

Project Management Processes and Tools in Technology Driven Companies

Course Title: ETM 545/645 Project Management in Engineering and Technology

Instructor: Dundar Kocaoglu

Term: Spring 2013

Team: 7

Name: Namitha Shetty

Table of Contends

| 1. | OBJECTIVE | 3 |
|-------------|---|-----|
| 2. | ABSTRACT | 3 |
| 3. I | NTRODUCTION | 3 |
| 3 | P.1Project Management in Practice | 4 |
| 4. | RESEARCH METHODOLOGY | 5 |
| 4 | 1.1 Questionnaire Design | 5 |
| 4 | 2. Survey Responders | 6 |
| 5. | RESULT & DISCUSSIONS | 6 |
| 5 | 5.1 Project Initiation Tools and Techniques | 6 |
| 5 | 5.1.1 Project Initiation Techniques: | 6 |
| 5 | 5.1.2 Project Initiation Tools | 7 |
| 5 | 5.2 Project Planning Techniques and Tools | 9 |
| 5 | 5.2.1 Project planning Techniques | 9 |
| 5 | 5.2.2 Project Planning Tools | 11 |
| 5 | 3.3 Project Execution Tools & Techniques | 14 |
| 5 | 5.3.1 Project Execution Techniques | 14 |
| 5 | 5.3.2 Project Execution Tools | 15 |
| 5 | A Project Control Tools & Techniques | 17 |
| 5 | A.1 Project Control Techniques | 17 |
| 5 | 5.4.1.2 Project Control Tools | 18 |
| 5 | 5.5.1 Project Closure Techniques | 20 |
| 5 | 5.5.1.2 Project Closure Tools: | 21 |
| 6. A | ANALYSIS & DISCUSSIONS | 23 |
| 6 | 5.1Top 5 Tools by Project Stage: | 23 |
| 6 | 5.2 Top 5 Techniques by Project Stage: | 25 |
| 7 | Conclusion | .27 |
| 8 | P. Recommendation | .27 |
| 9.B | IBLIOGRAPHY | .28 |
| 10. | Appendix | 31 |

1. Objective

This paper will investigate various project management techniques, tools, and processes available and conduct a survey to identify best practices and tools that are being popularly implemented in technology driven product and service industries in U.S.

2. Abstract

In present times the market has become highly competitive and cutting edge, compelling technology companies to constantly innovate and reinvent themselves within a short project development cycle time. In order to survive and be competitive in the global arenaof technology, companies must effectively manage costs, reduce time to market and optimize supply chains to increase their performance and efficiency. In this process it iscrucial for companies to identify goals and effectively manage and coordinate resources and tasks involved in their projects. As a result, project management plays a prominent role in technology companies by planning, organizing, implementing and delivering goal-oriented results.

3. Introduction

Project is atemporary activity consisting of a set of tasks to complete a definite goal [1]. It may include anything from inception of a new product concept, launch of tangible and intangible products/servicesto the market or even relocation of a corporate office. Companies select projects to demonstrate their objectives, strategies and to leverage their competitive advantage. Hence project selection is a very crucial step and is often based on several criteria involving company objective's and goal, financial analysis, technical requirements, quality assessment, competition, associated risk& government regulations [2].Once project is selected, completing project within allocated time, cost, budget along with performance is very crucial aspect to measure success of any project in project management[3].

- <u>Scope:</u> Is defined in the beginning of the project. It consists of all the tasks required to create the final end product and thus helps the project team to define time and budget of the project. Drafting a scope been considered as one of the most tricky and complicated part of project management as most of the details regarding the project are ambiguous and unknown in nature during initial days[4][5].
- <u>Time:</u> Estimation of time to complete the entire project. After defining the scope, project

team assigns time and resources for each project activity and task. Then cumulative of all tasks gives total time required to complete the entire project and hence the entire schedule of the project is planned[1]

• <u>Budget:</u> Is cost estimation of entire project. It includes cost of resources (people, material, money value of time) and duration (time) to complete the project tasks. Good budget management plans will foresee the unidentified cost in the early stages of project to develop a realistic budget[6].



Fig 1: Triple constraint of project management[7]

Therefore a good estimate, document and record of cost and schedule are important check if the project is extending beyond its scope[3].

3.1Project Management in Practice

Project management has been in existence in business organization more than a century but become popular in last decade of 20th century[8]. Project Management Institute (PMI) defines project management as "Meeting project requirement through the application of knowledge, skills, tools and techniques to project activities. This is accomplished through the use of initiating, planning, *executing, controlling and closing a project."*[1].Project management comprises of all of the elements of business discipline from strategy development, accounting and finance, capital budgeting, organizational change, personnel management, product management, management, supplier management to IT services.

A typical project management approach follows processes, policies, and procedures. Every stage of project management has numerous tools (like Gantt chart, Work Breakdown Structure) to enhance the project management experience. The use of project management practices,techniques and tools have following advantages to the organization[9][10][11]:

- Leads to common, consistent and organized effort to accomplish project for any nature (complex, simple, large or small) in any field or size of business
- It minimizes the interference with of routine business activities in organization by centralized management of skills, technologies, and resources needed to execute the project
- Increases efficiency by following roadmaps and flexibility to accommodate change and handle risk in predefined plans
- Effective use and management of resources, time and money to deliver successful projects.

Along with project management principles and tools many companies also implement complex and rigorous processes that determines the behavior of the output and use statistical methods to control/increase quality, performance and efficiency of the product in form of total quality management, kaizen, lean management, and six sigma[12].

4. Research Methodology

The project research will focus on extensive literature review, consisting of case studies, online resources and news/journal articles to investigate various project management techniques, tools, processes available and has conducted a survey to identify best practices and tools that are being popularly implemented in the industry.

4.1 Questionnaire Design

There are numerous tools and techniques available for project managers to manage their project management activities[10]. A questionnaire was developed after an extensive literature review towards identifying the best practices and tools that are implemented in each phase of project management of technology driven industry. The questionnaire has 10 questions addressing techniques

and tools implemented in every stage of project management. The main objectives in developing the questionnaire were to explore the following:

- 1. Understand fundamentals of project management techniques and supporting tools currently practiced in U.S based technology driven industry
- 2. Identify most popular and commonly used tools in every stage of project management
- 3. Identify any differences in practices/ approaches in project management in industry

4.2 Survey Responders

Survey was aimed at project managers; project coordinators, project coordinators and team leads in companies. Survey was successful in in getting 16 responses from responders with an average of 7 years project management experience from management consulting firm, financial services industry, construction industry, automobile industry, semiconductor industry, Healthcare IT industry and IT industry.

