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# Implementation of CVR / IT Methodology on Outsourced Applied Research to Internship Environment, Case, Information Technology Directorate of Bina Nusantara Foundation

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*Bina Nusantara University,*
*Indonesia*

## 1. Introduction

### 1.1 Nature of problem

Bina Nusantara Foundation is a Teaching and Learning Corporation. It consists of several Bodies with distinct responsibilities, and one of them is Information Technology Directorate (ITD). ITD is responsible in developing and maintaining information technology solution in whole corporate.

ITD consists of three main divisions, as in Fig 1. The Information System Development Division (IS Dev) is responsible in developing and maintaining whole foundation Information System Solution, such as web sites and console applications. The Network, Data, and Operational Division (Oper) are responsible in building and maintaining Network Connections, Data Storage and Servers, and daily operational procedure in foundation. Technology Development Division (Tech Dev) is responsible in maintaining applied research researchers and Internship partner students for helping the whole directorate.

ITD is ought to publish 20 National Level Research Paper yearly, but they only have 5 non dedicated researcher, and they called them Research Specialist. ITD need at least about 20 Research Teams to create those paper, or 40 teams for safety. ITD Research is divided into two Semester yearly, 1st year for Feasibility Study, and 2nd year for Product Research. They are currently supported by 54 students / 15 teams powered Associate member Research Internship program. The students are considered as partners, with full turnover per semester.

### 1.2 Scope of problem

This study is done to analyze how to Internship Student can be used by Tech Dev as a Research Outsourcing Body, what to tweak and modify. This study explains how to maintain students in Research Internship Program, including rewarding and punishment system.

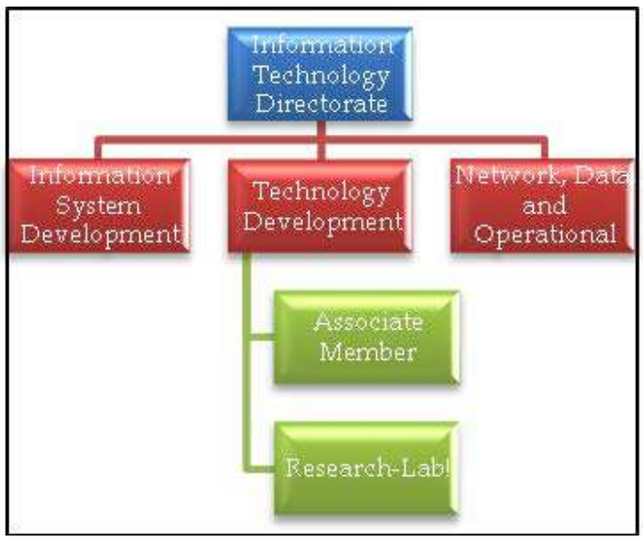



Fig. 1. Information Technology Directorate structure.

This study also describes how the Project Management Process Model is implemented. What changes should be made to modify Project Management Process Model to suite a Student Outsourced Software Development Environment.

### 1.3 Importance of problem

This study should be done to copes several issues. Internship Researcher should be utilized well and rewarded systematically. Failure to do so can cause serious impact to student trust to ITD, such as lost of faith and even truancy.

Current available Project Management Model normally did not include model for Research Environment that Outsourced to Student Internship. There is model for Professionally Outsourced System, but could not be adapted fully due to different philosophy on how to work with between Students and Professionals.

It is suggested to use CVR / IT Model on Research Project Management System Utilization. What the impact on core system and Social Impact should be documented. How fast the adaption time and what to modify should be found. Failure to do so can stop the whole Research Management System.

### 1.4 Literary review

We are using (Boehm & Ross, 1989) as definition of software project management, which shall activate several soft skills (Sukhoo, Bernard, Eloff, Poll, & A., 2008). We chose (CVR/IT Consulting LLC, 2002) as in Table 1 over several software management processes such as (Paul, Kunii, Shinagawa, & Khan, 1998), (Goebel III, 2003), (Liu, Kane, & Bambroo, 2003), (Alba & Chicano, 2006), and (Jalote, 2007); subsequently omitting needs of tools like (Quantitative Software Management Associates, 2004), (Reid & Wilson, 2007), and (Callahan & Ramakrishnan, 2007), for internship management as in (True, 2007).

| Group | | Activities |
|---|---|---|
| **Project Initiation Activities** | | Assign an initiating Project Manager |
| | | Identify the Project Sponsor |
| | | Define the Business Need/Opportunity |
| | | Identify Business Objectives and Benefits |
| | | Define Overall Scope |
| | | Define Project Objectives |
| | | Identify Project Constraints and Assumptions |
| | | Ensure Alignment with Strategic Direction and Architecture |
| | | Identify and Engage Key Stakeholders |
| | | Identify Key Potential Risks |
| | | Procurement and Resourcing Requirements |
| | | Determine Cost/Benefit and Schedule Estimates |
| | | Develop a Project Phase Exit Plan |
| **Project Planning Activities** | Analysis Phase | Assign a Project Manager |
| | | Refine Project Scope |
| | | Determine Procurement and Sourcing Strategy |
| | | Refine Project Schedule |
| | | Resource Planning |
| | | Identify Other Resource Requirements |
| | | Establish Project Life-Cycle Phase Checkpoints |
| | | Refine Project Cost Estimate and Budget |
| | | Identify Potential Project Risks |
| | | Determine Process for Issue Identification and Resolution |
| | | Develop a Change Management Process |
| | | Develop an Organizational Change Management Approach |
| | | Develop a Quality Management Approach |
| | | Develop A Project Communication Approach |
| | | Develop A Configuration Management (CM) Approach |
| | | Project Performance Commitment |
| | | Consolidate the Project Plan |
| | Design Phase | Detailed Designs |
| | | Establish a Requirements Traceability Matrix |
| | | Manage scope, cost, schedule and quality (Manage Change) |
| | | Manage issues, change and risk |

| Group | | Activities |
|---|---|---|
| | | Establish and report project status |
| | | Update Project Performance Commitment document |
| | | Obtain approval from the Governance Body at Design Review |
| **Project Execution and Control Activities** | | Manage Risk |
| | | Communicate Information |
| | | Manage Schedule |
| | | Document the Work Results |
| | | Manage Organizational Change |
| | | Manage Scope |
| | | Manage Quality |
| | | Manage Costs |
| | | Manage Issues |
| | | Conduct Status Review Meetings |
| | | Review Project Life-Cycle Phases Checkpoints |
| | | Execute the Procurement Plan |
| | | Administer Contract/Vendor |
| | | Update Project Planning Documents |
| | | Build & Test |
| | | Implementation |
| | | Conduct Rollout Acceptance Meeting |
| **Project Closeout Activities** | | Conduct Final Contract Review |
| | | Conduct Lessons Learned Meeting |
| | | Conduct Knowledge Transfer |
| | | Post Project Review |
| | | Distribution of Resources |
| | | Celebration |

Table 1. Project Management Process ( CVR/IT Consulting LLC, 2002).

