

## SOFTWARE PROJECT MANAGEMENT OBSERVES: FIASCO V/S VICTORY

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**ABSTRACT.** *A study on successful and un-successful about 210 large software (development) projects from around the world between February 1995 and December 2017 has been presented in this review paper. All these projects involved on mass level that completed on time with their scheduled expense, and time frame estimates in development of those are getting late as defined, much expensive as decide, or were get delayed or close without its completion, major seven hurdles were noted: un sufficient project planning, un sufficient cost estimating, un sufficient measurements, un sufficient milestone tracking, un sufficient change control, and un sufficient -quality control, Poor Coronation and communication. After detail study on past reviews on these hurdles in project management, in this review paper we have presented a short overview of success and failure reasons/causes/possibilities of all those seven factor/ hurdles are noted. Maybe the clearest aspect of these major problems is linked with project management rather than technical resource. Two occupied ideas combine which are no proper excellence regulator are the huge funder for the rates, and late time and unfair plan organization have number of prospective reason of insufficient excellence actions.*

**Keywords:** Software Project Management; observes.

1. **Introduction.** This review paper is resulting as the observation of about 210 major and productive software's projects those are working National/International at or more than 15,000 points in capacity that reviewed by amongst 1995 to 2017 [1]. Around ten thousand determination opinions are unevenly comparable to 1,050,000 declarations in the management of software project. It is tough during observation to find out fiasco or victory approaches from different projects those are less or more routine projects. Although, renowned opposites are inspected, rest of the software's exciting differences [2]. The phrase renewed reverses to those projects at differing ends of the ground in relations of reaching expense level, timing, and end product level goals. When projects getting late about 34 %, or more expensive as target their cost by more than 34 %, or face major product utility issues after completion and submission of associated to developments deprived of these matters, some exciting shapes can be realized. Of the 210 projects examined, near Twenty five percent positivity was measured that they skilled expensiveness, timing, excellence measures.

**Table-1:** Comparison of Successful & Unsuccessful Projects

Successful Projects (Effective)	Failing Projects (Inadequate)
<ul style="list-style-type: none"> <li>• Best Plan for the Project</li> <li>• Development Capacities</li> <li>• Mission breakthrough chasing</li> <li>• Project alteration administration</li> <li>• Plan quality regulator</li> </ul>	<ul style="list-style-type: none"> <li>• Mission plan</li> <li>• Rates guessing</li> <li>• Capacities for the project</li> <li>• Breakthrough chasing</li> <li>• Plan for modification</li> </ul>

About fifty had delays less than 36%, while about on hundred and sixty five reported as major delays finished without achievement. Rest of the projects inclusive of systems application, evidence related system, authorized projects, and security related applications. These delivery of values shows that mass level projects development is a risky undertaking. No doubt, some of the failing (projects) were reviewed during study while working as an expert overview in crack of-contract for short level relating the failed projects. These mass level proposals are inclusive of both systems applications, and information related application/system. Above mention firms and government agencies were involved. For the purpose of development approaches, rest of the cycles: waterfall software development life cycles and spiral software development life cycle involved. Now a day, latest approach for the development of software's is agile approach not involved for approaches those remain rarely forever applied on software's used on more than thousand function points. The author (personally I) research/find out on it by clients and software houses to examine the software (development) practices, techniques utilization, manage quality, and production results of various software/application. Thus, this article may be biased toward the topics observed. We were not custom-made to check other nature issues such as not sufficient training, staff in experience, poor communication/coordination or poor personnel practices/exercise. There are number of issues reported but the major in depth describe in this article/report/research paper. No doubt, number of prior articles/books/columns written in detail by the writer quoted about hundred factors [2], [3]. If you can explore further on failures of the project thee papers guides you [4]–[7]. But above mention seven key factors recorded highly preferable all the factors those are available at the time or later. For more studies on current systems/project disappointments additional the reference factors. Before dealing with the system/application/requirements must check on the successful and failing projects related mention points.

Major project management techniques/software are applied to a major software/application for the better results. Project management related techniques are applicable to a large size family of techniques whose basic resolve is delicate programming for comes with a hundreds or thousands of overlying and uncompleted mutually beneficial tasks.