5. Result & Discussions

The project management process typically includes phases namely initiating the project, planning the project, executing the project, control and closing the project[10]. Listed below are survey results of tools and practices in allthe four phases:

5.1 Project Initiation Tools and Techniques

In this phase the project manager, management and stakeholder define the project scope, deliverables, estimate costs and resources required for the project [10].

5.1.1Project Initiation Techniques:

Here techniques aid the management and the project management team in determining goals and boundaries of project. Listed below are most commonly used techniques:

- 1. Develop Business case: It's an analysis document based on cost, benefit, organization objectives, which helps decision makers todeicide if the project should be pursued or not[13].
- 2. Perform Feasibility Study: Is performed to determine if the project is feasible before actually investing money and resources in the project[14].

- 3. SWOT Analysis: Is a universally recognized technique for gathering, structuring and analysis of data. Which helps to understand the project aligns with company objective and strategy holistically[15].
- 4. Identify Project Dimensions&In Frame/Out Of Frame Analysis: It helps project team in identifying and staying within the project scope.It's very helpful in large and complex projects by defining the boundaries of what can be done within the given time and budget[16].
- 6. Financial Analysis: Is the financial assessment of the project to determine if it's profitable be pursued or not[17].
- 7. Perform Phase Review: Is performed at the end of each phase to determine if the team has met the desired objectives to move to next phase of project management[18].



Result1: Project Initiation Techniques

Commonly practicedare techniques in initiation field are namely: develop business case, Perform Feasibility Study, Perform Phase Review, SWOTAnalysis, Identify Project Dimensions: Financial Analysis, In – Frame/Out – of – Frame Analysis. Of all the techniques performing feasibility study is most widely used technique followed by developing business case and financial analysis respectively.

5.1.2 Project Initiation Tools

In initiation stage supporting tools that aid project managers to determine goals and boundaries of project are listed below.

- 1. Project Charter: It is a high level formal document to define scope, requirement and resources of the project[19].
- Stakeholder Register: It's a stakeholder planning documents created during the project initiation stage and continuously updated till closure. It helps project manager to keep on tab on changing stakeholder requirements and expectations[16].
- 3. Responsibility Assignment Matrix (RCI matrix): It's used to assign roles and responsibility project tasks and deliverable [20].
- 4. Risk Log/Registry: It's a riskrepository of project containing all the risk, risk probability, risk impact and risk mitigation and counter strategies[21].
- 5. Communication strategy matrix &Collaboration strategy matrix: Communication strategy is a tool for determines the level the communication for (ex. Frequent communication, well informed/less informed) to be used for each stakeholder [16].

7. WBS (Work Breakdown Structure): Provides a hierarchical view of work/tasks and subtasks involved in the project [22].

- Gantt Char: Most commonly used scheduling tool. Gantt chart is the graphical representation of schedule of project tasks in form calendar time assignments in days/weeks/months. Helps to monitor and track tasks [10].
- 9. Milestone Chart: It displays the important project milestone in project lifecycle[16].
- 10. Flowchart: Is an easy-to-understand pictorial representation of all activities involved in a project in sequential manner[23].
- 11. Primavera: Aides project team to prioritize resource and investment utilization, and helps teammates collaborate as well as monitor team progress [24].
- 12. Monte Carlo Analysis: Is used to understand the impact of risk and uncertainties in financial, project management, cost and other forecasting models[25].
- 13. MS Project: Is project management tool by Microsoft to assign, monitor, manage, analyze resources, task and budget of the project [26].
- 14. Project Blogs & Wiki: Are collaborative, low maintenance web tool designed for team members to create, remove, and modify project related activities.(e.g. Pmwiki, SVS, Git)[27].



Result 2: Project Initiation Tools

Project Planning tools consists of MS project, project charter, flowchart, work breakdown structure etc. Of all the project initiation tools Gantt chart and MS project are most popular tools followed by project charter, flowchart and milestone chart respectively.

5.2 Project Planning Techniques and Tools

Project Planning defines how a project should be completed in given time frame and resources. It includes activities like identify objectives; determine deliverables, allocation of resources[16].

5.2.1 Project planning Techniques

The techniques in this phase of project management deals with planning in of scope, schedule resources and budget[16]. The planning techniques implemented are listed below.

- Identify project requirements: Identifying the project requirements based on stakeholder meeting s and focus groups. Requirements may be technical, business, functional or operations[28].
- 2. Identify Milestones: Helps to monitor project progress and also check out if adequate resources have been allocated to complete task[29].

- Team Selection: After project has been selected project manager has to be selected. He should be a facilitator, decision maker and communicator. He later selects his team members based on technical competence, sensitivity and problem solving skills[30].
- 4. Planning & allocation of resources: Assigning resources to task in economically in regard to availability of resource and schedule[31].
- 5. Preliminary Cost Estimate: Is done during initial stages of the project planning. It gives rough estimate project cost before detail plan is prepared[32].
- Project Schedule: Depicts all the project activities to be performed to deliver project on time. It consists of project task along with resources and duration to complete it[33].
- 7. Project Procurement Plan: The purpose of procurement plan is to define, develop, manage and track procurement till completion of project [34].
- 8. Project Simulations: Is an a technique used analyze real projects and help project team test results of various choices hence in the process reducing project failure risk[16].
- Bottom Up Analysis: It consists of lower management estimating budget from lower level tasks to high-level task. This leads to very cost effective and optimized usage as well as management of resources, skill and time of both team and stakeholders[35].
- 10. Reserve Analysis: Is a technique to review project plan to identify any potential risk, which requires allocation of reserve of extra resources for example buffer days/budget for maintenance, wear and tear etc. [36].
- 11. Expert Judgment Estimation: Expert could be a part of team or a stakeholder who has knowledge in a specialized are of project. His judgment could be followed for an effective project management [37].
- 12. Financial Cost Analysis: It identifies the cost and benefit of undertaking the project to the company[38].
- 13. Risk Management Plan: Risk identification, Risk assessment, Quantitative risk analysis, Qualitative risk analysis, risk response plan, and Riskmonitoring & control: Risk can occur at any stage of the project. Hence its important to identify risk at the earliest. Once identified it should analyzed, prioritized and responded quickly. Later it must tracked and recorded in risk registry along with task associated [39].
- 14. Communication Technology Assessment & Communication Management Plan: An effective communication plan is an important aspect of any project. With increasing number of virtual

team its important to asses the communication technology and management plan to encourage team work among team members and stakeholders and update project status and reduce unnecessary documentation [40].