## 2. Methods

### 2.1 Whole design

The whole design shall be explained in 3 parts, stakeholders, methods templates, and procedures, as in Table 2. The CVR / IT Standard were mapped as in Table 3. The mapping is necessary to alleviate several problems. In research world, resources often come from grant that has fixed schedule, so grant must be pursued before researcher procurement. Furthermore, to maintain whole University research map, all research planned must go through committee examination. After the permission granted, researcher must procure student for running the research.

| Methods Template | | This part explains how the activities represented. |
|---|---|---|
| Procedures | Research Communication Activities | This part explains how research plan are communicated to every researcher and lecturer. |
| | Research Monitoring Activities | This part explains how researches are monitored. |
| | Research Proposal and Budgeting Activities | This part explains how the systems accept researcher proposal and compiling budget on it. |
| | Research Budget Sounding Activities | This part explains how budget are communicated to management level. |
| | Research Permission Grant Activities | This part explains how every proposal granted or denied. |
| | Research Execution and Control Activities | This part explains how to control and execute every research plan granted. |
| | Student Research Advertisement Activities | This part explains how the researches are communicated to student body. |
| | Student Research Proposal and Budgeting Activities | This part explains how the systems accept student proposal and compiling budget |
| | Student Research Execution and Control Activities | This part explains how to control and execute every research plan granted. |
| | Research Evaluation Activities | This part explains how every researcher and student is evaluated based on their achievement in their research. |
| | Research Training Schedule Commission Activities | This part explains how research training schedule are controlled. |
| | Research Schedule Commission Activities | This part explains how research schedule are controlled. |
| | Monthly Research Specialist Monitoring Activities | This part explains how monthly researcher monitoring done. |
| | Monthly Research Student Monitoring Activities | This part explains how monthly research student monitoring done. |
| | Weekly Research Student Monitoring Activities | This part explains how weekly research student monitoring done. |
| | Researcher Reward Activities | This part explains how weekly researcher and research student rewarded. |

Table 2. Whole design.

| CVR / IT Activities | Research Communication Activities | Research Monitoring Activities | Research Proposal and Budgeting Activities | Research Budget Sounding Activities | Research Permission Grant Activities | Research Execution and Control Activities | Student Research Advertisement Activities | Student Research Proposal and Budgeting | Student Research Execution and Control | Research Evaluation Activities | Research Training Schedule Commission | Research Schedule Commission Activities | Monthly Research Specialist Monitoring Activities | Monthly Research Student Monitoring Activities | Weekly Research Student Monitoring Activities | Researcher Reward Activities |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assign an initiating Project Manager | O | | O | Unique for Research | Unique for Research | | Unique for Research | | | | | | | | | |
| Identify the Project Sponsor | O | | O | | | | | | | | | | | | | |
| Define the Business Need/Opportunity | O | | O | | | | | | | | | | | | | |
| Identify Business Objectives and Benefits | O | | O | | | | | | | | | | | | | |
| Define Overall Scope | O | | O | | | | | | | | | | | | | |
| Define Project Objectives | O | | O | | | | | | | | | | | | | |
| Identify Project Constraints and Assumptions | O | | O | | | | | | | | | | | | | |
| Ensure Alignment with Strategic Direction and Architecture | O | | O | | | | | | | | | | | | | |
| Identify and Engage Key Stakeholders | O | | O | | | | | | | | | | | | | |
| Identify Key Potential Risks | O | | O | | | | | | | | | | | | | |
| Procurement and Resourcing Requirements | O | | O | | | | | | | | | | | | | |
| Determine Cost/Benefit and Schedule Estimates | O | | O | | | | | | | | | | | | | |
| Develop a Project Phase Exit Plan | | | O | | | | | | | | | | | | | |
| Assign a Project Manager | | | O | | | | | | | | | | | | | |
| Refine Project Scope | | O | O | | | | | | | | | | | | | |
| Determine Procurement and Sourcing Strategy | | | O | | | | | | | | | | | | | |
| Refine Project Schedule | | | O | | | | | | | | | | | | | |
| Resource Planning | | | O | | | | | | | | | | | | | |
| Identify Other Resource Requirements | | | O | | | | | | | | | | | | | |
| Establish Project Life-Cycle Phase Checkpoints | | | O | | | | | | | | | | | | | |
| Refine Project Cost Estimate and Budget | | | O | | | | | O | | | | | | | | |
| Identify Potential Project Risks | | | O | | | | | O | | | | | | | | |
| Determine Process for Issue Identification and Resolution | | | O | | | | | O | | | | | | | | |

| CVR / IT Activities | Research Communication Activities | Research Monitoring Activities | Research Proposal and Budgeting Activities | Research Budget Sounding Activities | Research Permission Grant Activities | Research Execution and Control Activities | Student Research Advertisement Activities | Student Research Proposal and Budgeting | Student Research Execution and Control | Research Evaluation Activities | Research Training Schedule Commission | Research Schedule Commission Activities | Monthly Research Specialist Monitoring Activities | Monthly Research Student Monitoring Activities | Weekly Research Student Monitoring Activities | Researcher Reward Activities |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Develop a Change Management Process | | | O | | | | | O | | | | | | | | |
| Develop an Organizational Change Management Approach | | | O | | | | | O | | | | | | | | |
| Develop a Quality Management Approach | | | O | | | | | O | | | | | | | | |
| Develop A Project Communication Approach | | | O | | | | | O | | | | | | | | |
| Develop A Configuration Management (CM) Approach | | | O | | | | | O | | | | | | | | |
| Project Performance Commitment | | | O | | | | | O | | | | | | | | |
| Consolidate the Project Plan | | | O | | | | | O | | | | | | | | |
| Detailed Designs | | | O | | | | | O | | | | | | | | |
| Establish a Requirements Traceability Matrix | | | O | | | | | O | | | | | | | | |
| Manage scope, cost, schedule and quality (Manage Change) | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage issues, change and risk | | O | | | | O | | | O | | O | O | O | O | O | |
| Establish and report project status | | O | | | | O | | | O | | O | O | O | O | O | |
| Update Project Performance Commitment document | | O | | | | O | | | O | | O | O | O | O | O | |
| Obtain approval from the Governance Body at Design Review | O | | | | | | | | | | | | | | | |
| Manage Risk | | O | | | | O | | | O | | O | O | O | O | O | |
| Communicate Information | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage Schedule | | O | | | | O | | | O | | O | O | O | O | O | |
| Document the Work Results | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage Organizational Change | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage Scope | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage Quality | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage Costs | | O | | | | O | | | O | | O | O | O | O | O | |
| Manage Issues | | O | | | | O | | | O | | O | O | O | O | O | |
| Conduct Status Review Meetings | | O | | | | O | | | O | | O | O | O | O | O | |

