

Resource Management through Project Management Software Particularly for Road Infrastructure Projects

Vishal Prajapati¹, Dr. Rajiv Bhatt², Dr. Darshana Bhatt³

¹ Infrastructure Engineering And Technology Department, BVM, INDIA

² Civil Engineering Department, ADIT, INDIA

³ Structural Engineering Department, BVM, INDIA

Abstract

Project management is a most required process of planning, organizing and managing all project activities and resources to complete a project within limited time resource and limited cost. Nowadays It is very commonly to see project are fail to achieve its goals within specified time and cost, The project overrun and failing of project are inadequate project planning and management,. As project become more complex and larger, the ability to giving information to other on a timely basis is shrinking .There is different amount of information on a project that is always changing. Specifically the highway construction projects use different amount of resources on and off the field in various forms of resources like- materials, plants, equipment and human resources along with money, time and space. In India various Construction Firms, that use traditional way means excel in the Construct the Projects, that is proves Uneconomical & Tedious also. Traditional way are also proves to be confusing and Time Consuming. The presented work will provide an Opportunity to observe the difference between the project management software like Microsoft Project (MSP) and primavera P6 which one is better from traditional work (Excel) and also speed up the Construction and make the Project Cost Effective with Proper Planning and management & execution of the highwayproject.

Keywords: MS Project, Primavera P6, Road Infrastructure Project

Objectives of Study

- To Identify benefits of using Microsoft Project for road infrastructure project
- To provide path to reduce the total duration with the help of software then the actual executed project's duration in traditional method (Case Study).

Brief Overview of Literature

- Miss . A.A.Lakade , Prof . D .B . Desai , Prof. A.K.Gupta they are study on ERP is single unified database software which helps to get data from any department and with the help of using material management module, we can see the problem related to material management on site. it is also study that Primavera management software some features helps for doing resource leveling, scheduling some specific reports can be generated . So when both software work when integrated then there is flow of data which will help to increase project efficiency and also doing cost effective project management.
- P.M.Wale, N.D.Jain, N.R.Godhani, S.R.Beniwal & A.A.Mir (2015) they are study on Construction of multi-story building with use Traditional way(Excel) proves to be uneconomical, consumes more time, many complicate error which actual execution time of the Project. Also they are telling that Traditional way of planning is very difficult to sub divide the main task in future when the project are ongoing and facing the difficulty in over allocation of resources, improper judgment of resources for particular activities etc. also conclude that Microsoft Project is the modern tool of Project Management that is help to overcome the different obstacles face in traditional way of Planning and Management. It helps for the optimum and effective organization of project activities which helps complete the project in estimate duration and within the Economy of the project.

- Mohammed Nabeel Khan , Prof. Akhil Khare & Himanshu Shrivastava (2016) are Decreasing the duration of a Project by proper scheduling and starting activities simultaneously, duration is decreases and chances of delaying the project is minimized whereas cost of resources , overall project is increasing but indirect cost will decrease
- K. Sri Bindu & U. Jayasanthosh Kumar (2016) are scheduling the project in three different types, three different time schedules are obtained and the respective resource allocations are also achieved , From the resource allocations and the time schedule of the three cases the optimal resource utilization is identified by the cost comparison , By performing the resource leveling the cost of the project has been reduced by Rs 9,27,474.72 (from total cost is Rs 16, 70,59,530.3)
- Desai madhura .c & Prof.s.v.desale (2013) are identify the various factors in construction projects, that are doing delays and considered to be a serious problem in the construction forms, also they give the following points can be recommended to control the delays in residential project -shortage of labour, shortage of construction materials, the escalation of material prices, delay in obtaining permits from authorities, mistakes and delays in preparing design documents, unclear and details in drawings, poor communication and coordination, inadequate project management assistance, reconstruction activity due to errors and changes in project, strikes