Result 3: Project Planning techniques

Project planning consists of techniques namely; identifying project requirements, preliminary cost estimation, project schedule, risk assessment, procurement design, financial plan, project simulations, bottom up analysis, reserve analysis, expert judgment, risk identification, quantitative risk analysis, qualitative risk analysis, risk response plan, risk monitoring & control, communication technology assessment. Of all the techniques identifying project requirements, project schedule and risk assessment are the most practiced techniques followed by identifying milestones, team selection and planning and allocation of resources.

5.2.2 Project Planning Tools

The tools used for planning in of scope, schedule resources and budget in project planning stage are listed below [16].

1. MS Project: Is project management tool by Microsoft to assign, monitor, manage, analyze resources, task and budget of the project [26].

- 2. Milestone Chart: It is used to represent major milestones for example approval from stakeholder, management review on project line[16].
- 3. Project scope statement: It consists of all the tasks required to create the final end product and thus helps the project team to define time and budget of the project[4][5].
- 4. Work Breakdown Structure (WBS): Provides a hierarchical view of work/tasks and subtasks involved in the project [22].
- 5. Gantt Chart: Most commonly used scheduling tool. Gantt chart is the graphical representation of schedule of project tasks in form calendar time assignments in days/weeks/months. Helps to plan, monitor and track tasks along with associated resources [10]
- Responsibility Matrix: It's used to assign roles and responsibility project tasks and deliverable [20].
- 7. MS Excel: It can used as project management just like MS Project and has features like Gantt chart, project dashboard, issue tracker, resource charts, variance charts etc.[41].
- Project Blogs & Wiki: Are collaborative, low maintenance web tool designed for team members to create, remove, and modify project related activities (e.g. Pm wiki, SVS, Git) [27].
- 9. Task & Team List: It's simple yet effective scheduling tool used to list of all the task assigned to each team member[16].
- 10. Program Evaluation and Review Technique (PERT) chart: It is statistical tool used to estimate duration and dependencies of task to evaluate the best and worst time scenarios to complete project[16].
- 11. Risk Registry/Log:It's a riskrepository of project containing all the risk, risk probability, risk impact and risk mitigation and counter strategies [21].
- 12. Network Diagram: Is a scheduling tool. Here the tasks are represented in form flowcharts with regard task predecessors and successors. Hence network diagrams are very useful when there is uncertainty regarding task durations [16].
- 13. 2-D diagram: It's a matrix representation of task-represented horizontal and activities represented vertically. When the task is completed the color of matrix is changed. Thus helping project manager to easily identify and track progress of task [16].
- 14. Calendar view: Provides details on task to be performed on daily basis [16].
- 15. MS project: Is project management tool by Microsoft to assign, monitor, manage, analyze

resources, task and budget of the project [26]

- 16. Critical Chain Analysis: Is used to reprioritize activities when project deliverable get delayed. It uses network diagram and critical path to identify the slacking activity and fast track the processes [16]
- WBS dictionary: It provides additional information on WBS activities in terms of status, risk. It's usually represented in spreadsheet [16].
- 18. Fishbone Diagram: Is a simple visual trouble shooting tool used by project team to identify cause of any issue in project [42].



Result 4: Project Planning Tools

Project Planning consist of tools like WBS dictionary, fishbone diagram, critical chain analysis, calendar view, milestone chart, project scope statement, MS excel, team list, PERT chart, network diagram, 2D diagram, project blog and wiki and most popularly implemented is MS project followed by milestone chart and project scope statement along with work breakdown structure respectively.

5.3 Project Execution Tools & Techniques

These tools and techniques assist the project team and the project manager in ensuring that the project activities are realized as planned, time and budget issues are addressed and changes to project plan are accommodated[10].

5.3.1 Project Execution Techniques

Project execution techniques implemented verifying project deliverable, change, time & budget issues, stage are listed below:

- 1. Milestone Analysis: Its project tracking technique, where the milestone completion date is compared against planned date and if they're any variance it's noted down[43].
- Verify project deliverables: During execution phase deliverables are created and its project management team's responsibility to make sure if deliverable meet standards and meet the stakeholders expectations [44].
- Communicating projects status: Is an important aspect of execution phase. It involves participation of project team and stakeholders to verify deliverable, status review meetingto check changes in project schedule and budget [45].
- 4. Request & Managing change in project plan: Change management (request and manage) is very crucial factor to deliver project on time. It can be done any stage of project management from initiation to project closeout. The Change Control process ensures that each change introduced to the project either expected or unexpected circumstances is appropriately defined, evaluated and approved before to implementation[46].
- 5. Monitoring Project Performance: Monitoring and evaluation project progress helps project team to identify issues, measure success, track changes [47].
- Time & budget issues: Deliverable may be delayed to accommodate changes in project due to unforeseen issues like maintence cost, new regulations, natural disasters etc. Thus leading to budget and time constraints[45].
- 7. Conduct Procurement: Consists of conducting all the procurement activities like evaluating bids, evaluating and choosing avendor, details of contract and materials etc.[48].



Result 5: Project Execution Techniques

Project execution techniques consists of milestone analysis, verify project deliverables, communicating project status, request & managing change in project plan, monitoring Project performance, time & budget issues and conduct procurement. Milestone analysis followed by verifying project deliverables and communicating project status are popularly implemented in project execution stage in various industries.

5.3.2 Project Execution Tools

Project execution tools implemented verifying project deliverable, change, time & budget issues, stage are listed below:

- 1. MS Project: Is project management tool by Microsoft to assign, monitor, manage, analyze resources, task and budget of the project [26].
- Gantt Chart: Most commonly used scheduling tool. Gantt chart is the graphical representation of schedule of project tasks in form calendar time assignments in days/weeks/months. Helps to plan, monitor and track tasks along with associated resources [10]
- 3. Project status report: It's a report to share the status of the project with team members and stakeholders[49].
- 4. Project wiki & blogs: Are collaborative, low maintenance web tool designed for team members to create, remove, and modify project related activities (e.g. Pm wiki, SVS)[27].

