

Software Project Management in Developing Countries: Recent Developments and Research Opportunities

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ABSTRACT

This paper studies the business process known as project management. This process has exhibited a remarkable growth in business interest over the last 15 years, as demonstrated by a 1000% increase in membership in the Project Management Institute since 1996. The new applications for project management include IT implementations, research and development, new product and service development, corporate change management, and software development. The characteristics of modern projects are typically very different from those of traditional projects such as construction and engineering, which necessitates the development of new project management techniques. It is also found that the current research in SPM in DC is at best outward with only discernible issues addressed without in depth exploration. New research opportunities in SPM in DC are also identified.

Keywords: *Software project management, software engineering, issues in SPM, developing countries (DC), recent practical developments,*

Introduction

A project is conventionally defined as a “temporary endeavor undertaken to create a unique product or service” (Project Management Institute 2008). Alternatively, a project can be thought of as a well defined set of tasks that must all be completed in order to meet the project's goals. The unique problems that the DC presents such as social, cultural, political

and communication barriers are not present in the countries where SPM practices were born.

Compared to many business processes, project management appears to be particularly difficult, from both theoretical and practical perspectives. From a theoretical perspective, the fundamental planning problem of resource constrained scheduling is highly intractable. From a practical perspective, the two standard objectives in project management are defined to be completion of the project on time and on budget. Yet, many projects fail to meet these two criteria, despite detailed planning before execution begins and the use of modern project management software.

1. History and growth :

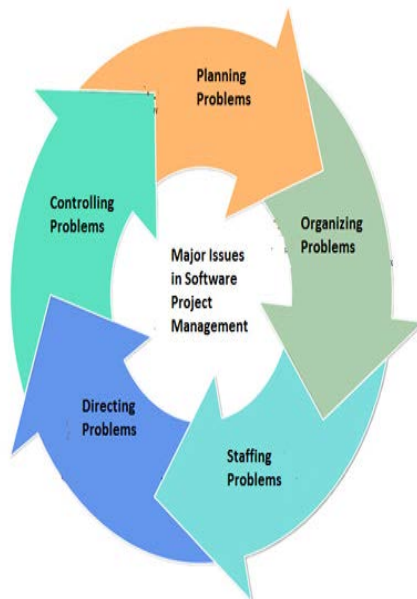
A particularly impressive project management achievement at that time was the Apollo moon landing project (1961-1969). However, the potential for project management to be applied to a much wider set of applications gradually became apparent. However, traditional and modern projects often have very different characteristics. First, the eventual configuration of traditional projects is much more transparent than for modern projects. For example, construction of a bridge or skyscraper typically does not start until very detailed blueprints have been drawn up. We say that such project management applications are deterministic.

the people issue. Success and failure of any project relies on the team that works on it.

The processes included in SPM are: project control, cost and schedule, technical performance, change and configuration and project evaluation processes.

3 Major issues in software project management :

Many major concerns related to the availability of technology for software production have been addressed. Significant tools to support enhanced software production are readily available. He noted that yet major advances in software engineering project management (SEPM) are still awaited. He further noted the paradox that software developers who have demonstrated competence as developers and programmers have been elevated to project managers without much training in this regard.



4. Research techniques in SPM in developing countries :

Our aim is to provide a significant search of the present body of knowledge in SPM practices in DC and inform intellectuals of further research opportunities in this context. The review of literature has addressed issues on a breadth of topics such as identification of key project management practices, barriers in successful project management, project performance and delivery, environment in which projects work, use of tools and

techniques of project management, project planning, information sharing in SPM, risk analysis etc.