INTRODUCTION

- Resources Management are nothing but the working in the organizations for achieving the goals of the business and earning benefits for themselves for their survivals or for their specific purpose. Resource management deals with the management of different resources for achieving the desired business goals. Resource management incorporates the vast fields like construction, banking, manufacturing, processing, etc.
- Different Resources (manpower, material, money) are the major risky to manage in the construction field, as they are not mostly permanent like other industries. Therefore, factors influencing Resource management are very much critical for any construction firms.
- Project information for these study we are approaching to the “Patel Infrastructure Pvt . Ltd” they are working on Development to four lanes with paved shoulders of Lambra- Shahkot Section of NH - 71 from Km 12.0 to Km 44.60 (32.60km) in the State of Punjab and total tender amount in 338 crore and the duration of project is 2 years so, we are doing study on both project management software (MS Project and Primavera P6) and give conclusion which one is better for road infrastructure project
- However, Resource management is a very vast area; there is a lack of much quantitative studies about its practices. Also, there are many qualitative research regarding the Resource management.

About MS Project

- For these study we are using “MS Project 2016 software” it is useful for enter the different activity or task in between the project activity at a time of project execution very easily.
- Each resource can be provide with its individual calendar, which provide the information what days and time is resource required to present. Resource rates are used to calculate resource assign costs. Every resource can be assign in multiple tasks each task can be assign number of resources. The execution in the project scheduled task work based on the resource available or not as defined in the resource calendars. All resources can be defined in form of Work, Material and Cost.

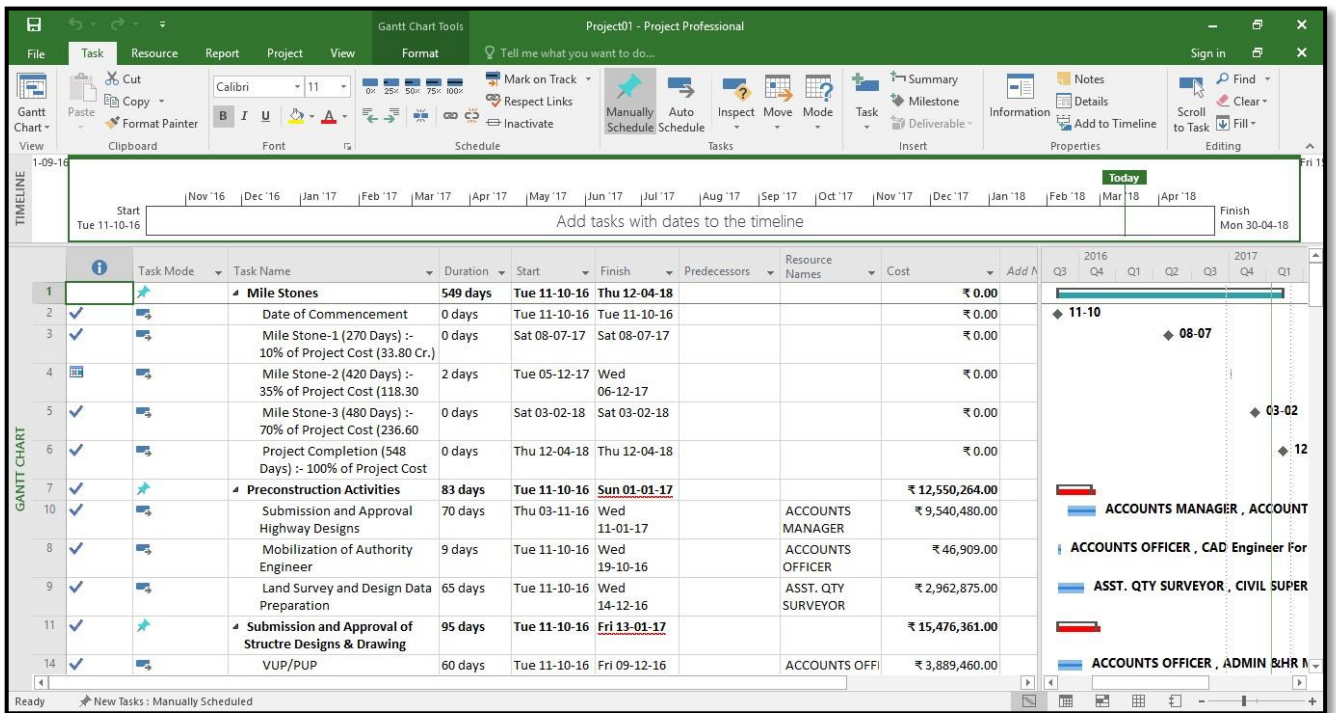


Fig 1:- MS Project screen

- Some of the advantages of MS Project are **Support and Reliability**- these software is developed by The most reputed company, **Easy Integration with other Microsoft Products**- these software are easy to integrate with the other software of Microsoft , **Desktop Application**-means project manager work without internet facility also some off the disadvantages of MS Project are **No collaboration**-work with third part or share the data with third part is difficult use the separate collaboration platform by the user or manager, **Desktop, Offline Application** – need backup of every work and give to the another user separately, **Compatibility Issues** – same software are required by the other use otherwise that file is not open in software