- 5. Risk Log: It's a riskrepository of project containing all the risk, risk probability, risk impact and risk mitigation and counter strategies [21]
- 6. Risk response plan: It's a risk plan used to mitigate identified risks and unidentified potential risk[50].
- 7. Roll out plan: Is tactical execution and management of product release /final deliverable [51]
- 8. Work breakdown structure: Provides a hierarchical view of work/tasks and subtasks involved in the project [22].
- 9. User acceptance form: Is a form to be signed by stakeholder It means the deliverables meetsbusiness, technical, functional and non functional requirement of the project[52].
- 10. Pareto chart: Is a quality control method to identify defects and source of theses defects in project activities [53].



11. Milestone chart: It displays the important project milestone in project lifecycle[16]

Result 6: Project Execution Tools

Project execution tools commonly implemented are MS Project, gantt Chart, project status report, milestone chart, work breakdown structure, risk log, risk response plan, roll out plan, user acceptance form, pareto chart project wiki & blogs and most popularly implemented are MS project followed by Gantt Chart and project status report respectively.

5.4 Project Control Tools & Techniques

Monitoring and controlling a project is the process or activities whereby the project manager tracks, reviews, monitor and revises the project activities to deliver deliverables in accordance with the project objectives[10].

5.4.1Project Control Techniques

Techniques implemented in control phase is to make sure all the task have adequate resources like financial, human resources, physical assets to complete as scheduled[54].

- Managing Changes to Project Plan& Change control: Change management is very crucial factor to deliver project on time. It can be done any stage of project management from initiation to project closeout[14]. The Change Control process ensures that each change introduced to the project either expected or unexpected circumstances is appropriately defined, evaluated and approved before to implementation.
- 2. Monitor Project Progress: Monitoring and evaluation project progress helps project team to identify issues, measure success, track changes[47].
- Review & Revise Project Activities & Plan: It consists of reviewing planned activities, verifying work done, comparing the planned and actual work done, determine if additional resources are required and revise the plan and task accordingly[47][45].
- Problem Solving: The problems during the lifecycle of project may be simple or complex to solve. Steps involved in problem solving are: defining the problem, generating alternatives, evaluating and selecting alternatives, Implementing solutions[28].
- 5. Performance Analysis&Quality Analysis:Performance analysis involves gathering formal and informal data ondeliverable, determining anyhurdles to successful performance and quality and proposing a solution to overcome these hurdles[55].
- 6. Earned Value Analysis: It's an assessment by the project team as to the amount of progress they have made on each task in the project[16].
- Risk Assessment and Containment: Risk assessment can be done at any stage of project management but the best practice is to perform risk assessment has early as possible. Risk assessment consists of identifying uncertainties, analyzing risk and priorities risk. Risk control and containment consists of plan for risk and measure and control effects of risk on events[49].



Result 7: Project Control Techniques

Project control phase consists of techniques managing changes to project plan, change control, earned value analysis, review project activities, problem solving, quality analysis, etc. Of all the techniques managing changes to project plan followed by review project activities are most popularly implemented

5.4.1.2 Project Control Tools

Supporting tools implemented in control phase is to make sure all the task have adequate resources like financial, human resources, physical assets to complete as scheduled are listed below[29] :

- Gantt Char: Most commonly used scheduling tool. Gantt chart is the graphical representation of schedule of project tasks in form calendar time assignments in days/weeks/months. Helps to monitor and track tasks [9].
- 2. Variance Report: Provides a comparison of how the task was planned to be completed (in terms of cost, schedule, resources) to how it was finally completed [15].
- 3. Milestone Checklist: Helps to monitor project progress and also check out if milestone are complete[42].
- 4. Work breakdown structure (WBS): Provides a hierarchical view of work/tasks and subtasks involved in the project [21].
- 5. Control Charts: Are used to measure the results of a task over a period of time byplotting the results as a graph. It can also be used to measure variances within a task to determine id the task is being performed according the schedule [55].

- 6. Project Status Report: It's a report to share the status of the project with team members and stakeholders[48].
- 7. Pulse Meetings: It's a short team meeting to discuss progress of ongoing of tasks[15]
- 8. Program Reviews: It's meeting between project team members to check the status of project. The main focus of the meeting is keep a tab on sub task and make sure it aligns and integrates accordingly with objective of its main task[15].
- 9. Management Reviews: Its formal meeting between project team and significant stakeholders to review and compare the up to date status of the project with proposed plan and check for performance and resources, time issue of deliverable[15].
- 10. Change Management Log: Change management is very crucial factor to deliver project on time. It can be done any stage of project management from initiation to project closeout. The Change Control process ensures that each change introduced to the project either expected or unexpected circumstances is appropriately defined, evaluated and approved before to implementation[13].
- 11. Project Dashboards: It's a subset status report used to indicate if the entire project will be delivered as scheduled. For example to represent if tasks are on budget and schedule green color is used to signify sub task is "on target", yellow card to represent sub task in "concern" and red shows "off schedule". Hence we can determine the entire task/deliverable will be completed on time by checking status of its sub tasks[15].
- Project wiki and blogs (e.g.Git, CVS, Sub version): Are collaborative, low maintenance web tool designed for team members to create, remove, and modify project related activities.eg. Pm wiki[26].
- 13. MS project: Is project management tool by Microsoft to assign, monitor, manage, analyze resources, task and budget of the project [25]
- 14. MS Excel: It can used as project management just like MS Project and has features like Gantt chart, project dashboard, issue tracker, resource charts, variance charts etc.[20].



Result 8: Project control tools

Project control tools commonly implemented are MS Project, gantt Chart, project status report, change control, milestone checklist, work breakdown structure, control chart project wiki & blogs and most popularly implemented are MS project, MS excel and Gantt Chart.

5.5.1 Project Closure Techniques

These techniques are used in project control stage by and the project team and stakeholders to ensure all project and administrative activities are complete and final project is handed over and accepted by client[9].Listed below are most commonly used techniques

- 1. Project Integration: It's a process of integrating and coordinating of the entire project related activities into the final deliverable[44].
- 2. Project Inclusion: It's a process of closing of administrative accounts of project which will be only reopened only for deployment of the project deliverable[15].
- 3. Project (Deliverable) Hand off to Stakeholder: Project and final documentation to handover to stakeholder, who reviews deliverable to make sure they are acceptable[15].
- Close Down Project&Internal closeddown: It includes releasing all project resources and communicating project closure to all team members and stakeholders after final delivery and acceptance of project/product[56].

