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Application of MS Project in Project Management

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Abstract- Building Information Modeling is known by the abbreviation BIM. Using a collaborative process, architects, engineers, developers of real estate, contractors, manufacturers, and construction experts can plan, design, and build a project using a single 3D model. By using the Autodesk Revit program to create a 3D model of the (G+4) Residential building, the current research study aimed to create various floor elevations. A research study was conducted to determine the project's overall schedule and the best way to utilize the available resources. The scheduling, monitoring, and optimization of numerous construction tasks, as well as the usage of MSP software, were all made possible thanks to this initiative. It is possible to examine the number of building floors, which will reduce the time and expense. MSP is a project management tool that aids in resolving issues that arise with conventional. MSP provides proper project planning, allowing management to set up the resources as needed for the project. MSP software can be used to calculate the time required (942 days) for a residential building that will begin on Thursday, May 2, 2019, and end on Wednesday, May 4, 2019, and which will cost around Rs 28,463,555. According to the work overview chart, the baseline cumulative working hours (80,000 hours) were on 11/3/19 and continued to decrease until they reached zero on 11/29/20. They then stabilized until 4/17/22. The figure also shows that 99 percent of the work has been accomplished, 125 hours of work remain, and 201,119.93 hours have been put in. Real working hours range from 201,040 to 201,120 whereas the remaining working hours are between these two numbers.

Keywords: 5G systems; Software Defined Networks; 5G- Network; Slice Handover; Machine learning; Network Function Virtualization.

I. INTRODUCTION

The application of knowledge, skills, and techniques to project activities in order to achieve project requirements is known as project management. It is a strategic ability to accomplish goals for businesses, allowing them to better compete in their marketplaces by connecting project outcomes to organizational goals. It can also be described as the activity and process of organizing resources, following protocols, and being inspired by others to reach predetermined objectives in solving scientific or everyday issues. A project is a temporary goal with a clear beginning and finish that aims to provide a unique product, service, or outcome. It is started to satisfy unique goals and objectives, usually to bring about positive change or added value. People claim that both the Egyptian pyramids and the Great Wall of China were constructions. Consider the Manhattan Project as the "modern" project management field's first true innovator. information about project management The United States invests $2.3 trillion annually in projects, which is equal to one-fourth of the GDP of the nation. Over $10 trillion of its $40.7 trillion gross domestic product is invested globally in various projects. Over 16 million people consider being a project manager to be a vocation, and the average project manager

earns over $82,000 annually. Project management can be used in both business and personal undertakings. Project management is applicable in a wide range of industries, including IT, construction, banking, sports, and event planning, to name just a few. Its skills are useful in daily life. Project management is the art of overseeing a project's deliverables in order to produce finished items. Project management includes identifying needs, establishing precise, realistic goals, balancing opposing demands from several stakeholders, and making sure that a common goal is attained. Execute the project in a way that satisfies quality standards, is finished to end users' satisfaction, and avoids using unproven equipment. Finish the project within the allotted (or allocated) time and money. Timing and planning are more important for the project in question to avoid going over budget. Planning is the cornerstone of all procedures that offer an estimation of the project's duration and cost. A thorough overview of the project updates is provided by the schedule, which in turn demonstrates where/how the project is standing at any given time. This project uses Microsoft project software for scheduling and resource distribution, which makes it simpler to organize and assign resources to ongoing tasks. With competent management, a project's productivity and cost-effectiveness can both be boosted, which helps the project finish on time and under budget. The success of the project depends on the efficient use of time management, labor, and material management.