About primavera

- For these study we are using software is “primavera P6” in this software we have to prepare activity task list and resource task list but the all the details are required at that time when we are preparing resource task list it is difficult compare to MS Project.
- Each resource can be provide with its individual calendar, which provide the information what days and time is resource required to present. Resource rates are used to calculate resource assign costs. Every resource can be assign in multiple tasks each task can be assign number of resources. In this software one time we have to prepare our calendar and that is use for different project. All resources can be defined in form of Work, Material.

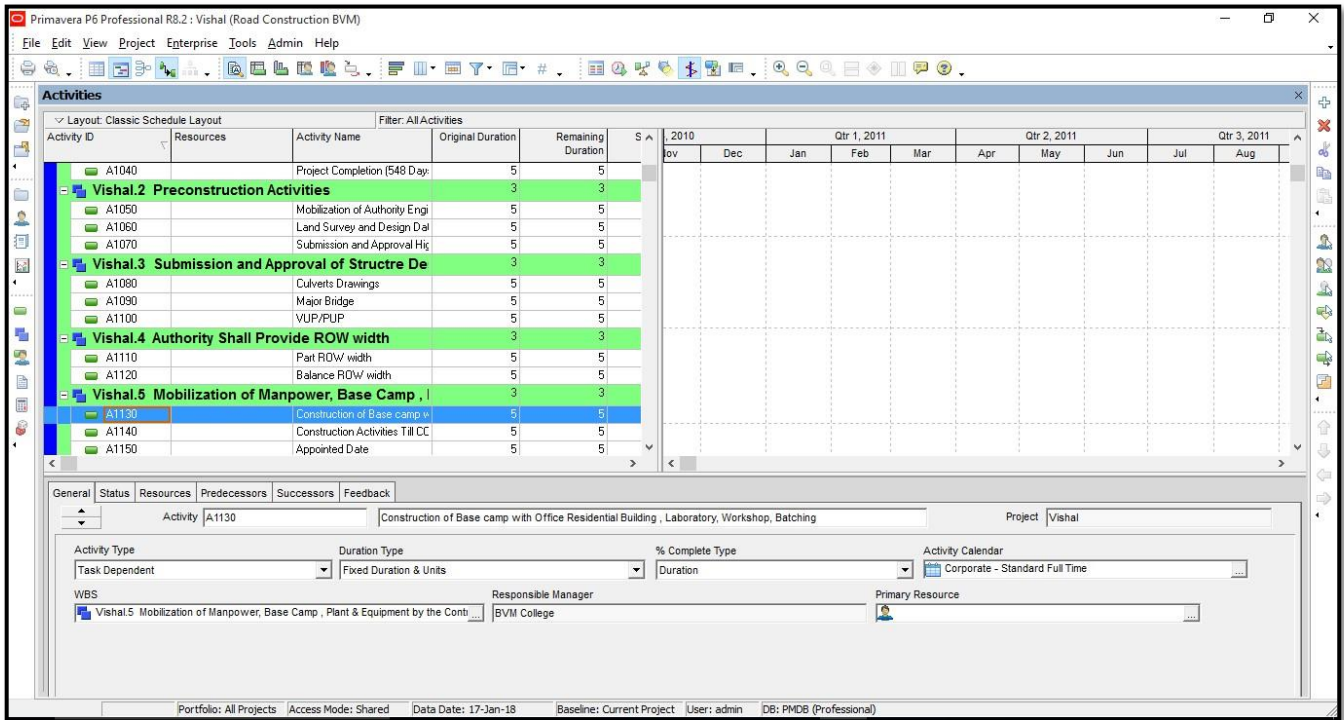


Fig 2:- Primavera screen

- Some of the advantages of Primavera P6 is reduce the risk and time over run ,clear visibility , track on progress is easy , collaboration is easy for different user that are only connectivity is internet also some of the disadvantage of Primavera P6 Primavera is not user friendly software compare to MS Project, It is not have customize tools and menu compare to MS Project, It is not have facility to make formula for calculation in custom field, We cannot use Primavera in low configuration system (like computer or laptop), Non-technical user cannot use Primavera easily compare to MS Project