- 5. Close Down Supplier Contract&Close the customer Contract: Signing off and terminating customer and procurement at the end of delivery of project[15].
- 6. Evaluate Business Case: Here evaluation is done whether project wascost effective as proposed in earlier in the project[15].
- 7. Evaluate Project Plan& Conduct Post Project Reviews: Evaluating the project team's plan in terms of cost, time, schedule, resource allocation and budget[15].
- 8. Evaluate Team Performance: Evaluation of team in terms of project plan, project execution, team work and 360 reviews of team members [15]



Result 9: Project closeout Techniques

Project integration, Evaluate Team Performance, Evaluate Project Plan, Conduct Post Project Reviews, Close Down Supplier Contract, Close the customer Contract, Close Down Project &Internal Closed down, Project (Deliverable) Hand off to Stakeholder.Conduct post project reviews, project handoff to stakeholders, evaluating business plan is the most popularly implemented project closure technique

5.5.1.2 Project Closure Tools:

Tools used in project control stage by and the project team and stakeholders to ensure all project and administrative activities are complete and final project is handed over and accepted by client are listed below[9].

- 1. Milestone Checklist:Helps to monitor project progress and also check out if milestone are complete[42].
- 2. Stakeholder Acceptance Meeting &User Approval Form: In the meeting stakeholder reviews the deliverable and on his successful approval or feedback the project is closed/terminated[9].
- 3. Review Document: Document contains the review of the accomplished project along with deliverables and issues handles and lessons learnt in the process[57].
- 4. Project Status Report: It's a report to share the status of the project with team members and stakeholders[48].
- 5. Project Punch List: Is a tool to fix gaps between stakeholder expectations and project team's deliverable[15].
- 6. Project Post Mortem & Lessons Learned: It usually consists of evaluation of business case, evaluation of project plan, evaluation of team performance. The lessons learned document defines what was done what went well and what could be done better. It is required to be completed in order for the project to be completed[15][58].
- 7. Project Blogs & Wiki: Are collaborative, low maintenance web tool designed for team members to create, remove, and modify project related activities.eg. Pm wiki[26].



Result 10: Project Closeout Tool

Project closeout consist of tools like project blogs & wiki, project post mortem & lessons learned, milestone checklist, project status report and project punch list. Of all the tools milestone checklist, project status report and lessons learned are popularly implemented.

6.Analysis & Discussions

Project management is a challenging task with many complex responsibilities. Fortunately, there are numerous tools and techniques that are available to aid project managers in their task of initiating, planning, executing, controlling and closing any project. Some tools can be operated manually, while others require a computer with supporting software. Project managers should choose a project management tool that best suits their management style[9].

Through this report I have made an attempt to capture most of the available tools and techniques that are applicable across the project life cycle. Based on the survey results sent out to project managers and project leaders across multiple industries, the tools that are most used at various project life cycle can be summarized as below:



Fig: Top 10 Tools used: by % Responders across various project stages

6.1Top 5 Tools by Project Stage:



2.Project Planning Tools:



3.Project Execution Tools:



4.Project Control Tools:



5. Project Closeout Tools



According to the survey the top 5 project management tools are,Gantt chart, Microsoft Project, Milestone Charts, Work Breakdown Structure and status reports are the most popular tool implemented across initiation, planning, execution and control phases of project management.





3.Project Execution Techniques:

4.Project Control Techniques:





5.Project Closure Techniques:



In project management techniques the survey has not found any significantly overlapping techniques. In initiating phase performing feasibility study is most important, in planning stage identifying project requirements, schedule and risk are top priority. Whereas in execution phase milestone analysis is the most crucial technique and in control phase managing changes to project plan is highly rated as important. At the end in closeout post project reviews, product delivery and evaluating project plan is regarded equally significant to overall process. Yet there are activities like status review, phase reviews are commonly practiced in all the stages of project management life cycle. But survey hasn't got enough responses on these activities to make it to top 5 techniques.

7.Conclusion

In any industry, small or large, have wide spectrum of projects requiring complex cross-functional collaboration that is also based in multiple geographies. In addition, in today's world of rapidly evolving market, it is imperative to execute projects quickly and efficiently in order to be relevant and competitive. In a typical company, project management approach focuses on processes, policies, and procedures that are often rigid that dictate behavior and use of statistical methods to control quality. Process guides and policies dictate work practices, while quality control and monitoring systems assess and improve these practices. Even with all these processes and policies, the rate of project failure does not seem to be decreasing. *That's because current project management tools, techniques, and theories account for the rational components of project management, but they overlook the emotional components. And these emotional factors account for a large part of a project's success*[11]. According to a study done byMcKinsey & Company along with the University of Oxford (2012) to large IT projects run 45% over budget and 7% over time, while delivering 56% less value than predicted[59].

The tools and techniques explored in this report help aid project managers manage projects more effectively by thoroughly evaluating project tasks, milestones, collaboration structure at various project life cycles well in advance so that corrective actions and proper controls can be put in place to minimize project overruns. The report identified tools and techniques that are most widely used across various industries, which can be a useful guide to any project manager that is seeking to improve his/her processes.

8. Recommendation

Although the paper covers broader geography of project management in terms of practices,tools and techniques, there are few limitations that can be overcome with these recommended future studies:

- 1. Increase the sample size to include more companies to have greater confidence on the survey results
- The study can be further enhanced by including industry specific questions with-in the survey (e.g. Health Care, Semiconductors, etc.). This will need literature search and domain experts from several fields.
- 3. The study can be further enhanced to compare difference between project management practices and tools across different countries e.g. India, China & France