| CVR / IT Activities | Research Communication Activities | Research Monitoring Activities | Research Proposal and Budgeting Activities | Research Budget Sounding Activities | Research Permission Grant Activities | Research Execution and Control Activities | Student Research Advertisement Activities | Student Research Proposal and Budgeting | Student Research Execution and Control | Research Evaluation Activities | Research Training Schedule Commission | Research Schedule Commission Activities | Monthly Research Specialist Monitoring Activities | Monthly Research Student Monitoring Activities | Weekly Research Student Monitoring Activities | Researcher Reward Activities |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Review Project Life-Cycle Phases Checkpoints | | O | | | | O | | | O | | O | O | O | O | O | |
| Execute the Procurement Plan | | O | | | | O | | | O | | O | O | O | O | O | |
| Administer Contract/Vendor | | O | | | | O | | | O | | O | O | O | O | O | |
| Update Project Planning Documents | | O | | | | O | | | O | | O | O | O | O | O | |
| Build & Test | | | | | | O | | | O | | | | | | | |
| Implementation | | | | | | O | | | O | | | | | | | |
| Conduct Rollout Acceptance Meeting | | | | | | | | | | O | | | | | | |
| Conduct Final Contract Review | | | | | | | | | | O | | | | | | |
| Conduct Lessons Learned Meeting | | | | | | | | | | O | | | | | | |
| Conduct Knowledge Transfer | | | | | | | | | | O | | | | | | |
| Post Project Review | | O | | | | | | | | O | | | | | | |
| Distribution of Resources | | | | | | | | | | | | | | | | O |
| Celebration | | | | | | | | | | | | | | | | O |

Table 3. CVR / IT Mapping.

### 2.2 Stake holders

These system stake holders are as follows.

- Community Development Coordinator. He is in charge of running supporting events like admission, training, and others.
- Technology Development Manager. He is the one who in charge of Technology Development Division where research done. Research Committee. This is the team to judge whether one research is feasible to run.
- Research Coordinator. He is in charge of daily task in research coordination.
- Research Specialist. Researcher for one specific research fields.
- Head of Information Technology Directorate, Head of Information Technology Department and Board of Management. They are in charge of judging research product and its availability for incubation. Thesis Student. Main source of internship program.

### 2.3 Methods template

Every activity shall be presented in following fashions.

1. Visual representation of procedures. It shall give the reader who shall do certain activities and where they shall get and give the deliverables.
2. What points should be considered so the activities can be called success, and failure to do so can ruin the project.
3. What activities should be done so every success factor can be paid. What deliverables are made in each activity.

### 2.4 Procedures

#### 2.4.1 Research Communication Activities

Research Communication Procedure is as in Fig 2. Community Development Officer describes how the researches are communicated to every researcher.

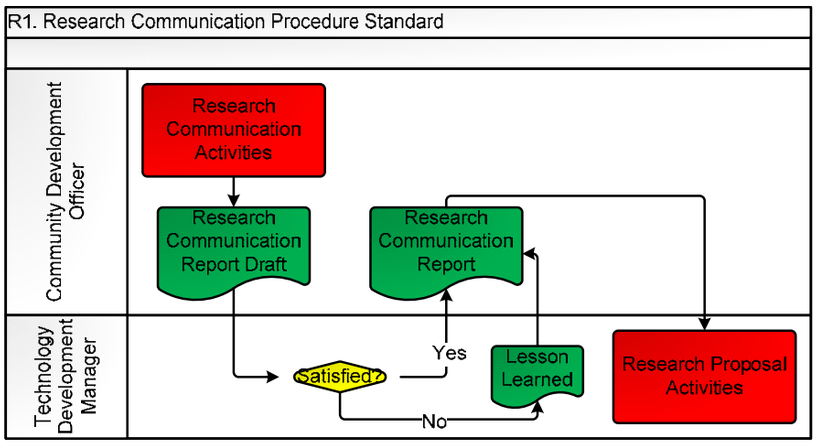



Fig. 2. Research Communication Procedure Standard.

Research Communication Activities critical success factor is:

1. all Lecturers and Research Specialist in University and Information Technology Directorate recognize the program,
2. problems emerged and potential remedies are identified, and
3. Technology Development Manager already approves the research communication report draft.

Research Communication Activities activities is

1. run the Researcher and Lecturers Briefing and report the realization,
2. identify Problems emerged and its potential remedies, and
3. Obtain approval of Research Communication Report Draft from Technology Development Manager.

Research Communication Activities deliverables is Form R1. Research Communication Report.

### 2.4.2 Research Proposal and Budgeting Activities

Research Proposal and Budgeting Procedure is as in Fig 3. Research Coordinator gathers every research proposal available.

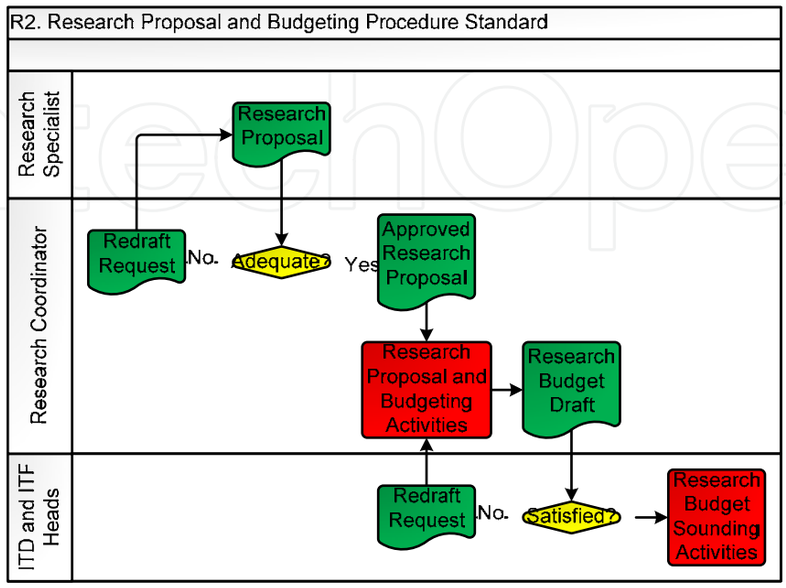



Fig. 3. Research Proposal and Budgeting Procedure Standard.

Research Proposal and Budgeting Activities critical success factor is

1. Every proposal received is reviewed,
2. The following budget is calculated: Man Power demand, Tools / Machine budget, Research object budget, Research operational budget, Literature budget, Seminar / Proceeding / Journal Budget, Awards Budget, Knowledge Sharing Budget, and Student Briefing Budget, and
3. Every member of research committee already approves the research budget plan draft.

Research Proposal and Budgeting Planning Activities activities are

1. Review every research proposal,
2. Calculate: Man Power demand, Tools / Machine budget, Research object budget, Research operational budget, Literature budget, Seminar / Proceeding / Journal Budget, Awards Budget, Knowledge Sharing Budget, Student Briefing Budget, and
3. Obtain approval of Research Budget Plan Draft from Research Committee.