Summary

	Start	Finish
Current	Tue 11-10-16	Fri 20-04-18
Baseline	Tue 11-10-16	Tue 01-05-18
Actual	Tue 11-10-16	NA
Variance	0d	-11d

	Duration	Work	Cost
Current	556.13d	6,387,408h	₹ 3,114,461,807.00
Baseline	567.13d	6,620,872h	₹ 3,227,107,611.00
Actual	554.6d	6,381,503h	₹ 3,112,393,313.13
Remaining	1.53d	5,905h	₹ 2,068,493.88

Percent complete:
 Duration: 99% Work: 99%

Fig 3:- MS Project statistics table screen

- In these table we can see the actual project duration by traditional method that is 567 days shown by baseline duration and the working hours in that method is 66,20,872 and the total

project cost by that method is rupees 3,22,71,07,611 and after that the we are given the some changes in project software so , after the change the duration of the project is 556 days and the working hours is 63,87,408 and the project cost is rupees 3,11,44,61,807 So, we can say that if we are using the software and reduce the duration of the total project is **11 days** so we can save the **rupees 11,26,45,804** that is **3.49%** of the total project cost of the road.

Conclusion

- We are working on both the software (MS Project AND primavera P6) So, we are reach to the conclusion that both software are very useful in project but due to our experience on both the software and study of advantages and disadvantage of both the software we are saying that MS Project software are easy and more useful compare to primavera p6 software in our case study and all the project they are handle by foe people and primavera P6 are help full in major project that are handle by server base or globally so, for our case study point of view MS Project is best .

Recommendation & suggestion

- This software is used for other engineering project like multi-storey building, railway projects, tunnelling project.
- Also we can use project management software for specific requirement of projects.

References

1. Miss . A.A.Lakade , Prof . D .B . Desai , Prof. A.K.Gupta “A Project Management Approach Using Erp And Primavera In Construction Industry” in IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)
2. P. M. Wale , N. D. Jain , N. R. Godhani , S. R. Beniwal , A. A. Mir (2015) “Planning and Scheduling of Project using Microsoft Project (Case Study of a building in India)” in IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)
3. Mohammed Nabeel Khan , Prof. Akhil Khare , Himanshu Shrivastava (2016) “Comparative Study On Planning, Scheduling & Resource Allocation Of A Live Project With Upcoming Project Of Same Aspect.” In International Journal of Engineering Sciences & Research Technology
4. K. Sri Bindu , U. Jayasanthosh Kumar (2016) “Resource Optimization in Road Construction Projects” in International Journal of Engineering Development and Research
5. Desai madhura .c , Prof.s.v.desale (2013) “Study factors affecting of delay in residential construction projects for Nashik city” in International Journal of Latest Trends in Engineering and Technology (IJLTET)
6. V.Dhanalakshmi (2016) “High Cost Infrastructure Report Monitoring By P6 Software” in International Conference on Engineering Innovations and Solutions(ICEIS – 2016)
7. Mr. D . Sukumar , Mr. S . Saravanan (2017) “Factors Affecting Labour Productivity In Road Construction ”
8. Dineshkumar . M , Arul Sankar . C (2015) “Hindarance in Construction Project” in National Conference on Research Advances in Communication, Computation, Electrical Science and Structures (NCRACCESS-2015)
9. K . Abhinaya , S. Priscil Nidhu (2017) “Risk management in highway construction using risk priority matrix and SPSS software” in SSRG International Journal of Civil Engineering - (ICETM-2017)
10. K Swarna Kumari , J Vikranth (2012) “A Study On Resource Planning In Highway Construction Projects ” in International Journal of Engineering Research and Applications (IJERA)