9.Bibliography

- [1] Katie Stricker, "What Is Project Management?" [Online]. Available: http://management.about.com/od/PMterms/a/What-is-project-management.htm.
- [2] European Technical Corporation Program 2007-2013, "Project Selection Criteria," no. 3.
- [3] Jin -Lee Kim, Seta Ohanesian, "Project Performance Analysis and Delivery Methods -Quantitative Analysis," p. 2,3.
- [4] "Program Success: Project & Program Management Success Factors." [Online]. Available: https://programsuccess.wordpress.com/2011/05/02/scope-time-and-cost-managing-the-tripleconstraint/.
- [5] "Programme Management." [Online]. Available: http://www.projectmanagementtraining.net/book/chapter7.html.
- [6] Sarita Harbour, "Chron." [Online]. Available: http://smallbusiness.chron.com/importantorganizations-use-project-management-46723.html.
- [7] Villanova University, "What Is Project Management?" [Online]. Available: http://www.villanovau.com/what-is-project-management/.
- [8] "Why use project management?" [Online]. Available: http://www.ask.com/question/why-useproject-management.
- [9] Sean Maserang, "Project Management: Tools & Techniques." [Online]. Available: http://www.umsl.edu/~sauterv/analysis/488_f02_papers/ProjMgmt.html.
- [10] Gina Adudi, "Developing a Project Management Best Practice." [Online]. Available: http://www.ginaabudi.com/articles/developing-a-project-management-best-practice/.
- [11] Benoit Hardy-Vallee, "The Cost of Bad Project Management." [Online]. Available: http://businessjournal.gallup.com/content/152429/cost-bad-project-management.aspx.
- [12] Brad Egeland, "The Project Business Case." [Online]. Available: http://pmtips.net/projectbusiness-case/.
- [13] Jean Scheid, "Bright Hub PM: Project Feasibility Study Samples." [Online]. Available: http://www.brighthubpm.com/project-planning/63692-project-feasibility-study-samples/.
- [14] "SWOT Analysis." [Online]. Available: http://www.crsccarltonandroates.com/SWOT_Analysis.html.
- [15] Ray Sheen, "Project Management Guru." [Online]. Available: http://www.projectmanagementguru.com/initiating.html.
- [16] "Investopedia." [Online]. Available: http://www.investopedia.com/terms/f/financialanalysis.asp.
- [17] "Project Review Form Initiation Phase." [Online]. Available: http://www.method123.com/initiation-phase-review.php.
- [18] Rita Mulcahy, "Project Management Crash Course: What is a Project Charter?".
- [19] Son Nguyen, "Project Management Reviews." [Online]. Available: http://pmreviews.org/2011/01/05/pmp-concepts-the-responsibility-assignment-matrix-ram/.
- [20] "Wikipedia." [Online]. Available: http://en.wikipedia.org/wiki/Risk_register.

- [21] "Work Breakdown Structure (WBS)." [Online]. Available: http://www.projectmanagementdocs.com/project-planning-templates/work-breakdown-structurewbs.html.
- [22] "Mind Tools," Problem Solving, Understanding and Communicating How a Process Works...
- [23] Oracle Applications, "Using Top-Down, Bottom-Up, and Middle-Out Budgeting." [Online]. Available: http://docs.oracle.com/cd/A60725_05/html/comnls/us/gl/budmet03.htm.
- [24] Risk AMP, "What is Monte Carlo Simulation?," p. 1.
- [25] "Wikipedia." [Online]. Available: http://en.wikipedia.org/wiki/Microsoft_Project.
- [26] Michael Hammel, "PmWiki for Project Management.".
- [27] Mind Tools, "Business Requirements Analysis." [Online]. Available: http://www.mindtools.com/pages/article/newPPM_77.htm.
- [28] Michelle Hickman, "How to Identify the Milestones of a Project." [Online]. Available: http://www.ehow.com/how_8750839_identify-milestones-project.html.
- [29] "Small Business Tool Kit." [Online]. Available: http://toolkit.smallbiz.nsw.gov.au/part/13/64/266.
- [30] "Resource Allocation Tool."[Online]. Available *Ganttic*.http://www.ganttic.com/resource-allocation.
- [31] "Preliminary Estimate." [Online]. Available: http://www.ganttic.com/resourceallocationhttp://www.totaltakeoffs.com/categories/193/169/default.aspx.
- [32] "Project Insight," *Project Scheduling*. [Online]. Available: http://www.projectinsight.net/project-management-basics/project-management-schedule.aspx.
- [33] "Project Planning." [Online]. Available: http://www.projectmanagementdocs.com/projectplanning-templates.html.
- [34] Natasha Gilani, "eHow Money," *The Advantages of Bottom-Up Budgeting*. [Online]. Available: http://www.ehow.com/info_8792659_advantages-bottomup-budgeting.html.
- [35] "Project Management Lexicon." [Online]. Available: http://www.projectmanagementlexicon.com/reserve-analysis/.
- [36] "Expert Judgment A Project Management Technique." [Online]. Available: http://leadershipchamps.wordpress.com/2009/10/26/expert-judgment-a-project-managementtechnique/.
- [37] "Economic versus Financial Analysis." [Online]. Available: http://daad.wb.tu-harburg.de/?id=1065.
- [38] Bart Jutte, "10 Golden Rules of Project Risk Management." [Online]. Available: http://www.projectsmart.co.uk/10-golden-rules-of-project-risk-management.html.
- [39] Jason P. Charvat, "Project communications: A plan for getting your message across." [Online]. Available: http://www.techrepublic.com/article/project-communications-a-plan-forgetting-your-message-across/1061894.
- [40] Chandoo, "Excel Project Management Free Templates, Resources & Information." [Online]. Available: http://chandoo.org/wp/project-management/#project-trackers.

- [41] "Fishbone (Ishikawa) Diagram." [Online]. Available: http://asq.org/learn-about-quality/cause-analysis-tools/overview/fishbone.html.
- [42] "Milestone Analysis." [Online]. Available: http://flylib.com/books/en/1.356.1.73/1/.
- [43] Qian Huang, Xuepan Zhong, Robert M. Davison, Hefu Liu,, "Transactive Memory System Impact On Team Performance Through Knowledge Quality And Percieved Knowledge Satisfaction," p. 1,3.
- [44] "Project Execution Phase Overview." [Online]. Available: http://pmstats.dis.arkansas.gov/meth/07-execution%20phase.pdf.
- [45] Jean Scheid, "Create and Use a Plan for Change Management: Theories, Strategies and Implementation." [Online]. Available: http://www.brighthubpm.com/change-management/29324-theories-strategies-and-implementation-of-a-change-management-plan/.
- [46] "Monitor and evaluate progress." [Online]. Available: http://www.doc.govt.nz/gettinginvolved/volunteer-join-or-start-a-project/start-or-fund-a-project/monitor-and-evaluate-progress.
- [47] "Conduct Procurements Buying and selling." [Online]. Available: http://www.pm-primer.com/conduct-procurements/.
- [48] "Project Status Report." [Online]. Available: http://www.method123.com/project-reports.php.
- [49] Robert Tusler, "An Overview of Project Risk Management." [Online]. Available: http://www.netcomuk.co.uk/~rtusler/project/riskprin.html.
- [50] George Spafford, "Developing and Implementing a Rollout Plan." [Online]. Available: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CDMQFjAB&u rl=http%3A%2F%2Fspaffordconsulting.com%2Ffeb%25205%2520-%2520rollout.ppt&ei=QkK2Ue2PLearOCrl/ID4AO Surge_AFO;CNE00PLuce, 2OL 2rrCdrL t54Ph dCP