Research Proposal and Budgeting Planning Activities deliverables is Form R2A. Research Budget and Form R2B. Research Proposal.

### 2.4.3 Research Budget Sounding Activities

Research Budget Sounding Procedure is as in Fig 4. Research Budget is to be communicated with board of management.

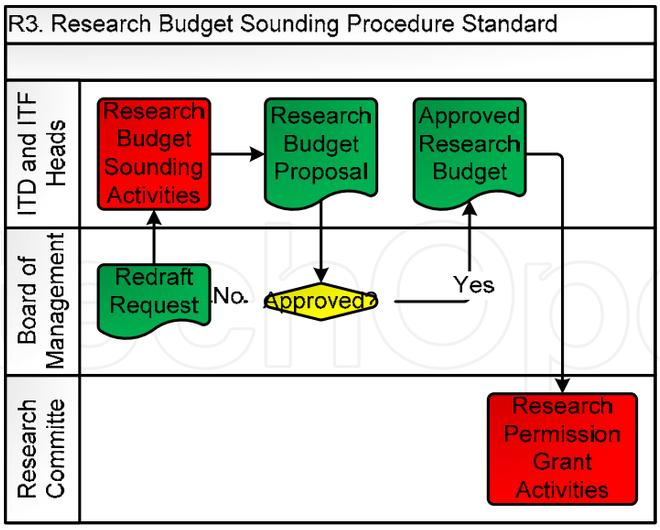



Fig. 4. Research Budget Sounding Procedure Standard.

Research Budget Sounding Activities critical success factor is

1. Research budget plan is presented to board of management, and every related member of board of management already approves the research budget plan draft.

Research Budget Sounding Activities activities is

1. Research budget plan presentation and Obtain approval of Research Budget Plan Draft from Every related member of board of management.

Research Budget Sounding Activities deliverables is as follows. Form R3.Approved Research Budget.

### 2.4.4 Research Permission Grant Activities

Research Permission Grant Procedure is as in Fig 5. Research Specialist and Research Coordinator are to run every research planned.

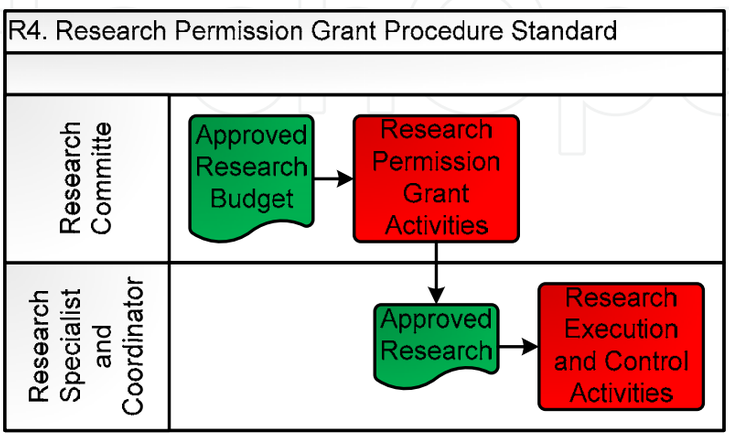



Fig. 5. Research Permission Grant Procedure Standard.

Research Permission Grant Activities critical success factor:

1. every proposal received is reviewed,
2. Research Approved Budget is reviewed,
3. Status of every proposal permission is made, and
4. Every related member of research committee already approves the research permission grant draft.

Research Permission Grant Activities activities is

1. Review every proposal received,
2. Review Research Approved Budget,
3. Grant or deny every proposal permission, where the end choice should be made by all the research committee members.
4. And Obtain approval of Research Permission Grant Draft from Every related member of research committee.

Research Permission Grant Activities deliverables is Form R4. Research Permission Grant.

### 2.4.5 Research Execution and Control Activities

Research Execution and Control Procedure is as in Fig 6. Research Specialist and Research Coordinator are in charge of execution of every research plan.

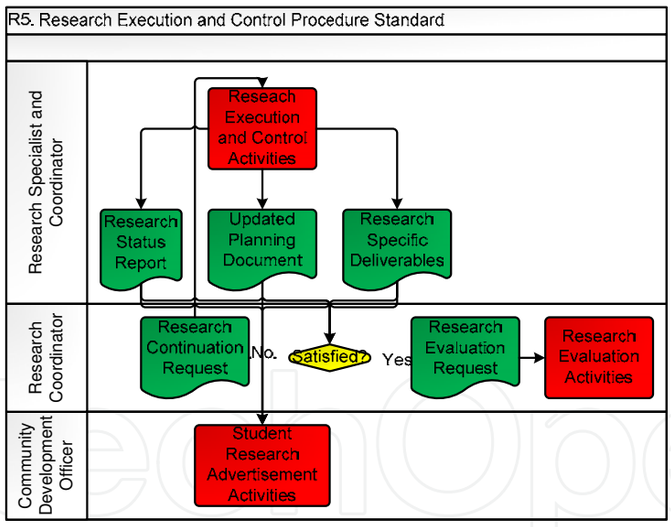



Fig. 6. Research Execution and Control Procedure Standard.

Research Execution and Control critical success factor is:

1. The research proposal is reviewed,
2. Every research prerequisite is satisfied,
3. Every phases described in research methodology is committed,
4. Every milestones / deliverables needed is made, At minimum, it consist of: Research Report, Solutions and it's Manual or Training Materials, Research Journal in English and Indonesian Language, Business Journal in English and Indonesian Language, Script, Thesis, or Dissertation, if available, and

5. Technology Development Manager already approves the research report draft.

Research Execution and Control Activities activities are

1. Review the proposal,
2. Satisfy every research prerequisite,
3. Ensure that every phases described in research methodology is committed,
4. ensure that every milestone / deliverables needed is made, and
5. Obtain approval of Research Report Draft from Technology Development Manager.

Research Execution and Control Activities deliverables is Form R5. Research Execution and Control.

### 2.4.6 Student Research Advertisement Activities

Student Research Advertisement Procedure is as in Fig 7. Student is drafted based on research plan.

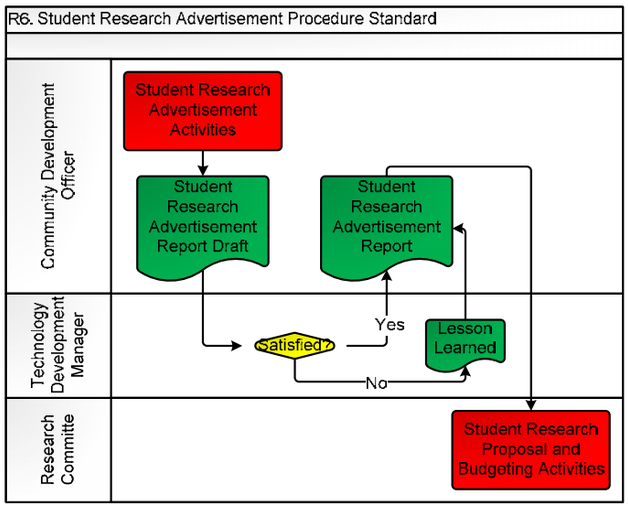



Fig. 7. Student Research Advertisement Procedure Standard.