II. LITERATURE REVIEW

Project management has expanded in popularity and complexity over the past few years. It has created a special field of management strategies to handle the issues caused by the shifting economic landscape, the process of globalization, the rapid growth of technology, and the quality concerns of the stakeholders. According to R.A, Yamin, and D. J. Harmelink, 2001 efficient project management requires that the construction process be planned, predicted, and controlled. To finish the task, project managers need continually use timetables. Time, money, and quality are the three variables that are considered during the project management process. The standards of quality and the amount of time required to complete a project must be taken into consideration when estimating its cost. There is computer-based software available for managing the events or activities that are specifically made for planning and scheduling. such as Primavera, MS Project, and MS Excel. The planning and scheduling of the M.S. project is the purpose of this thesis. to be aware that automated approaches are simpler and more effective than manual ones. Although this program is largely based on manual procedures, it is more accurate and faster than manual approaches. The domain is called Indraprastha Greens. It is a 10-block, 7-story multi-story construction project. There are two sorts of flats, and each flat has five blocks. Each story includes four apartments. A Deep Group of companies constructed the project. The Microsoft project should develop a work schedule from excavation to completion and alert the critical path. There should be a resource allocation for each task and piece of equipment. In the M.S. project, the cost of the labor and supplies should be calculated. The good results of the planning and scheduling should be clear from this thesis. This thesis is genuinely investigating/notifying the right project management with Microsoft Project, which will notify the project's duration, deadline, cost, and material (Aldrin, 2021). Project planning and scheduling are crucial tasks in the construction industry. Primavera software and Microsoft Project were the two regularly utilized programs compared in this project. A significant amount of paperwork is needed for job planning and scheduling, which makes administration very difficult. A project management tool that aids in giving planning a planned approach can help overcome these issues. Due to their similar technological features, this analysis was conducted in order to compare and contrast each option's ability to manage a project.

Both programs had certain advantages, but Primavera received higher marks overall than MS Project. MS Project received the highest rating for usability as well. Primavera and MS Project are used in this study's case study to demonstrate how to correct planning and scheduling are carried out (S. Ravi and R. N. Uma, 2017). Construction project study about excessive stake endeavor aiming at a

time certain programmed performance goal. Except combined resources are deliberate/procured, no activity may be completed in line with a pre-fixed timetable. Project managers ought to take complicated choices under exceptional scheduling desires and below situations of uncertainty that every so often expand past assignment intervals. The project study offers with useful resource scheduling for a quick-track project with constrained intervals. The learning has been executed in stages. Inside the first segment, with the useful resource of MS Project software task timetable for numerous activities for the development of a business construction become prepared. Finally, requirements of sources had been attributed to the activities primarily depending on Standard Schedule Rates. The considered necessary necessity information collected from the designated drawings and triumphing site online situations. The analysis was completed with the aid of useful resource leveling for diverse activities by way of reducing resources with accelerated length to observe the time-cost implications (T.Subramani, and T.M.Karthick, 2018). Information about the deemed essential necessities was gathered from the successful site online scenarios and designated drawings. The investigation was done by using resource leveling for a variety of tasks by rapidly reducing resources to observe the time-cost effects. (TM Karthick and T. Subramani, 2018). In the last ten years, India's construction industry has grown rapidly. Construction is a challenging activity that requires careful resource planning and capital management. Projects today tend to be more sophisticated in nature. The necessity to concentrate on quality and workmanship has arisen due to the industry's growing competition and safety concerns. Any project's success depends on the effective management of Time, Quality, and Cost. By gaining on-the-job management experience, it has been determined that resource scheduling is the most crucial aspect of project management. Our project involves project scheduling while keeping track of activities and minimizing time, resource, and financial waste (Chourajit K Sharma, et al, 2016). The majority of construction projects experience cost and time overruns as a result of numerous causes. Earned value management is a method for evaluating the performance of projects that has its roots in industrial engineering but has been modified for use in project management. Software for earned value analysis is created in Visual Studio 2008. The created program is compared to M.S. Project 2007/Primavera P6 in the following step. Therefore, it can be inferred that the program might be applied to a variety of projects for the computation of earned value analysis. It has been noted that specific factors during the construction project may cause delays in construction activities. The project will go over budget and in terms of time as a result. Therefore, finishing the project on time and on the budget has grown into a serious issue. The idea of construction project management through Earned Value Management System is assessed as a remedy for this. A potent methodology used for project monitoring and control is called earned value management. The project management method known as EVMS was created to gauge the project's performance and progress based on this. of the timetable, price, and job completed. This method allows for the investigation of the project status in active projects at any point and can determine whether the project is on time, on budget, or both. Also, the estimated cost and time required to complete the project from the current situation can be investigated (Chandrakala S, et al, 2020).