These software/applications are completed to descend to terribly elaborate assignment levels, & uniform controlled timings are separately working. Number of great techniques at interact with the project management category embrace Microsoft Project Management, Primavera, Artemis Views, and Project Manager's work table.

The concept and project management techniques are generally used/ purpose in nature and doesn't embrace specialized code filler and estimating aptitudes as do the code value. As a review, it depends on nature of project and project state of matters similarly on different places wherever you wish to implement/develop. Neither do these general software project/systems management techniques manage quality related issues like defect removal power. Project management techniques are also useful, owing to its programming power and assigned connected problems, however code needs extra functionalities to be underneath full control. Code estimated rates/price, business and the project/software management tool business invented as independent businesses with project management techniques shown in the 1960, around 10 years before code price estimating techniques.

Although the two were originally independent businesses, they're currently on start to make combination of technically, samples of specific code rates measuring techniques grip You may use CHECKPOINT, COCOMO II, Cost Expert, PRICE-S, Software Evaluation and Estimation of Resources, SLIM & SEER-SEM, with detail execution on project against every activity and in short explaining of tasks with details of capitals that are adapted perform these tasks are working in the project, particularly mean employees for the project and programming with their rate accounting and far additional and SLIM. Project management techniques working on itself way and many practices/systems were developed by the different software houses (on Govt. Level/ Private) dominant massive and sophisticated weapons systems. As an example, the Project Evaluation and Review Techniques (PERT) originated in 1950 for handling complicated military tasks like building. Rather than these competences of project management techniques contains critical path analysis, resource smoothing, and construction of Gantt chart or timeline charts. There are different business level application are available the market like : Microsoft Project Management, Cynthia Views, Primavera, Project Manager's Work bench, and supplementary skilled techniques are on the market for all on top of mentioned different ways to examine further these techniques moreover capable to manage incomes, price, and sufficiently of extra assignments at a time. Project management techniques not able to manage for software systems, rather than handling awfully new programming things wherever lots of or maybe millions of assignments have to be absolute to be resolute and sequenced, and completely different dependencies square measure to finish assignments would maybe have an impact on the beginning of coming back assignments.

Project management techniques don't have any itself data relating to software package as do the trade software package price assessing techniques. As an example, if anyone desires to find the standards and price/cost result. Secondary in object-oriented artificial language like tittle-tattle, a traditional project

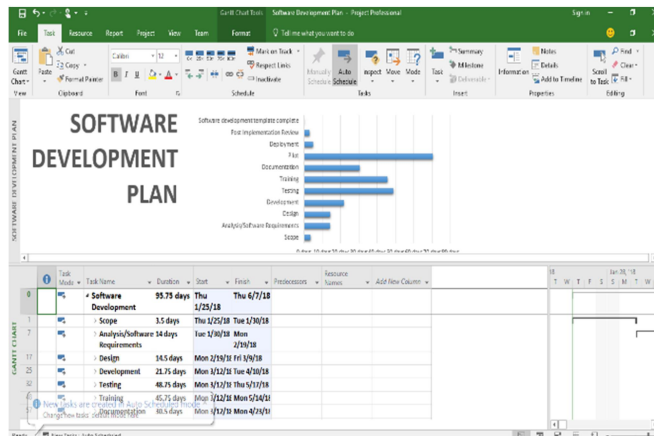
management is not the correct alternate, in distinction, various code systems/application standards approximating techniques have engrained tables of programming languages and may automatically alter the estimate buoyed that language is chosen for the smearing. When code application/system price estimating techniques made-up regarding ten years once business project management techniques, the developers of code systems estimate techniques hardly tried to matching project management functions like structure of enlarged irreverent diagrams or important path analysis. Instead, the value estimation techniques would transfer data to a project management tool. Thus, interfaces between software package price estimating techniques and project management techniques square measure presently traditional choices at intervals the commercial approximation market. Agree US to immediately connect smearing project near-term with and project estimate techniques to large code applications/system.