Student Research Advertisement Activities critical success factor is

6. All Thesis Student in University and Information Technology Directorate recognize the program,
7. Problems emerged and potential remedies are identified, and
8. Technology Development Manager already approves the Student Research Advertisement report draft.

Student Research Advertisement Activities activities is

1. Run the Thesis Student Briefing and report the realization,
2. Identify Problems emerged and its potential remedies, and
3. Obtain approval of Student Research Advertisement Report Draft from Technology Development Manager.

Student Research Advertisement Activities deliverables is Form R6. Student Research Advertisement Report.

### 2.4.7 Student Research Proposal and Budgeting Activities

Student Research Proposal and Budgeting Procedure are as in Fig 8. Research Coordinator is gathering every student research proposal.

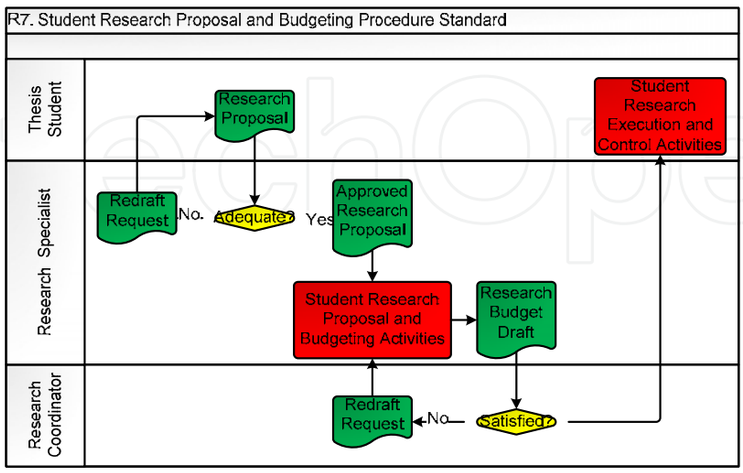



Fig. 8. Student Research Proposal and Budgeting Procedure Standard.

Student Research Proposal and Budgeting Activities critical success factor is

1. Every proposal received is reviewed, The following budget is calculated: Man Power demand, Tools / Machine budget, Research object budget, Research operational budget, and Literature budget, and
2. Every related research specialist and coordinator already approves the student research budget plan draft.

Student Research Proposal and Budgeting Planning Activities activities are

1. Review every research proposal, Calculate: Man Power demand, Tools / Machine budget, Research object budget, Research operational budget, and Literature budget, and
2. Obtain approval of Research Budget Plan Draft from Every related research specialist and coordinator.

Student Research Proposal and Budgeting Planning Activities deliverables is Form R7A. Student Research Budget and Form R7B. Student Research Proposal.

### 2.4.8 Student Research Execution and Control Activities

Student Research Execution and Control Procedure are as in Fig 9. Research Specialist handle day to day control of Thesis Student.

Student Research Execution and Control critical success factor is

1. The research proposal is reviewed,
2. Every research prerequisite is satisfied,
3. Every phases described in research methodology is committed, Every milestones / deliverables needed is made, At minimum, it consist of: Research Report, Solutions and

it's Manual or Training Materials, Research Journal in English and Indonesian Language, Business Journal in English and Indonesian Language, and Script, Thesis, or Dissertation, if available, and

4. Technology Development Manager already approves the student research report draft.

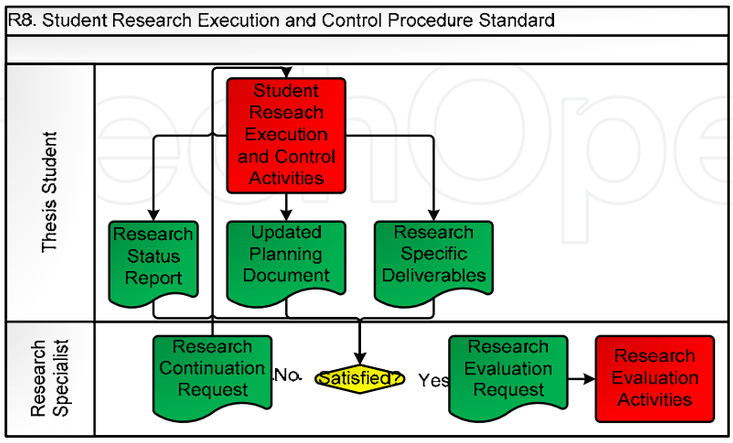



Fig. 9. Student Research Execution and Control Procedure Standard.

Student Research Execution and Control Activities activities are

1. Review the proposal, Satisfy every research prerequisite, Ensure that every phases described in research methodology is committed, ensure that every milestone / deliverables needed is made, and
2. Obtain approval of Student Research Report Draft from Technology Development Manager.

Student Research Execution and Control Activities deliverables is Form R8. Student Research Execution and Control.

### 2.4.9 Research Evaluation Activities

Research Evaluation Procedure is as in Fig 10. Research Committee is to evaluate deliverables of every research done.

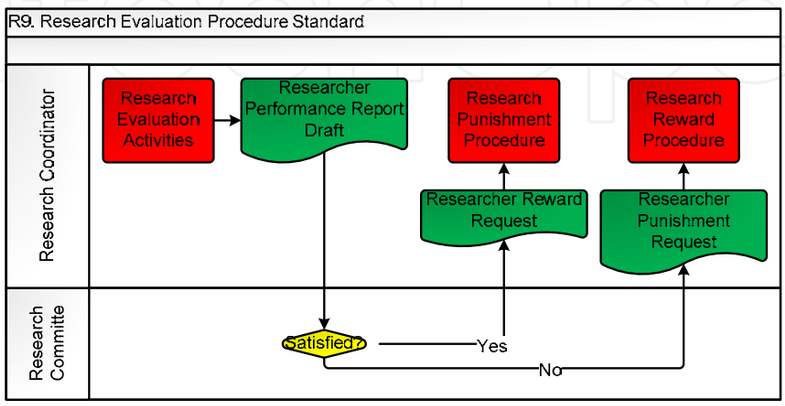



Fig. 10. Research Evaluation Procedure Standard.

Research Evaluation Activities critical success factor is

1. every finished research is reviewed, every research and student research report is reviewed, every research phases described in research methodology is committed, every research milestones / deliverables needed is made, and
2. Every member of research committee already approves the researcher performance report draft.

Research Evaluation Activities activities is

1. Review every finished research, Review every research and student research report, and
2. Obtain approval of Researcher Performance Report Draft from every member of Research Committee.

Research Evaluation Activities deliverables is Form R9. Researcher Performance Report.

### 2.4.10 Research Training Schedule Commission Activities

Research Training Schedule Commission Procedure is as in Fig 11. Researcher attendance in training must be documented.

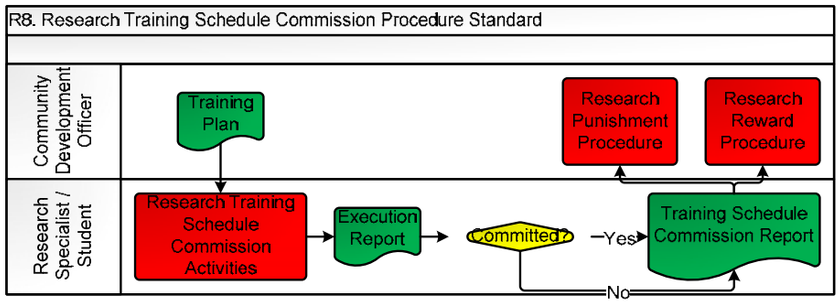



Fig. 11. Research Training Schedule Commission Procedure Standard.

Research Training Schedule Commission Activities critical success factor is

1. Every Research Training Attendance List Report is reviewed, and
2. Technology Development Manager already approves the research training schedule commission activities report draft.

Research Training Schedule Commission Activities activities is

1. Review every Research Attendance List Report, and
2. Obtain approval of Research Training Schedule Commission Report Draft from Technology Development Manager.

Research Training Schedule Commission Activities deliverables is Form R10. Research Training Schedule Commission Report.

### 2.4.11 Research Schedule Commission Activities

Research Schedule Commission Procedure is as in Fig 12. Researcher attendance in research lab must be documented.

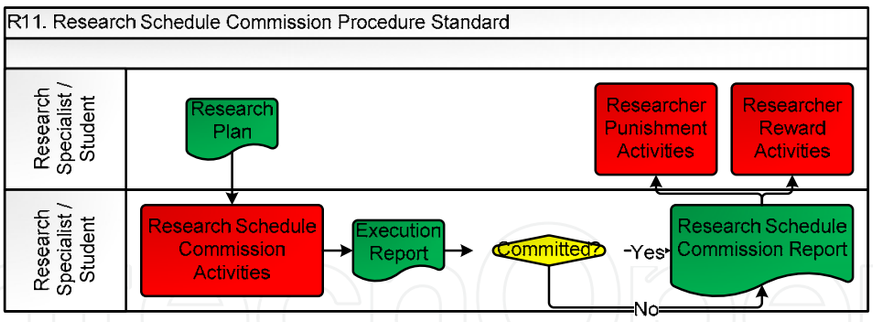



Fig. 12. Research Schedule Commission Procedure Standard.

Research Schedule Commission Activities critical success factor is

1. Every Research Attendance List Report is reviewed, and
2. Technology Development Manager already approves the research schedule commission activities report draft.

Research Schedule Commission Activities activities is

1. Review every Research Attendance List Report, and
2. Obtain approval of Research Schedule Commission Report Draft from Technology Development Manager.

Research Schedule Commission Activities deliverables is Form R11. Research Schedule Commission Report.

### 2.4.12 Monthly Research Specialist Monitoring Activities

Monthly Research Specialist Monitoring Procedure is as in Fig 13. Research Specialist is ought to report to Research Coordinator Monthly.

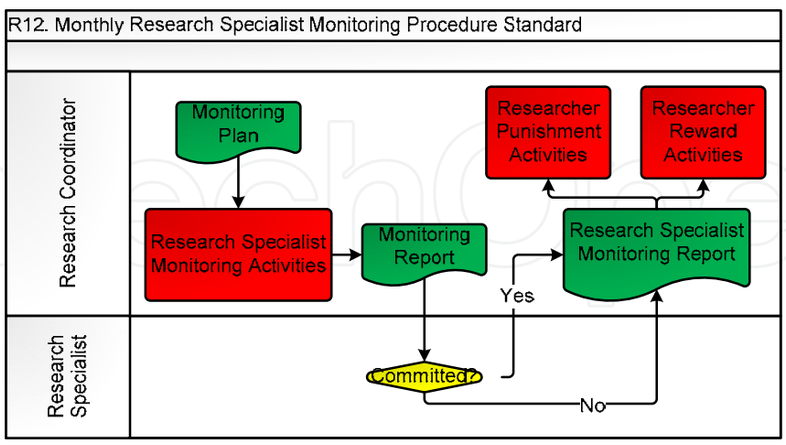



Fig. 13. Monthly Research Specialist Monitoring Procedure Standard.

Monthly Research Specialist Monitoring Activities critical success factor is

1. Every Plan for meeting is scheduled, in every meeting, every intended information from every owner is captured, and

2. Technology Development Manager already approves the Monthly Research Specialist monitoring report draft.

Monthly Research Specialist Monitoring Activities activities are

1. Schedule every Meeting, in every meeting, the intended information from every owner must be captured an documented, and
2. Obtain approval of Monthly Research Specialist Monitoring Report Draft from Technology Development Manager.

Monthly Research Specialist Monitoring Activities deliverables is Form R12. Monthly Research Specialist Monitoring Report.

### 2.4.13 Monthly Research Student Monitoring Activities

Monthly Research Student Monitoring Procedure is as in Fig 14. Research Student is ought to report to Research Coordinator Monthly.

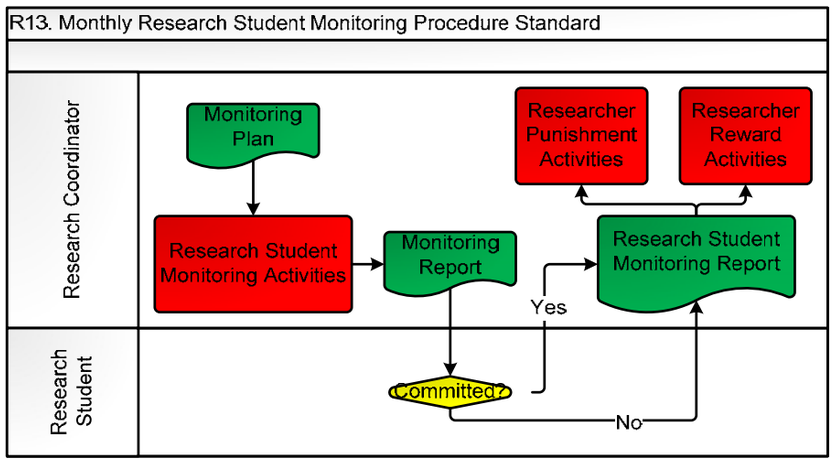



Fig. 14. Monthly Research Student Monitoring Procedure Standard.

Monthly Research Student Monitoring Activities critical success factor is

1. Every Plan for meeting is scheduled, in every meeting, every intended information from every owner is captured, and
2. Technology Development Manager already approves the Monthly Research Student monitoring report draft.

Monthly Research Student Monitoring Activities activities are

1. Schedule every Meeting, in every meeting,
2. the intended information from every owner must be captured an documented, and
3. Obtain approval of Monthly Research Student Monitoring Report Draft from Technology Development Manager.

Monthly Research Student Monitoring Activities deliverables is Form R13. Monthly Research Student Monitoring Report.

### 2.4.14 Weekly Research Student Monitoring Activities

Weekly Research Student Monitoring Procedure is as in Fig 15. Research Student is ought to report to Research Coordinator Monthly.

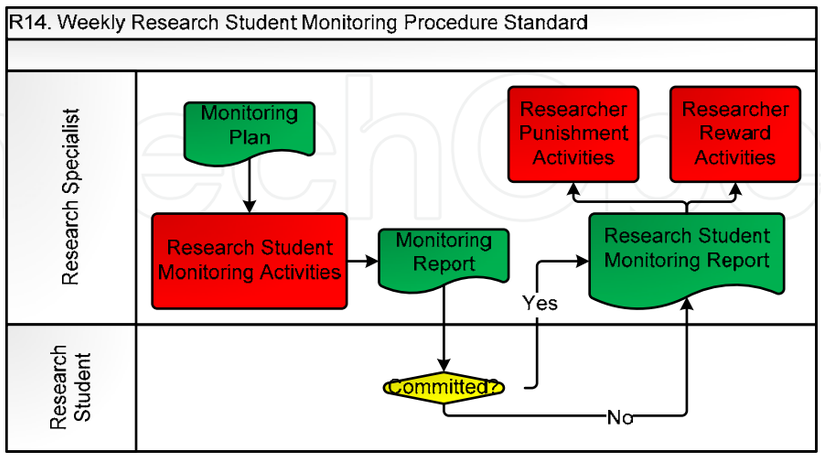



Fig. 15. Weekly Research Student Monitoring Procedure Standard.

Weekly Research Student Monitoring Activities critical success factor is

1. Every Plan for meeting is scheduled, in every meeting,
2. every intended information from every owner is captured, and
3. Technology Development Manager already approves the Weekly Research Student monitoring report draft.

Weekly Research Student Monitoring Activities activities are

1. Schedule every Meeting, in every meeting,
2. the intended information from every owner must be captured an documented, and
3. Obtain approval of Weekly Research Student Monitoring Report Draft from Technology Development Manager.

Weekly Research Student Monitoring Activities deliverables is Form R14. Weekly Research Student Monitoring Report.

### 2.4.15 Researcher Reward Activities

Researcher Reward Procedure is as in Fig 16. System shall pay every researcher based on their achievement in research.

Researcher Reward Activities critical success factor is

1. Every Researcher Evaluation Report is reviewed,
2. Ensure that all work done is within budget,
3. Technology Development Manager already approves the researcher reward report draft,
4. Reward and Level Advancement is granted to the deserved Researcher, and
5. Budget Balance is updated.

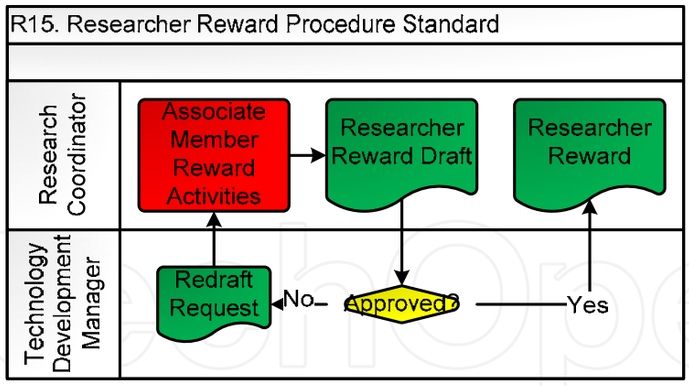



Fig. 16. Researcher Reward Procedure Standard.

Researcher Reward Activities activities is

1. Review every Researcher Evaluation Report,
2. Review available budget,
3. Obtain approval of Researcher Reward Report Draft from Technology Development Manager,
4. Pay every Researcher Reward, and
5. Update Budget Balance.

Researcher Reward Activities deliverables is Form R15. Researcher Reward Report

### 2.4.16 Researcher Punishment Activities

Researcher Punishment Procedure is as in Fig 17. System shall punish every researcher based on their achievement in research.

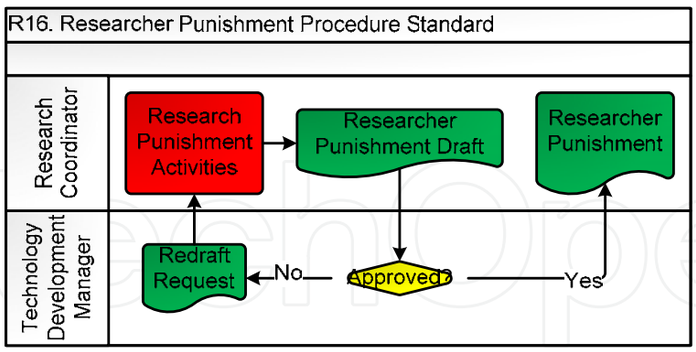



Fig. 17. Researcher Punishment Procedure Standard.

Researcher Punishment Activities critical success factor is

1. Every Researcher status is reviewed,
2. Every Researcher Evaluation Report is reviewed,
3. Verify Researcher misconduct to themselves, related Research Specialist, Research Coordinator, or other related person / group,
4. Ensure that the Researcher is deserved to be punished, If the misconduct is made not by them, they did not deserve to be punished,

5. Technology Development Manager already approves the Researcher punishment report draft, and
6. Punishment is mandated to the deserved Researcher.

Researcher Punishment Activities activities is

1. Review every Researcher status,
2. Review every Researcher Evaluation Report,
3. Verify Researcher misconduct to themselves, related Research Specialist, Research Coordinator, or other related person / group,
4. Obtain approval of Researcher Punishment Report Draft from Technology Development Manager, and
5. Punish the Researcher

Researcher Punishment Activities deliverables is Form R16. Researcher Punishment Report.

### 2.5 System implementation test

The CVR / IT system adoption rate is calculated using simple equation, how much activities mandated from CVR / IT already implemented on current system.