2BIaayQGnkID4AQ&usg=AFQjCNE99RIvgy_2OL2mGdzLt54RhdGR-

- A&bvm=bv.47534661,d.aWc.
- [51] "User Acceptance." [Online]. Available: http://doit.maryland.gov/SDLC/Documents/User_Acceptance.pdf.
- [52] "Pareto Charts." [Online]. Available: http://www.isixsigma.com/toolstemplates/pareto/pareto-chart-bar-chart-histogram-and-pareto-principle-8020-rule/.
- [53] "Project Management." [Online]. Available: http://toolkit.smallbiz.nsw.gov.au/part/13/64/269.
- [54] Allison, "What is Performance Analysis?" [Online]. Available: http://www.josseybass.com/legacy/rossett/rossett/what_is_pa.htm.
- [55] R. Max Wideman, "Project Cost Control: The Way it Works." [Online]. Available: http://www.maxwideman.com/papers/cost_control/cost_control.pdf.
- [56] QMSrs, "Projects Closedown." [Online]. Available: http://www.qmsrs.com/Products/ProjectManagement/ProjectsClosedown/tabid/166/language/en-GB/Default.aspx.
- [57] Imperial College London, "Post Project Review." [Online]. Available: http://www3.imperial.ac.uk/estatesprojects/projectprocedures/processes/ea/2.10/2.10.05.
- [58] "PMI Project Management Body of Knowledge," vol. 3, p. 223, 2004.
- [59] "Why Projects Fail." [Online]. Available: http://calleam.com/WTPF/?page_id=1445.

10. Appendix

1. Project Initiation Technique& Tool

| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
|------------------------|---------|----------------|-----------------|-----------------|
| Gantt Chart | | 13.19% | 12 | 75% |
| MS Project | | 13.19% | 12 | 75% |
| Project Charter | | 10.99% | 10 | 63% |
| Flowchart | | 10.99% | 10 | 63% |
| Milestone Chart | | 10.99% | 10 | 63% |
| WBS (Work Breakdown | | 9 89% | Q | |
| Structure) | | 5.0570 | J | 56% |
| RCI Matrix (| | | | |
| Responsibility | | 6.59% | 6 | |
| Assignment Matrix) | | | | 38% |
| Risk Log | | 6.59% | 6 | 38% |
| Project Blogs & Wiki | | 6.59% | 6 | 38% |
| Primavera | | 3.30% | 3 | 19% |
| Stakeholder Register | | 2.20% | 2 | 13% |
| Communication Strategy | | 2,20% | 2 | |
| Matrix | | | - | 13% |
| Collaboration Strategy | | 1.10% | 1 | |
| Matrix | | | - | 6% |
| Monte Carlo Analysis | | 1.10% | 1 | 6% |
| Other (Specify) | | 1.10% | 1 | 6% |
| Perform Feasibility | | 24% | 15 | |
| Study | | | | 94% |
| Develop Business Case | | 17% | 11 | 69% |
| Financial Analysis | | 17% | 11 | 69% |
| SWOT Analysis | | 16% | 10 | 63% |
| Perform Phase Review | | 14% | 9 | 56% |
| Identify Project | | 10% | 6 | |
| Dimensions | | 10 /0 | 0 | 38% |
| In-Frame/Out-of-Frame | | 20% | 1 | |
| Analysis | | 270 | 1 | 6% |

2. Project Planning Technique

| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
|--|---------|----------------|-----------------|-----------------|
| Identify Project Requirements | | 8.88% | 15 | 94% |
| Project Schedule | | 8.88% | 15 | 94% |
| Risk Assessment | | 8.88% | 15 | 94% |
| Identify Milestones | | 7.69% | 13 | 81% |
| Team Selection | | 7.69% | 13 | 81% |
| Planning & Allocation Resources | | 7.69% | 13 | 81% |
| Preliminary Cost Estimation | | 6.51% | 11 | 69% |
| Risk Identification | | 6.51% | 11 | 69% |
| Financial Cost Analysis | | 5.92% | 10 | 63% |
| Risk Response Plan | | 4.73% | 8 | 50% |
| Project Procurement Plan | | 4.14% | 7 | 44% |
| Quantitative Risk Analysis | | 4.14% | 7 | 44% |
| Qualitative Risk Analysis | | 4.14% | 7 | 44% |
| Risk Monitoring & Control | | 4.14% | 7 | 44% |
| Expert Judgment Estimation | | 2.96% | 5 | 31% |
| Communication Management Plan | | 2.37% | 4 | 25% |
| Bottom Up Analysis | | 1.78% | 3 | 19% |
| Reserve Analysis | | 1.18% | 2 | 13% |
| Communication Technology Assessment | | 1.18% | 2 | 13% |
| Project Simulations | | 0.59% | 1 | 6% |

| # of Respondents | | 16 | | | |
|------------------|-----------------------------------|---------|----------------|-----------------|-----------------|
| Ì | Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| | MS Project | | 9.86% | 14 | 88% |
| | Milestone Chart | | 7.75% | 11 | 69% |
| | Project Scope Statement | | 7.04% | 10 | 63% |
| | WBS (Work Breakdown Structure) | | 7.04% | 10 | 63% |
| | Gantt Chart | | 6.34% | 9 | 56% |
| | Responsibility Matrix | | 6.34% | 9 | 56% |
| | MS Excel | | 6.34% | 9 | 56% |
| | Task List | | 4.93% | 7 | 44% |
| | Team List | | 4.93% | 7 | 44% |
| | Traceability Matrix | | 4.23% | 6 | 38% |
| | PERT Chart | | 4.23% | 6 | 38% |
| | Network Diagram | | 3.52% | 5 | 31% |
| | Calendar View | | 3.52% | 5 | 31% |
| | WBS Dictionary | | 2.82% | 4 | 25% |
| | Project Budget Spreadsheet | | 2.82% | 4 | 25% |
| | Approval Documents | | 2.82% | 4 | 25% |
| | QFD (Quality Function Deployment) | | 2.11% | 3 | 19% |
| | 2-D Diagram | | 2.11% | 3 | 19% |

| Staff Mnagement Plan | 2.11% | 3 | 19% |
|--------------------------------|-------|---|-----|
| Communication Management Plan | 2.11% | 3 | 19% |
| Project Blogs & Wiki | 2.11% | 3 | 19% |
| Fishbone Diagrams | 1.41% | 2 | 13% |
| Deliverable Deployment Diagram | 1.41% | 2 | 13% |
| Critical Chain Analysis | 0.70% | 1 | 6% |
| Risk Registry | 0.70% | 1 | 6% |
| Other (Specify) | 0.70% | 1 | 6% |
| | | | |