**2. Project Planning.** Project plans means WBS and assigned different kinds of tasks to the team member. It includes formation of numerous timelines and critical paths as well as GANTT charts and PERT charts or like different methods. Actual project planning for mass level software in large companies contains planning specialist & robotic development software those support them to make it simpler. Successful planning for huge software projects CIRCA 2004 involves the following:

- Robotic planning techniques like: Artemis Views /Microsoft Project Management.
- Preparing work breakdown structures from start to end.
- Directing serious and dangerous examination of project development actions.
- In view of regulator appointment and gross revenue throughout the plan.
- In view of subcontractors and national/international teams.
- Factoring in-time for specifications gathering and examination.
- Make procedure to make changings on time.
- A full collection of quality control actions.
- In view of number of releases if requirements growth is important.

Successful projects comes that the designing of software is good enough so, delayed, nearly always have designing team of software's disappointments. The primary common designing failures embrace (1) not trade well with different parameter needs; (2) is not able to get ahead employee's appointment and turnover throughout the project; (3) not assigning time for explained necessities examination; and (4) not allotting enough time for examinations, testing, and defect repairs, creative project designing tends to be extremely machine-controlled. There is a component minimum of fifty commercial project-planning techniques on the market, and productive comes all use a least of one in all these. Not only area unit the original plans automated, however conjointly any changes in needs scope or outside events can cause updated plans to struggle the new conventions. Such updates can't be basically skillful via manual methods; sketching techniques are as necessary for huge software applications/system.

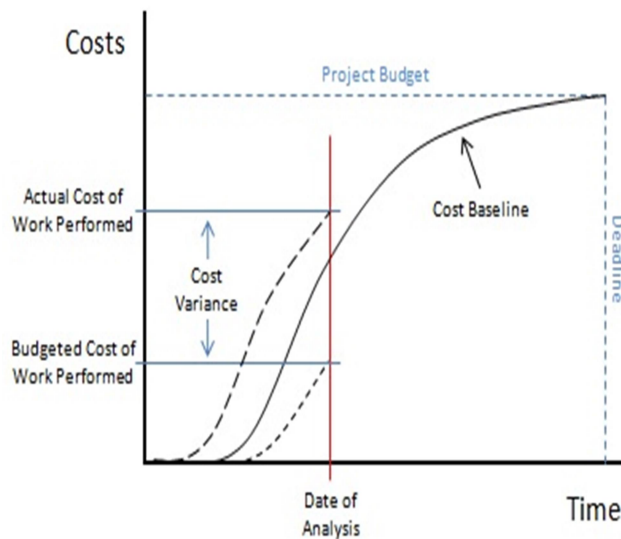
**3. Project Cost Estimating.** Software charges guessing for huge application or project is much complicated done yourself. This opinion is maintained by the occurrence of at minimum seventy-five applications. Including such well-known techniques as COCOMO II, Charges PERT, Knowledge Plan, PRICE-S, SLIM, SEER-SEM. Using one tool is common and two or more is uncommon for the successful projects. Approximations are done by trained estimated authorities remain viewed scheduled numerous effective huge software application/plans, then not on worsening plans.



**Figure-1: Software Development Plan**

Effective charge estimating for large application/systems contains by means of the mentioned below:

- Application approximating techniques, Cost, Knowledge plan, prices, etc.)
- Official sizing tactics for key requested functionalities created on role points.
- Judgment of approximations to past data from alike projects.
- Accessibility of qualified guessing authorities or development executives.
- Addition of original and changing provisions in the approximation.
- Enclosure of quality approximation as well as agenda and price estimate.



**Figure- 2: Effective Cost Estimation**

By difference, large failing comes might not apply any of the manufacturing package approximating technique. However, by manually guesses are never suitable for comes within the 10,000 function purpose differ. Worsening comes tend to minimalize the scopes of the work to be proficient because of derisory size tactics. Failing comes moreover overlook quality approximations that are important blunder since unnecessary fault levels decrease testing to a stoppage. Overrating output rates or presuming that output on an outsized application or system are going to be satisfactory to output on miniature comes are dissimilar common whys

and wherefore for price and schedule overruns. The most disadvantage with guesses for comes within the 200,000-function purpose size vary is that they are on the facet of unnecessary hopefulness. Project coming up with techniques and project estimating techniques overlap in practicality, and are sometimes marketed one by one. Normally, the project coming up with and price estimating techniques pass data back and forth. The package price estimating tool would be used for overall project size, resource estimating, and quality estimating. The project-planning tool would be used for vital path analysis, elaborate programing, and for work breakdown structures.

