

PLANNING IN SOFTWARE PROJECT MANAGEMENT
AN EMPIRICAL RESEARCH OF A STARTUP SOFTWARE COMPANY
“DevCastle IT”

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ABSTRACT

This paper reports the findings of an empirical study of project management practice for a startup company. Nowadays, startup is no longer a strange concept because there are too many startups in this venture world. As the demand of people who want to be entrepreneurs to work in their desirable aspects is accelerating, more and more people are setting up their own startups. The Report was conducted with Project Management put the focus startup company in order to show how a startup manage their projects. Software project management comprises of a number of activities, which contains planning of project, deciding scope of software product, estimation of cost in various terms, scheduling of tasks and events, and resource management. Studying this report also give a very clear idea about this components. We serve a startup company named “DevCastle IT” to find real time data on how they manage their project.

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1. Introduction

1.1 Overview

Today's world market is a very sophisticated business area. A huge number of competitors in most of industrial areas are confronted with requests to deliver "state-of-the-art" products in less time, with less money and higher quality. And those who pick any two mentioned variables and let the third one get "as good as possible" do not survive long. Only those who are able to really manage all three variables will be successful enough to withstand all the challenges and remain active in the market. Of course, it is very hard to achieve remarkable results in all relevant areas. If we concentrate on the area of software development, one of the questions one might ask himself is: "How to manage my software development process to achieve better results than my competitors do?" There is no straightforward answer to this question, but there is definitively a way one should follow to get there. Along this way one very important, if not most important, thing is called "Project Management" (PM) Today, the increased significance of project management is apparent. Projects are being used as temporary organizations with the goal of performing any kind of large-scaled processes in the project-oriented organizations. Also, project management has established itself as a new discipline and project manager has become a new profession

1.2 Objectives of the Study

In the last few years Bangladesh has seen a tremendous growth in the information technology (ICT) sector. There are many software development companies in Bangladesh. At the same time the number of new startup Software Company is also growing rapidly.

In a software company, project management is an important issue in the whole developing process. Many techniques are applied to manage software project management. There are a lot of project management software & tools that are used to help in project managing activities like project planning, scheduling, documenting, monitoring and controlling. Sometimes software developing fails because of poor planning in project management. Project management is therefore a very important issue for project results.

Our study will help us to get knowledge about the planning process in a software project. Our main objective is to identify the project planning process of the startup company. We

also want to know how the project documentation, project requirements, schedule, budget, resources and quality are managed. Also we want to get the information of implementation of the managing activities and why the project can be failed with or without the project management techniques.

1.3 Significance of the study

Project management play a very important role in project development lifecycle. An organization's success depends on how successfully it manages the project to achieve its goals.

The main significance of the study is it gives a theoretical and practical knowledge of software project management. By reviewing our analysis one can get the concept of managing activities during project development life cycle of a startup software company. We focus on the role of project manager, planning and implementation process of managing.

The findings are very useful for both project manager and software developers who are going to join a software company.

This empirical study will describe the current project managing activities of the company. The result we got from the questionnaires will present a general evaluation about the project requirements, resource, budget, schedule, communication and quality management.

This study investigates the relationships among the planning factors and project outcomes. In software industry, anyone can find it useful to get ideas about risk management and necessary steps to prevent project failures and other project management components.

1.4 Methodology

To complete our study's objectives we work following several steps. At first we study briefly about software project management planning. The purpose of the study is to know how the software projects are managed. We also study on the components & importance of software project management. This study will work as the base of the next steps.

After setting up our goal and requirements we select a startup software company on which we will research. At present there are a lot of startup software companies in Bangladesh. We choose the company as per our requirements.

We made the necessary questionnaires and meet with the project manager of the company to get the information that we need to know. We tried to collect the information about the various types of project management activities and the overview of the company. Finally we got some informative analysis which will help to meet our objectives.

1.5 Scope of the study

There are various types of activities in software project management planning. It mainly includes planning, organizing, monitoring, controlling and leading the software projects. The main components of software project management includes project requirements, resources, budget, schedule, communication, risk and quality management.

The study focuses on the software project management planning of the company. It's a startup software company. The study therefore gives knowledge about the software project management process of a startup company in Bangladesh.

2. Background study

2.1 Software Project Management

Software Project Management is the process of planning and leading the software projects. These activities include planning, monitoring, implementing and controlling to meet the projects requirements.

Software project management can be defined as the process of making visible what is invisible. Specifically, the software engineering process is invisible because its progress is not immediately visible. Software products contain more complexity than other engineered artifacts. Software developers have to conform to the requirements of human clients. Software systems are likely to be subject to a high degree of changes. Managing a software project is not an easy task.

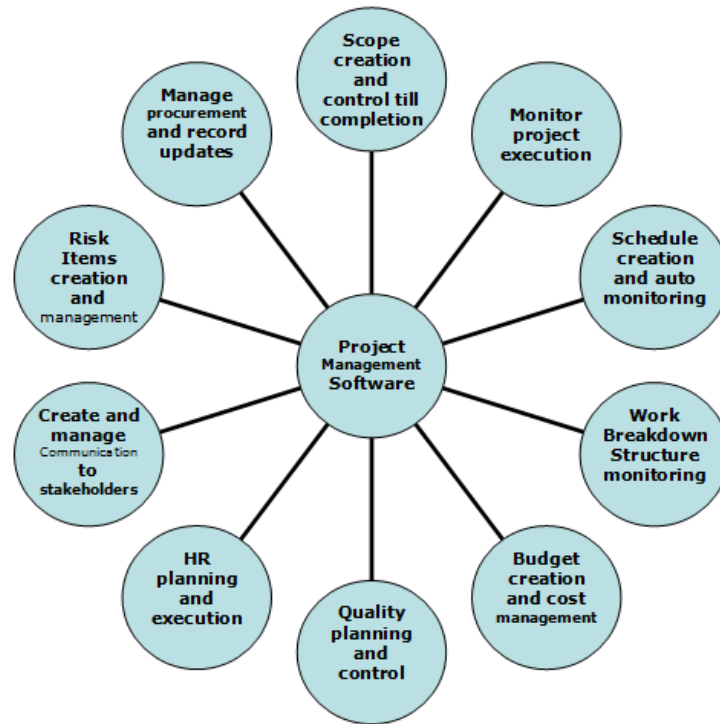


Figure: Functionalities of Project Management Software

A project manager closely monitors the development process, prepares & executes various plans & manages other related activities to fulfill the project requirements.



Figure: Project Management Process

There are also some project management software and tools for managing different project management tasks. These software's are used for project planning, scheduling, resource allocation and change management. It allows project managers (PMs), stakeholders and users to control costs and manage budgeting, quality management and documentation.

2.2 Software Project Management Components

- **Project requirements management :**

Requirements are defined as the desired set of characteristics of a product or a service. In the world of software development, it is estimated that more than half of the failures are attributed towards poor requirements management. This means that although the software functions correctly, it is not what the client requested. Modern software requirements management methodologies are available to reduce the occurrence of such incidents.

- **Project scope management :**

Managing project scope is primarily concerned with defining and controlling what is and is not included in the project. Essentially, project scope is the phase of project planning in

which you identify the project's goals, deliverables, budget, and schedule. Note that project scope is not to be confused with product scope. Though similar in intent, product scope defines the necessary deliverables and constraints of a product, rather than of a project.

While both project and product requirements can change over time, the goal is to avoid scope creep, which is the unplanned or unmanaged ballooning of expectations. When left uncontrolled, scope creep can result in cost overruns, delays, and reduced quality

- **Project time management :**

Project scheduling is a mechanism to communicate what tasks need to get done and which organizational resources will be allocated to complete those tasks in what timeframe. A project schedule is a document collecting all the work needed to deliver the project on time.

- **Project cost management :**

Cost management is the process of estimating, allocating, and controlling the costs in a project. It allows a business to predict coming expenses in order to reduce the chances of it going over budget.

Projected costs are calculated during the planning phase of a project and must be approved before work begins. As the project plan is executed, expenses are documented and tracked so things stay within the cost management plan. Once the project is completed, predicted costs vs. actual costs are compared, providing benchmarks for future cost management plans and project budgets.