3.Project Execution Tool & Technique

| # of Respondents | 16 | | | |
|---------------------------------|---------|----------------|-----------------|-----------------|
| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| Milestone Analysis | | 15.56% | 14 | 88% |
| Verify Project Deliverables | | 13.33% | 12 | 75% |
| Communicating Project Status | | 13.33% | 12 | 75% |
| Request Change in Project Plan | | 12.22% | 11 | 69% |
| Managing Change in Project Plan | | 12.22% | 11 | 69% |
| Monitor Project Performance | | 11.11% | 10 | 63% |
| Time Issues | | 8.89% | 8 | 50% |
| Budget Issues | | 8.89% | 8 | 50% |
| Conduct Procurement | | 4.44% | 4 | 25% |

| # of Respondents | 16 | | | |
|--------------------------------|---------|----------------|-----------------|-----------------|
| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| MS Project | | 15.12% | 13 | 81% |
| Gantt Chart | | 12.79% | 11 | 69% |
| Project Status Report | | 12.79% | 11 | 69% |
| Milestone Chart | | 11.63% | 10 | 63% |
| WBS (Work Breakdown Structure) | | 10.47% | 9 | 56% |
| Risk Log | | 8.14% | 7 | 44% |
| Risk Response Plan | | 8.14% | 7 | 44% |

| Roll Out Plan | 4.65% | 4 | 25% |
|----------------------------------|-------|---|-----|
| User Acceptance Test Plan | 4.65% | 4 | 25% |
| Pareto Chart | 3.49% | 3 | 19% |
| Project Blogs & Wiki | 3.49% | 3 | 19% |
| CVS (Concurrent Versions System) | 1.16% | 1 | 6% |
| Subversion | 1.16% | 1 | 6% |
| Git | 1.16% | 1 | 6% |
| Other (Specify) | 1.16% | 1 | 6% |
| Gnu arch | 0.00% | 0 | 0% |
| Mercurial | 0.00% | 0 | 0% |
| Monte Carlo Analysis | 0.00% | 0 | 0% |
| Buffer Chart | 0.00% | 0 | 0% |

4. Project Control Tools & Technique

Techniques

| # of Respondents | 16 | | | |
|----------------------------------|---------|----------------|-----------------|-----------------|
| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| Managing Changes to Project Plan | | 14.42% | 15 | 94% |
| Review Project Activities & Plan | | 13.46% | 14 | 88% |
| Problem Solving | | 12.50% | 13 | 81% |
| Quality Analysis | | 12.50% | 13 | 81% |
| Monitor Project Progress | | 11.54% | 12 | 75% |
| Performance Analysis | | 9.62% | 10 | 63% |
| Revise Project Activities & Plan | | 8.65% | 9 | 56% |
| Change Control | | 8.65% | 9 | 56% |
| Risk Assessment & Containment | | 6.73% | 7 | 44% |
| Earned Value Analysis | | 1.92% | 2 | 13% |

| # of Respondents | | 16 | | |
|------------------|------------|----------------|-----------------|-----------------|
| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| Ga | antt Chart | 10.38% | 11 | 69% |
| Μ | 1S Project | 10.38% | 11 | 69% |

| | MS Excel | 10.38% | 11 | 69% |
|---|----------------------------------|--------|----|-----|
| | Management Reviews | 9.43% | 10 | 63% |
| | Project Dashboards | 9.43% | 10 | 63% |
| | Milestone Checklist | 7.55% | 8 | 50% |
| | WBS (Work Breakdown Structure) | 7.55% | 8 | 50% |
| | Change Management Log | 7.55% | 8 | 50% |
| | Project Status Report | 7.55% | 8 | 50% |
| | Program Reviews | 6.60% | 7 | 44% |
| | Project Blogs & Wiki | 3.77% | 4 | 25% |
| | Control Charts | 2.83% | 3 | 19% |
| | Variance Report | 1.89% | 2 | 13% |
| | CVS (Concurrent Versions System) | 1.89% | 2 | 13% |
| | Pulse Meetings | 0.94% | 1 | 6% |
| | Subversion | 0.94% | 1 | 6% |
| | Other (Specify) | 0.94% | 1 | 6% |
| | Clocking IT | 0.00% | 0 | 0% |
| | Mercurial | 0.00% | 0 | 0% |
| | Buffer Charts | 0.00% | 0 | 0% |
| | Newsletters | 0.00% | 0 | 0% |
| _ | | | | |

5.Project Closeout Tools & Technique

Techniques

| # of Respondents | | | 16 | |
|---|---------|----------------|-----------------|-----------------|
| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| Conduct Post Project Reviews | | 13.92% | 11 | 69% |
| Project (Deliverable) Hand off to Stakeholder | | 13.92% | 11 | 69% |
| Evaluate Project Plan | | 13.92% | 11 | 69% |
| Evaluate Business Case | | 12.66% | 10 | 63% |
| Evaluate Team Performance | | 12.66% | 10 | 63% |
| Project Intergration | | 10.13% | 8 | 50% |
| Close Down Project | | 6.33% | 5 | 31% |
| Internal Closed down | | 5.06% | 4 | 25% |
| Close Down Supplier Contract | | 5.06% | 4 | 25% |
| Close the customer Contract | | 3.80% | 3 | 19% |
| Project Inclusion | | 2.53% | 2 | 13% |

| # of Respondents | 16 | | | |
|--------------------------------|---------|----------------|-----------------|-----------------|
| Column1 | Column2 | % of Responses | # of Responders | % of Responders |
| Milestone Checklist | | 16.92% | 11 | 69% |
| Project Status Report | | 16.92% | 11 | 69% |
| Lessons Learned | | 16.92% | 11 | 69% |
| Review Document | | 13.85% | 9 | 56% |
| Stakeholder Acceptance Meeting | | 10.77% | 7 | 44% |
| Project Post Mortem | | 9.23% | 6 | 38% |
| User Approval Form | | 7.69% | 5 | 31% |
| Project Blogs & Wiki | | 3.08% | 2 | 13% |
| Other (Specify) | | 3.08% | 2 | 13% |
| Project Punch List | | 1.54% | 1 | 6% |
| Newsletter | | 0.00% | 0 | 0% |