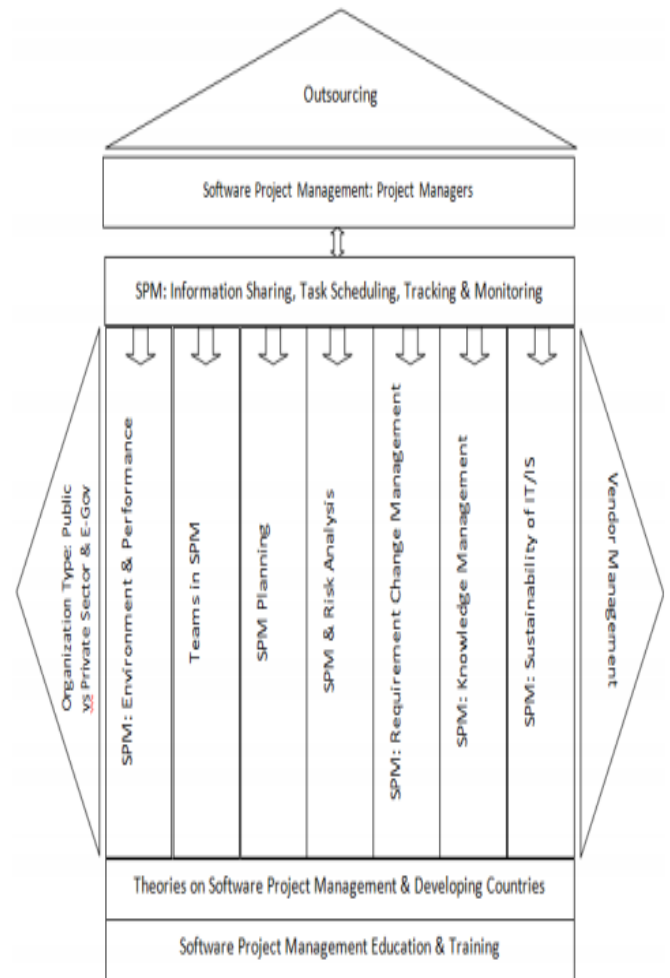


Figure-3
Framework for Review of Literature on SPM in DC

Globally research has been conducted in all the project management knowledge areas, which are time management, risk management, integration management, scope management, quality management, procurement management, cost management, human resource management, and communications management.

4. Development in software project management :

PERT relies on several strong statistical assumptions that are difficult to justify for most projects. As a consequence, the project duration estimates obtained from PERT are often unreliable. A further problem is that companies have been reluctant to implement Monte Carlo

simulation, apparently due to unfamiliarity with its statistical justifications and a possibly naive satisfaction with their existing methodology.

5. Software development stages :

Building a software product is a process consisting of several distinct stages:-

Research is the stage where the project owner, the project manager and the project team gather and exchange information. The project manager is responsible for receiving the requirements from both a business perspective and a technical perspective for evaluating them and passing them to the project team as technical specification. The project manager has to be able to evaluate the requirements.

Planning starts with defining the overall flow of the application. Next step is to breakdown the flow into smaller, easier to manage subassemblies. For each subassembly a comprehensive set of functionalities has to be defined. Based on the required functionality a database structure is designed.

Design is the stage where the layout of the application is created. The graphic design stage is important because it will display to the project owner a preview of the application before it is actually built. At this stage usually the project owner comes up with new requirements that have to be submitted to research and planning.

Development is the stage where code is written and the software application is actually built. Code is written on the development environment and uploaded on the test environment using the synchronization protocol. Another important aspect of the development stage is progress monitoring. The project manager should constantly update the project owner on the overall progress.

Testing is the stage where programming and design errors are identified and fixed. Programming errors also consist in security or usability issues. Design errors occur in the

planning stage, have a significant impact on the project and are usually harder to fix.

Setup is the stage where the application is installed on the live environment. The actual setup of the software product includes copying the source code, importing the database, installing third party applications if required, installing cron-jobs if required and configuring API's if required. Once the application is installed it will go through another full testing cycle. When testing is completed content is added to the application.

Maintenance is the stage that covers software development subsequent to the application setup and also the stage responsible for ensuring that the application is running within the planned parameters.

7. Conclusions :

Several conclusions can be drawn from this work.

The growth in software development industry can only be guaranteed through achieving maturity in SPM

1. practices in DC therefore more research in this regard is the need of time.
2. Heavyweight methodologies are suitable for projects where requirements are unlikely to change and the software complexity allows for detailed planning. Heavyweight methodologies are easy to understand and implement.
3. Important recent developments on the business innovation side of project management are not yet well supported by research.
4. In contrast, several trends are making project management easier: better project management training, publication of best practices information, and better software support. The relative impact of these two effects varies application to application.
5. We identify the following trends making project management harder: increased

competition, shorter product and service life cycles, tighter budgets, unfamiliar and more complex applications, globally distributed and multicultural project teams.

6. Underestimation of the value of project management as a planning methodology over the last 20 years has led research to fall behind recent business innovation and the growing range of applications.
7. Practice and research have diverged, and few new researchers have entered the project management field.

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