The usage of machinery, equipment, and dealing with human capital are key parts of any construction project due to the quick development of science and technology, which connects numerous project operations via CPM. It is a useful tool for planning the activities of intricate projects. It is a method, algorithm, or approach for planning projects involving many activities that entail intricate, interconnected relationships. It is frequently used for project network analysis. The project uses the software programme Microsoft Project to plan, schedule, and optimize the use of resources. As a result, the design fully optimizes project costs, resource allocation, and smoothness (Mantravadi V V Lakshmi Lalitha Saranya, et al, 2019). The major objective of this study is to develop a teaching assistant that can help discrete civil engineering students with their practice by analyzing problem statements and giving them the right feedback when

they run into trouble. The objective of this paper is to provide an overview of estimating and scheduling for a multi-story building. The inputs for this paper are a number of randomly generated exercises in MS Project format, and the method I used to solve these problems produces a scheduled estimation of a building that is properly controlled with how much money will be required for the basic construction work in a timely manner. All of the inputs were assumed, and depicted in the designs, and the estimated duration and cost of the project were calculated. Due to a lack of financing as a result of unanticipated events, the project's comprehensive estimation was not finished. Because certain resources aren't taken into account, the project's planned expense isn't as accurate as it should be (Alok Sharma, et al, 2021).

The essay discusses the risks that multi-story building construction projects face, including excessive rain and pandemic COVID-19. For the planning and scheduling of the building, MSP, a project management technology, is used. This job is divided into four stages for convenience in its execution, with each stage using a project management tool to plan and schedule construction. Only the project's duration is taken into account in the first stage, with no consideration of delays; heavy rain is taken into account in the second stage; pandemic COVID-19 is taken into consideration in the third stage; and in the fourth stage, advanced project management techniques are used to plan and schedule taking into account both delays in order to reduce the overall delay. With the aid of the MS Project tool, an effort was made to reduce the delay by using several approaches including resource augmentation, project crashing, decreasing dependencies, and effective critical path tracking (Kratika J. Deshpande and Amey A. Kelkar, 2020). The storage and economical construction of the material benefit from material management. The findings demonstrate how applying material management techniques improves material flow, quality assurance, and material waste reduction. Using MSP software, project management technology is used to plan and schedule an ABC examination of a residential building. A thorough grasp of the various materials utilised in residential constructions and their effect on the project's overall cost is provided by ABC Analysis. It concentrates on initiatives that make the biggest savings possible. These waste materials should be avoided because the fabrication of construction materials uses a lot of resources and money. According to Vinayak B. Somawarad and Rashmi J. V. (2019), this aid boosts the economy in the building industry. Due to the growing complexity of the construction industry, planning and scheduling play a crucial part in projects. Construction Planning is the essential precursor to scheduling, figuring out the general flow, outlining labour duties, specifying building techniques, and allocating responsibilities. Inadequate planning might cause significant delays in the project's progress. There is an enormous amount of paperwork required for the planning and scheduling tasks, which makes management exceedingly difficult. A project management tool that aids in giving planning a planned approach can help overcome these issues. Primavera and MS Project are used in this study's case study to show how good planning and scheduling should be done (S. Ragavi and R. N. Uma, 2016). Rhuta Joshi (2015) compared the time costs in residential construction and used MSP 2013 to analyze manpower resource restricted projects. In order to make a project profitable, it is useful in reducing project length while utilizing the few resources that are available. They came to the conclusion that projects get delayed without effective resource scheduling and those resources can be leveled to shorten project duration and lower project costs (Rhuta Joshi and V. Z. Patil, 2015). Abhishek Sharma (2015) Many projects experience time and expense overruns as a result of poor planning, scheduling, and job completion. This leads to a variety of problems, including delays in the provision of facilities, development, reductions in the quality of construction, and an increase in project cost. MSP, a project management tool, is also used to compare the project's baseline length and cost to its actual duration and personnel costs. The schedule report is looked at, and the delays' causes are reviewed. This delay is the result of insufficient workers, the contractor's failure to begin multitasking activities on site, a lack of shuttering materials, and work that was carried out haphazardly

on the job site (Abhishek Sharma and K. K. Pathak, 2015).

Suresh Kumar E (2015) Utilizing MSP software for scheduling comprises estimation, activity sequencing, resource allocation, and timing. The goal of construction scheduling is on-time project completion and resource allocation. A common technique for gauging a project's progress at any given moment in time, EV Analysis forecasts the project's completion date, and final cost, and analyses variances in the schedule and budget. (E. Suresh Kumar and S. Krishnamoorthi, 2015) