's project development.
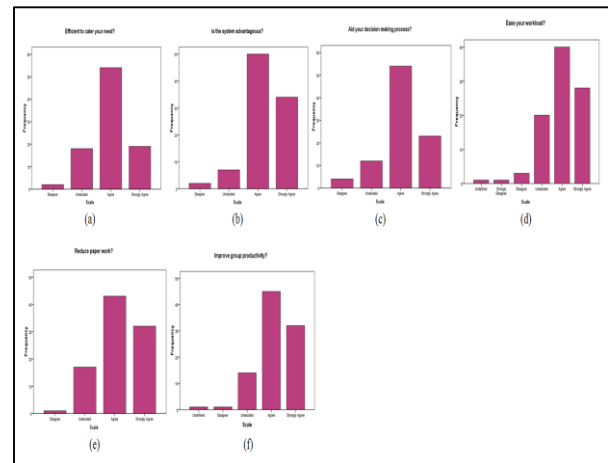

Fig 5 Internal business perspective

Customer

Customer perspective plays major role for developer as their feedback reflect the system's target. Based on respondents' answer in the questionnaire, the result indicates that majority of the user satisfy with the system. Customer perspective receives highest average of agree and strongly agree answer (82.58%) from the respondents as compared to other perspectives. Nevertheless, these users entail further guideline on the timely report since this criterion receives minimum voting for agree and strongly agree (77.4%) as compared to other four questions in the category. Respondents clarify that this system can be used to simplify their supervision task (84.9%) especially when the system is supported within the organization (85%). Furthermore, they also agreed that the system is very user friendly (82.8%) and every group members capable to handle the functionality side (82.8%). Functionality of this system differs for each user category and it creates perception on the user that the system is intolerant and less user friendly (17.2%). Hence, comprehensive training must be provided for this group of users to solve their incompetency and make the system more reliable. Figure 6 illustrates detail result for this perspective.

Financial

Financial perspective receives diversity responses from the users. Total average 80% of them agree and strongly agree that this system can help their financial aspect. Yet, they fairly unsure about the reduction of operating cost due to inexperience in management process for the students (17.2%). Thus, this question receives minimum percentage of agree and strongly agree voting (67.7%) as compared to others 21 questions. The rest of the questions receive promising feedback on agree and strong agreed scale especially for designing strategic planning for students' project (87.1%). Financially, this system can save user time and improve their performance. Moreover, the system also acts as an important platform for the supervisor and student to

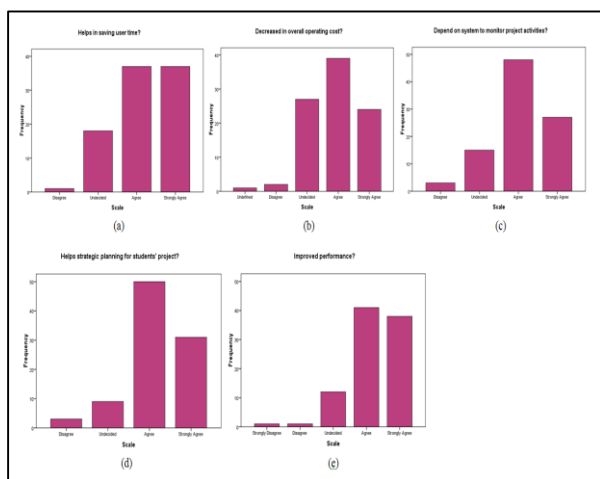have collaborative interaction as well as to monitor their project progress.

Fig 6 Financial perspective

CONCLUSION AND RECOMMENDATION

This study has shown comprehensive result in supervise student's project. It helps supervisor and students to keep track their project progress in more systematic ways. Moreover, the supervisor can monitor their students' progress via online inside or outside campus. This system also can help to reduce issues such as missing log book, tedious meeting document or plagiarism in students' project. In addition, students are allowed to view previous project information using e-thesis function. By using this system, redundancy in project title can be avoided. This may enhance the quality of students project an encourage distinction in their project ideas.

In the future, this project can be improved by providing other important functions such as project assessment module and portfolio module. These modules might help the supervisor to store important project's document and used them as reference when grading the student's project. As a conclusion, online supervision system is an effective method for monitoring and managing programming students' projects in DFT 6124 course.

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