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Nasina Jigeesh
Projects from different fields regularly come out with some specific objectives and purpose. A project may either be a service or development of a product, but it will always be constrained in terms of resources, time, cost, etc. Any project is supposed to be done within time by a limited number of human resources using relevant tools and techniques and the cost of all these services is limited by the budget allocated to that project. In turn the project should satisfy the user for whom it is developed by exhibiting good quality and performance, without defects. Availability of human resources, their stay and performance are very important issues because any project will be done by skilled people. Market demands or user demands and other external policies also affect projects and due to fluctuations in their nature, their influence on the project also varies. Any of all these factors may shoot up with great strength at any moment and affect the project tremendously. Due to these continuously varying factors, the projects are becoming dynamic systems. Hence the project should be safeguarded and handled properly in the background of limited resources, time and cost to achieve its targets. Hence project management is becoming a very important activity to accomplish such challenging tasks.

Any project passes through different phases like formation of idea and scope, planning, execution and delivery to the user and in every such phase the project should be managed to the best to meet its objectives.

The present research work studies different issues that affect the management of project in each and every phase in the lifecycle of a project. It deals with four major phases of project, namely, conception, planning, execution and termination. Conception phase leads to formation of idea, feasible nature and scope of project; planning phase identifies different tasks to be completed in an order, risks and strategy to mitigate them and estimates time duration, requirement of resources and cost for all the tasks and designs the project; execution phase deals with actual development work including resource allocation and management, procurement of required tools or services if necessary, monitoring and
control of project; termination phase concludes the project by delivering it to the user and relieving the project team members.

The present research work attempts to model and simulate the behaviour of major project management activities and highlight the effect of important issues on the performance of those activities in each phase in the lifecycle of project. For this purpose, system dynamics (SD) methodology and techniques have been used and many models have been developed and simulation results generated. Industrial survey reports and literature reports along with sensitivity analysis results of simulation have been used to validate the models. The study is focused on information technology (IT) projects.

The thesis provides the study and analysis of the project management activities, the results of modeling and simulation of those activities and their validation. In addition, a new decision making method, named as, Bit decision making (DBM) method has been proposed. The method has been developed using Boolean logic and Boolean algebra. The thesis also provides an example of application of the BDM method to evaluate tender bids.