- **Project quality management :**

At project level quality management is mainly about the project's products or services, and what makes them fit for the purpose of meeting clearly stated needs. Projects cannot be effectively built around implied needs.

Quality management is the process of ensuring that the customer's expectation of quality (for products or services being delivered) is met. Configuration management is closely linked to quality management

- **Project HR management :**

Project Human Resource Management includes the processes that organize, manage, and lead the project team. The project team is comprised of the people with assigned roles and responsibilities for completing the project. Project team members may have varied skill sets, may be assigned full or part-time, and may be added or removed from the team as the project progresses. Project team members may also be referred to as the project's staff. Although specific roles and responsibilities for the project team members are assigned, the involvement of all team members in project planning and decision making is beneficial. Participation of team members during planning adds their expertise to the process and strengthens their commitment to the project.

- **Project communication management :**

Communication management is critically important for project managers and can be seen in terms of many steps that are used to explore project objectives and find solutions. Listening intently requires that one hear messages from other people effectively, whether the messages be oral or written. Thinking clearly involves exercising judgment and making correct inferences. Open discussions allow questions to be explored and clarified, while focusing on a project's objectives. Developing sensitivity requires susceptibility to others' attitudes and biases, and honest dealing. Once messages have been received and understood, prompt action should be taken to respond to the needs that were imparted in the initial messages.

- **Procurement management**

Project procurement management is collaboration with outside suppliers in order to obtain or purchase goods and services for projects. These relationships are often created based on a contract so that the needed items or services are received on time and meet the standards requested by the purchasing company.

- **Project stakeholder management**

Stakeholders are individuals who either care about or have a vested interest in your project. They are the people who are actively involved with the work of the project or have something to either gain or lose as a result of the project. When you manage a project to add lanes to a highway, motorists are stakeholders who are positively affected. **Key stakeholders can make or break the success of a project. Even if all the**

deliverables are met and the objectives are satisfied, if your key stakeholders aren't happy, nobody's happy.

- **Project risk management :**

Risk Management is the process of identifying, analyzing and responding to risk factors throughout the life of a project and in the best interests of its objectives. Proper risk management implies control of possible future events and is proactive rather than reactive. If risk management is set up as a continuous, disciplined process of problem identification and resolution, then the system will easily supplement other systems. This includes; organization, planning and budgeting, and cost control. Surprises will be diminished because emphasis will now be on proactive rather than reactive management.

- **Process Improvement plan :**

The process improvement plan is a component of the Project Management Plan. The purpose of the process improvement plan is to document how the project team will analyze various processes, determine where improvements can be made, and implement improvement measures. Like a large part of project management methodology, process improvement is an iterative process that is performed throughout the project's lifetime.

2.3 Company Overview

DevCastle IT is one of the fast growing IT startup companies in Bangladesh.

Started - 7th November, 2017

Founder - Mr Bitul Saha , Mr Atm R Kabir(Jewel)

Total Employees - 9

Website - <http://devcastle.net/>

Email - info@devcastle.net

Address - House #992, Road #15, Mirpur DOHS, Dhaka -1216

2.4 How DevCastle started their journey

DevCastle is one of the leading IT & Digital companies in Bangladesh - continuously creating value as a 'One-Stop Solution Provider for IT & Digital needs'.

The company started from November, 2017.

At starting time, 2 founders and 3 software developers worked together for the company. One of the founders lives in UK and with his funding the company is running.

2.5 Mission & Vision

Mission: To make a difference in global IT sector and make contribution in human development.to inspire young generation for using IT to develop their creativity. to encourage all class of people to use IT facilities for more productivity.

Vision: To contribute in IT sector globally and work for human development.