**4. Project Measurements.** Successful big projects are (greatest) frequently initiate in corporations that have applications size programs for taking efficiency and quality historical data. Thus, any new project may be paralleled against similar comes to gauge the validity of schedules, costs, quality, and different necessary factors [8]. The foremost helpful dimensions for comes within the ten-thousand purpose domain embrace measures of the following:

- Collected struggle.
- Collected costs.
- Expansion output.
- Bulk and rate of supplies variations.
- Faults by origin.
- Imperfection removal competence.

Actions of effort got to be sleek enough to support work breakdown structures. Worth measures got to be complete and hold development costs, contract costs, and costs associated with obtaining or leasing packages. There is one area of uncertainty even for prime firms and successful projects: The overhead or burden rates recognized by firms vary wide. These alterations can distort comparisons between organizations, industries, and countries, and make benchmarking exhausting. Of course, among one business this is {often this can be} often not a tangle. Operate points are presently the leading commonly used metric in the US and Europe for coding system comes, and are quickly growing in usage throughout the earth. Development output dimensions typically use operate points in two fashions: operate points per employee's month and/or work hours per operate [9], [10]. For additional information on helpful metrics, see internet web site of the uncommercial zed international operate purpose Users cluster at the national, some armed comes, and so the defense trade still perform amounts neglect the older lines-of-code metric. This metric is venturesome as a result of it cannot be used for activity many very important actions like needs, plan, credentials, project management, value assurance, and so variety. There are programming languages like Visual Basic that don't have any effective rules for examination lines of code. Relating to one third of the huge coding system comes inspected developed several programming languages at an equivalent time, and one big suggestion fogbound twelve wholly completely different programming languages. Actions of quality are powerful pointers of top-ranked coding system manufacturers and are nearly worldwide on winning comes that are misleadingly to failure have unsuccessful, nearly never live quality. Quality actions hold defect volumes by origin (i.e., wants, design, code. and harshness level, defect severity levels, and defect reparation charges. extremely refined corporations and comes additionally live defect removal potency. this need accumulating all defects found throughout development and additionally once unharness to customers for a preset period. for instance, if a project notices 900 defects throughout development and therefore the users find a hundred defects within the 1st 3 months of use, then it will be expressed that the project achieved a 90% fault exclusion potency close.

Obviously, rest of the defects initiate once the primary 90 days sinks the faults exclusion price. it's attention-grabbing that triple-crown comes square measure nearly always higher than 95% in defect removal potency, that is concerning 10% higher than the U.S. average of 85% [8]. It's insufferable to live defect removal potency for off comes since there's no client usage. However, for comes that finally get unconfined to clients – while delivered getting late – fault exclusion efficacy rarely tops eighty percent, or around 5% below and 15% underneath fruitful developments.

The declaration is created on solitary nearby a dozen huge applications/systems because almost generally, projects that are late or over budget do not have actual quality capacities in home. After the majority of timetable postponements and price overruns be disposed to occur through challenging and is caused by extreme defect capacities, it can be imagined that lack of actual quality controller on big systems is a main

contributor to both price and calendar invades. Unsuccessful & Successful Landmark Chasing the saying landmark racking is unclear in the software world. It occasionally refers to the twitch of an action.

The conclusion of the specific time, and not more than a scheduled period or prepared colander for specific purpose. In this document all the things will be related to deliverables or the points which will be perform during the time. Typically, achievement landmark is the conventional result of approximately assessment and review's (deliverables). A breakthrough is not a random time period. Project organization is answerable for developing/creating signposts, and have strong check and balance till it's completion, and reporting honestly on real basis whether the marks were achieved successfully (completed) or run into complications. When thoughtful issues are reported, it's needed to make it fix the issues before writing that the landmark has been finished. A characteristic set of project indicators for successful software claims in the minor ten thousand function point size change will be included the idea of the below mentioned:

- Supplies assessment.
- Assessment of the Project.
- Assessment for the rates and work quality
- Valuation in term of External design.
- Calculation for the Design of DB.
- Charge for the design or System (Internal design).
- Excellence strategy and test plan assessment.
- Citations plan assessment.
- Deployment plan assessment.
- Keeping fit plan assessment.
- Cryptogram reviews.
- Each development examination phase.
- Taking full operational test from customer side.

Failing or delinquent comes typically deficiency thoughtful breakthrough following. Events could be rumored as finished whereas work was silent current. Signposts could be easy dates on a calendar instead of conclusion & assessment as per real deliverables. Rest of the types of reviews is also therefore lean on be ineffective. Winning comes, on the opposite hand, regard milestone following as a crucial activity and take a look at to try to it well. There's no glossing over of incomprehensible milestones, or simulation that unfinished work is finished. Delivering documents or code segments that area unit incomplete, contain errors, and can't support downstream development work isn't the means milestones occur on winning comes. Another facet of milestone following on winning comes is what happens once issues area unit rumored or delays occur. The reaction is robust and immediate: corrective actions area unit planned, task forces assigned, and corrections occur as apace as attainable. Among insulation comes, on the opposite hand, downside reports are also unheeded and extremely rarely do corrective actions occur.

**5. Change Management.** About System's un-important twenty thousand less or more functionalities vary from one or more than 1%, while reviewing the project steps. These key features declaring for the exact and fair on the stage of delivering, it's depends upon the design at the stage/time of the design. In the software industry overall growth of the software is 23% if we assume total connotation Twenty Thousand function point & post design is Thirteen Thousand role points. Time period for project take about 10 months or more than that then the growth rate should be the two percent /month.

All of the accumulated capacity of moving goods can top 50% of the original necessities when function opinion entireties at the supplies phase are compared to those at placement. Therefore, successful software projects in the nominal twenty thousand-function point size range must use unique approaches and techniques to ensure that changes do not get out of control. Positive alteration control for proposals in the twenty thousand functions facts to be the range include the following:

- A combined effort for the customer which is designed on the opinions of the professionals.
- Design stages by using the different application, for the change.
- Well planned design for the changes should be helpful to minimize the changes.
- Formal review of all change requests.
- Reviewed rates and time as defined for the approximations for all changes larger than ten role facts.
- Ordering modification appeals in relations of business effect.
- Formal task of change wishes to specific announcements.

- Using computerized alteration control systems with citation capabilities. One of the observed byproducts of using

By using official ways to minimize the time for the changes as well for requirements. There are bundle of unplanned requirements reported during the project, it vary from 1 to 3 percent in different projects/systems. By using JAD techniques we can control the requirements changes up to 1 percent per month, (according to JAD by IBM Technologies). Already, formal cases can also help in this regards to minimize the frequent changes. Ordinarily key awnings, contributions, & productions area unit prototyped thus operators have rest of the active expertise through and finished software can seem alike. However, variations can forever occur or massive systems. It's out of the question restriction necessities slightly from the ground of the real, application, and it's naïve to suppose this will occur. Therefore, leading firms area unit prepared and able to trot out changes, and don't allow them to convert weaknesses and development. Consequently, approximately kind of unvaried expansion could be common-sense requirement.

**6. Quality Control.** Effective software package interior management is that the foremost necessary single issue that divorces flourishing comes from delays and disasters. The explanation for usually this can be} often as a results of conclusion and setting errors is that the generous value constituent for large systems and takings intensive than the opposite activity. Prosperous within management includes every fault bar and state removal activities. The phrase fault bar consists of regarding variety of actions that abate the prospect of creation blunders at intervals the preliminary place. Samples of defect bar activities embrace JAD for gathering desires, victimization formal vogue ways, victimization structured committal to writing techniques, and victimization libraries of verified reusable material. The phrase defect elimination contains all activities which will notice errors or defects in any fairly deliverable. Samples of fault removal activities embrace provisions inspections, vogue inspections, document inspections, code inspections, and every one kinds of testing. Some activities profit each defect bar and defect removal at identical time. For instance, sharing in vogue and code inspections is incredibly effective in terms of defect removal, and together edges defect bar. The reason why defect bar is assisted is as a results of examination participants learn to avoid the categories of errors that inspections discover. Flourishing management activities for twenty thousand purpose comes embrace the mentioned below:

#### **A. Defect Anticipation**

- Requirement gathering
- Using the official way to design
- Make a detail process to code
- Controlled and a symbolic plan for testing
- Formal test case structure.

#### **B. Fault Removal**

- Check of the user requirements
- Checking / testing of the design.
- Checking/testing of the document.
- By executing testing of the code.
- Symbolic designs of plans and cases (test) checking.
- Maintenance and update review.
- Software quality pledge reviews.
- Unit testing.
- Section difficult trying.
- New role challenging.
- Test the weakness of the system.
- Monotonous tests.
- Application challenging.
- Receipt challenging.

The mixture of fault block and error exclusion actions principals toward approximately same significant disparities inside the numbers of code defects compared between winning and unsuccessful comes [11], [12]. Aimed at comes inside the ten thousand role purpose vary, the winning ones accumulate development totals of around 4.0 defects per operate purpose and remove regarding 95% of them before shopper delivery. In different

words, the quantity of delivered defects is regarding zero. Two defects per operate purpose or two thousands whole hidden faults. These, regarding 10% or two hundred would be fairly serious defects. The rest would be minor or cosmetic defects. Against this, the unsuccessful comes accumulate development totals of around 7.0 defects per operate purpose and remove entirely regarding 80% of them before delivery. Number of application and transported faults stands concerning one/four faults per operate purpose or fourteen thousands total hidden faults of these about 20% or two thousands & eight hundred would be fairly serious defects. This immense vary of latent defects once delivery is implausibly perturbing for users. One in each of the reasons why winning comes have such high defect removal efficiency compared to unsuccessful comes is that the usage of fashion and code inspections. Formal vogue and code inspections average regarding cardinal efficiency to search out defects. They to boot improve checking efficiency by providing higher supply for constructing check bags. Ineffective comes occasionally omit vogue and code examinations and believe firmly on testing. The lapse of direct reviews causes three serious problems:(1) the huge vary of defects still gift once testing slows the plan as stoppage,(2) Damaging fix inoculation rate for comes whereas not inspections is alarmingly high, and conjointly the defect removal competence associated with entirely testing is not tight to appreciate defect removal rates on top of regarding eighty p.c. (As the result) Tenure of these are dangerous to fixes mentions or to minor faults accidentally inserted by means of a cover or fault reparation that is about 7%, except for unsuccessful comes the quantity of unhealthy fixes will approach 20% like: 1/5 errors settlement presented current fault, winning comes, on the conflicting hand, will have less number to fix the vaccination prices of exclusively 2% fewer.

C. **Communication Issues.** Experts of the projects gives direction at each step of the project; thus every team leader is aware of what is expected. Effective communication to everybody concerned within the project is crucial to its flourishing completion.

- Project organization coaching contains a stress on printed and dialogue statements.
- Appropriate statement will facilitate increase morale by establishing clear expectations
- Decent venture executives retain letter and response graceful amongst higher administration and team influential.

**7. Communication & Coordination .** Communication and coordination are key problems for achievement or un-success of any software package project. Coordination is specifically a difficult task for software package comes wherever variety of mutualism role players are required to attain the specified project outcomes. During this context, a two-software house case study of development and implementation part management is given. A demand gathers and development practice was managed within the first phase and so the causes for the postponements were known. The examination results discovered that the scope of demand gather dominated an oversized portion of delays. Remainder of the business honors bimanual over this assignment to finish user, US agency can't deliver his supplies P.R.N. it unconditionally was originating that user wasn't processed swimmingly because of four main causes: imperfect data, recurrent adjustments, don't have whole domain data, and equipped to comprehend/knowledge listing. Seventy Percent (%) of the delays were caused by incomplete data and incomplete domain experience. the growth study rapid field specialized ought to be the manager of the shopper feature further from software bundle (teams).

Communication in coordination is crucial and key factor in project management. For effective communication in coordination is essential to know; Communication Requirement: including 5w's that are What, Why, When, How, Whom. Coordinator and project manager should also know about communication channels using formula  $n*(n-1)/2$  [13]. Enterprise Environmental factors: culture structure market place, policies, procedures, Organizational infrastructure, Project Management Information System.

Organizational process Assets: include standard and policies, procedures, lesson learned, risk identification, historical information[13].

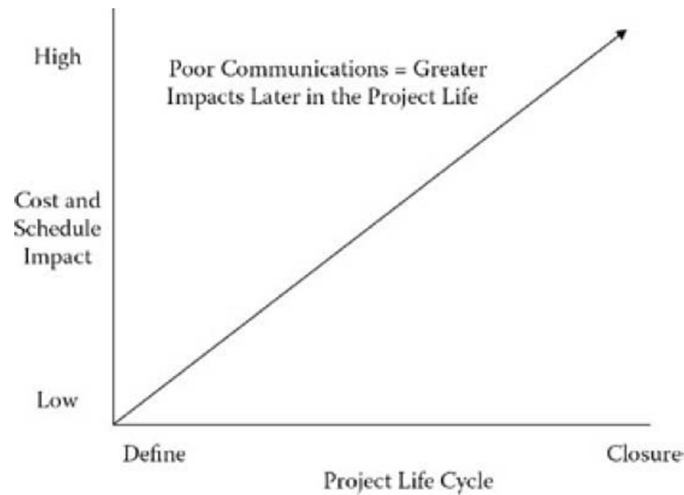
Effective Communication can cause in successful projects that involve factors;

- Understand the differences
- Appropriate or relevant message or to communicate.
- Deliver the complete and clear message
- Feedback from team.

There is Communication hurdles that cause poor communication are;

- Culture

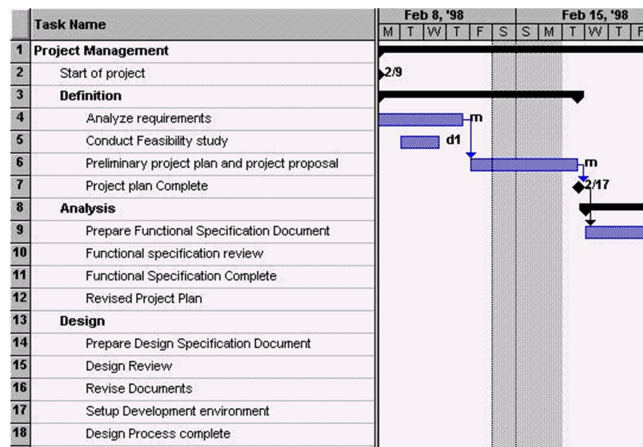
- Linguistic
- Politics



**Figure-3:** Bad communication cost analysis

**A. Project Task Coordination Model.** In this review paper we present a project task coordination model as methods to improve project coordination in software houses to overcome the challenges and issues faced in project management by hiring a project coordinator in a project. Usually Task Coordination Model identifies the coordination influence in sequence of all project tasks with responsible task team who will coordinate the project task throughout the project coordinator tasks usually a subset of project manager tasks, who provides assistance to project manager from initiative to end of the project. The success of your effort will largely depend of how it is managed. It is advised to have at least one project coordinator on the project to improve coordination. Project coordinator will be a responsible person to coordinate overall task of project efficiently and effectively. In this project task coordination model we identify the

- Task of project manager,
- Project team tasks,
- Project coordinator Tasks



**Figure-4:** Project Plan & Gantt Chart

Project coordinator is responsible and serves as a bridge between project team and client. Coordinator is responsible to complete project by assigning tasks to project team and complete it from project team. As much as the coordination strong, soon the project meets it deadline and objectives of plan. Coordination will influence in all phases of project life cycle.

- Initiation
- Planning
- Executing
- Monitoring and Controlling
- Closing

Project coordinators maintain Third party relationship, Kickoff meeting and status meeting to track project progress, Manage project Documentation.

**B. Tool.** There are many tools used by project coordinators to manage project one of them that project coordinators should choose a project tool that best suits their coordination style. Gantt charts is one of the most commonly used project management tool and is described below. Thus, Communication and Coordination a key successful issues in project management. However without proper coordination and communication influence can result serious delay in project completion.

**Conclusions.** Effective Project management become most crucial now a days to manage thousands of software project. It becomes a sensitive part for software industries. It needs an active consideration. The more powerful methods for the management the more successful the project are. The revenue for software industries is based on how the project are managed. For that manager must have knowledge about factor impacting negative and positive effect on project. We have created a detail study on past reviews on successful and failure project factors.

We have been noted seven main points about concentrated hurdle in software project management which are inadequate planning of project, inadequate estimation of cost, inadequate measurement, inadequate milestone tracking, ineffective change control and quality control and poor coordination and communication. After studying on these hurdles we have described and presented the short overview of key factors and methods of past reviews/study to take in account/ consideration to improve.

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