## 3. Result

The CVR / IT system adoption rate is as in Table 2. Furthermore, the system adoption status is in Table 3.

| Activities | Adoption Status |
|---|---|
| **Assign an initiating Project Manager** | O |
| **Identify the Project Sponsor** | O |
| **Define the Business Need/Opportunity** | O |
| **Identify Business Objectives and Benefits** | O |
| **Define Overall Scope** | O |
| **Define Project Objectives** | O |
| **Identify Project Constraints and Assumptions** | O |
| **Ensure Alignment with Strategic Direction and Architecture** | O, but using IT Directorate Research Tree |
| **Identify and Engage Key Stakeholders** | O |
| **Identify Key Potential Risks** | O, using simple test |
| **Procurement and Resourcing Requirements** | O, handled by Binus Procurement |
| **Determine Cost/Benefit and Schedule Estimates** | O |
| **Develop a Project Phase Exit Plan** | O |
| **Assign a Project Manager** | O |
| **Refine Project Scope** | O |
| **Determine Procurement and Sourcing Strategy** | |
| **Refine Project Schedule** | |
| **Resource Planning** | O |
| **Identify Other Resource Requirements** | O |
| **Establish Project Life-Cycle Phase Checkpoints** | O, based on project |

| Activities | Adoption Status |
|---|---|
| **Refine Project Cost Estimate and Budget** | O |
| **Identify Potential Project Risks** | |
| **Determine Process for Issue Identification and Resolution** | |
| **Develop a Change Management Process** | |
| **Develop an Organizational Change Management Approach** | |
| **Develop a Quality Management Approach** | O |
| **Develop A Project Communication Approach** | |
| **Develop A Configuration Management (CM) Approach** | |
| **Project Performance Commitment** | |
| **Consolidate the Project Plan** | |
| **Detailed Designs** | O |
| **Establish a Requirements Traceability Matrix** | |
| **Manage scope, cost, schedule and quality (Manage Change)** | |
| **Manage issues, change and risk** | |
| **Establish and report project status** | O |
| **Update Project Performance Commitment document** | |
| **Obtain approval from the Governance Body at Design Review** | O |
| **Manage Risk** | |
| **Communicate Information** | O |
| **Manage Schedule** | |
| **Document the Work Results** | |
| **Manage Organizational Change** | |
| **Manage Scope** | O |
| **Manage Quality** | O |
| **Manage Costs** | O |
| **Manage Issues** | |
| **Conduct Status Review Meetings** | |
| **Review Project Life-Cycle Phases Checkpoints** | |
| **Execute the Procurement Plan** | |
| **Administer Contract/Vendor** | |
| **Update Project Planning Documents** | O |
| **Build & Test** | O |
| **Implementation** | O |
| **Conduct Rollout Acceptance Meeting** | O |
| **Conduct Final Contract Review** | O |
| **Conduct Lessons Learned Meeting** | O, but problem with documentation |
| **Conduct Knowledge Transfer** | |
| **Post Project Review** | O, with problem with different POV |
| **Distribution of Resources** | O |
| **Celebration** | O |

Table 4. CVR / IT adoption current status.

| Activities | Adoption Status |
|---|---|
| **Research Communication Activities** | O |
| **Research Monitoring Activities** | O |
| **Research Proposal and Budgeting Activities** | O |
| **Research Budget Sounding Activities** | O |
| **Research Permission Grant Activities** | O |
| **Research Execution and Control Activities** | O |
| **Student Research Advertisement Activities** | O |
| **Student Research Proposal and Budgeting Activities** | O |
| **Student Research Execution and Control Activities** | O, with problem with different POV |
| **Research Evaluation Activities** | O, with problem with different POV |
| **Research Training Schedule Commission Activities** | O |
| **Research Schedule Commission Activities** | O |
| **Monthly Research Specialist Monitoring Activities** | O |
| **Monthly Research Student Monitoring Activities** | O |
| **Weekly Research Student Monitoring Activities** | O |
| **Researcher Reward Activities** | O |

Table 5. System adoption status.

There are about 54 Internship Researcher in IT Directorate until this paper is written, compared to 120 Internship Researcher needed. Their Research Speed is on par with ITD Standard. IT Directorate currently can only handle around 15 researches. All of them yields system adoption rate to around 40 %.

## 4. Discussion

Low adoption rate is come from several traits, based on post research observation. There some traits in Binus student, that they seldom documenting their problem, but they like to documenting their achievement in their research, so Research Specialist sometimes late in recognizing problems in research.

The IT Directorate research program still unpopular in student body, due to fear to fail in research. Further research is needed to alleviate this problem.

Preservation of Research tree is still uncommon in Binus University by the time this paper is written. IT Directorate must establish its own research tree, based on Research Directorate inputs.

Different Point of View (POV) between IT Directorate and IT Department does ignite problem, mostly in how the project conducted and roll out of project. Some monitoring and documentation activities and rules cannot be done due conflict with IT Department rules.

To alleviate these problems, writer suggested to start from changing student paradigm, start from early semesters. The class should be shaped to expose student to project development culture, where they learn to address real world problem, came up with solution, and essentially, to work together and to track progress, because most project fail in the last two items.

Several alternative solutions can be made. First is to encourage project based activities on class. Although this model can be considered artificial, at least that could train student responsibility on keeping with documentation and schedule.

Second is, to bridge the class to real life industries. The first variant is to get industrial agreement to be the sand box for class project. The second variant is to us real life project as either the complement or substitute of relevant credit.

The third one is, to actually shape the class as a software factory, where student accomplishment measured by task and project based style. The project should come from out school. Another variant of this model is to consider the whole university as a software factory, where the upper classes act as analyst and managers, and lower classes as programmers.

Only when student understand the project environment and the consequences behind it, the CVR / IT adoption rate (or, any project management standard in general) shall rise.

## 5. Conclusion

Based on observation, the system adoption rate is 40 % at most. Further activity is needed to raise the value to 100 %, addressing how to reduce fear in student, and how to manage research documentation and monitoring.

Solution made should aim to introduce and raise student awareness to project management environment o early semesters.

## 6. Acknowledgement

The author would like to thank Mr. Gintoro FX, this system is based on his idea to expand current associate member system to accommodate IT Directorate needs. This work will not taken place to begin with if without his idea.

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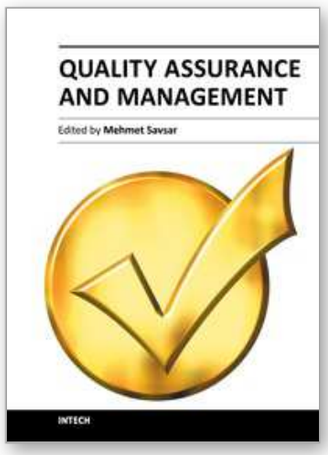
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The purpose of this book is to present new concepts, state-of-the-art techniques and advances in quality related research. Novel ideas and current developments in the field of quality assurance and related topics are presented in different chapters, which are organized according to application areas. Initial chapters present basic ideas and historical perspectives on quality, while subsequent chapters present quality assurance applications in education, healthcare, medicine, software development, service industry, and other technical areas. This book is a valuable contribution to the literature in the field of quality assurance and quality management. The primary target audience for the book includes students, researchers, quality engineers, production and process managers, and professionals who are interested in quality assurance and related areas.

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