2.6 Areas of Expertise

- Software Development
- Web Development
- Mobile App Development
- Graphic Design
- Digital Marketing
- ERP Solutions
- Cyber Security
- Search Engine Optimization

3. Description of work

3.1 Our Work Description

- ☐ **Select a startup software company:** As the paper focuses on startup Software Company so we try to find out the Startup Company on which we can do the necessary research work.
- ☐ **Collect information's of the company:** The paper focuses on the project management process of the company along with the company overview.
- ☐ **Set our requirements:** Clearly defining requirements is very important to complete any tasks. We set our study requirements to get the needed information. Clear and well defined requirements help to achieve the goal of the study.
- ☐ **Prepare our questionnaires:** we prepared our necessary questionnaires which will help us to gain the main objectives of the report.
- ☐ **Meet project manager:** The interview with the project manager helps to get the information about the company project management planning.
- ☐ **Summarize the findings:** Finally we can summarize the findings and able to achieve the goal of the study.

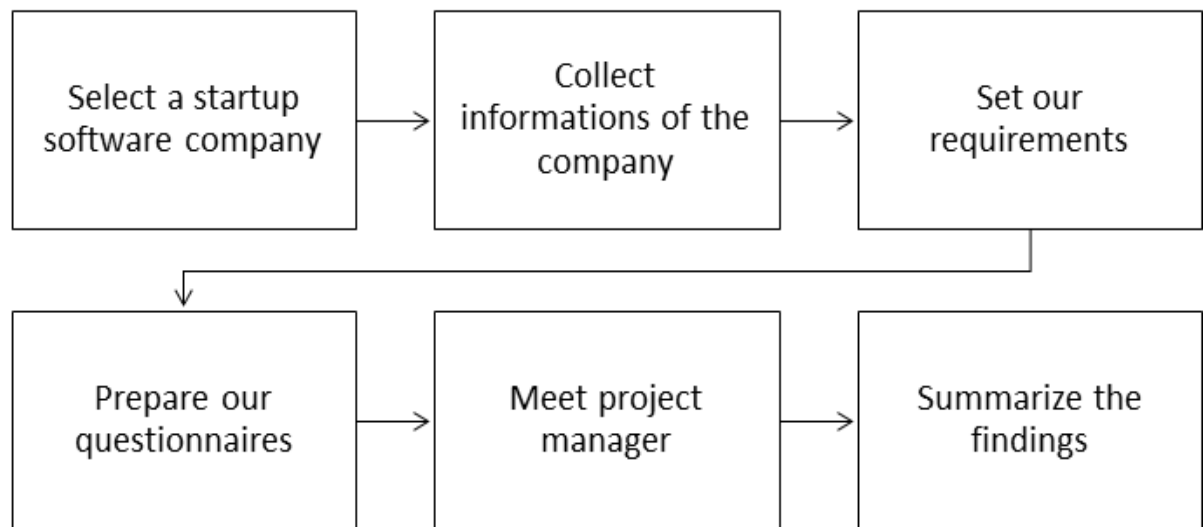


Figure: Working Methodology

3.2 Questionnaires

Our questionnaires include 20 questions about the following topics that explored our main findings.

- 1) How the company started?**
- 2) Information about the company and the projects**
- 3) What was the biggest or most challenging project you managed?**
- 4) In what sectors your company develop software?**
- 5) What is the mission and vision of the company?**
- 6) Tell us about the project management process of the company**
- 7) Number of employees and their role?**
- 8) Who are the major clients of the company?**
- 9) How the quality of the project is managed?**
- 10) Which automation tool you used to maintain quality of the project?**
- 11) The common method used to communicate with the stakeholders?**
- 12) Which software they use to communicate internally?**

- 13) How the requirements and scope of the project is managed?**
- 14) Do you have an extra HR department?**
- 15) How do you plan budget for any new project?**
- 16) Where does the funding come from?**
- 17) How you manage your hardware & software resources?**
- 18) How you handle project failure?**
- 19) What are the recent big projects they develop?**
- 20) What is the future plan of the company?**

4. Findings

After collecting all the information about project management process of the company we got some clear knowledge about the schedule management, quality management, requirement management, HR management, risk management and some other software project management process of the company.

4.1 Project Requirement Management

Conversation between clients and project manager about client's requirements is being held.

- Client specifies the features they want in their software
- Project manager studies on their features requirements and make a document on the requirements solutions and share his ideas.
- The document is then verified by management team.
- Then they present the document to clients.
- Client must review the document, they may add something or cut out something.
- Finally when two parties agree on a point of requirements and deliverables, then they sign on as final work order.

- Through the project life the team manages multiple documents to elaborately explain it to development team and QA team

4.2 Project Scope Management

- ❑ The team sit together and decides what would be done and what would not be done, in a word they clarify the boundaries of the project
- ❑ From the meeting, they decide the project containing limited and quantifiable tasks and make decisions on the following:
 - Define the scope
 - Divide the project into various smaller parts for the ease of management.
 - Verify the smaller parts and scope altogether
 - Various changes come through the project and the team control scope by incorporating the change

4.3 Project Stakeholder Management

- ❑ Everyone involved in the project, everyone affected by the project and everyone who can affect the project objectives.
- ❑ The company assume Project Manager as key stakeholder. Usually, the project management team including Cost Specialist, Planner, Quality Manager, Risk Manager and Management Personnel.
- ❑ But as it is a startup company, the maintain management personnel who sponsor the project and the Project Manager as Stakeholder.

- If a technical resource leaves the company in the mid of the project, Project Manager redistributes the tasks among existing members.
- The company's director also plays the role of a CTO. And he is ultimate the person to take charge if the Project Manager himself decides to resign the job.

4.4 Project Procurement Management

Most of the projects require outside products and services. They maintain a good relationship with a computer store 'Salta' in IDB.

Any hardware or device required for the projects are brought from there. The store also gives them any kind of IT support services.

They are using open source software for their development.

4.5 Project Schedule Management

They define their activities, plot out the sequence and calculate how long project duration will actually take. They set their project to priority base which needs to finish first and distribute the workload according that.

For Schedule Management they used "JIRA" software.

4.6 Project Risk Management

They maintain the process of identifying, analyzing and then responding to any risk that arises over the life cycle of a project to help the project remain on track and meet its goal. For extra workload they have 3 promising freelancer developer who work with them project basis.

4.7 Project Cost Management

Project budget plan focuses on the following:

- ☐ Analyzing project requirement
- ☐ Creating cost estimate
- ☐ Propose to client
- ☐ Implement cost budgeting

As a startup company they are not focusing on revenue generate. They want to make good profile of their company and established the name of the company to global market.

4.8 Project Quality Management

A software tester is responsible for project quality assurance.

Manual testing - manually test the features & functionalities of the software as end user.

Maintain Test cases to keep the test records.

Automation testing - Use open source software testing tools Saucelab & Browserstack for cross browser & cross platform testing.

4.9 Project Communication Management

- ☐ For communication with client they are using email. They said it's easy to track down previous conversation.
- ☐ For some Maintenance project they use "Mantisbt" where from the client panel client

directly create the issue and they are working base on that.

- ❑ For team communication they are using slack and hangout.

4.10 Process Improvement Plan

They sit regular Team meeting for improving their performance. They make workflow. Collect data on the current process .Use the data to simplify the process and remove unnecessary activities. This data will also help to establish a baseline of comparison and can be used to measure against the objective. They always try to use new technologies.

4.11 Project HR Management

As a very small team there are no extra HR department to maintain human resource works. Director play HR roles here. They recruit employee according to their project. From the beginning of the company now they have recruit 4 another developer and one marketer. They used BDjobs and other free job posting sites to recruit the employees.

5. Conclusion

Essentially Without proper project management a company cannot run long in market. So Without it, teams and clients are exposed to chaotic management, unclear objectives, a lack of resources, unrealistic planning, high risk, poor quality deliverables, projects going over budget and delivered late.

Running projects without good project management is a false economy. It's often thought to be an unnecessary burden on the budget, and there's no doubt it can be expensive – as much as 20% of the overall project budget. Great project management matters because it delivers success. Project management creates and enables happy, motivated teams who know their work matters, so do their best work. And that project management enabled team ensures the right stuff is delivered, stuff that delivers real return on investment, and that makes happy clients.

As we studying on a startup company it's also very much helpful for thinking a new company. We get change to understand their business strategy, their motivation and development plan.

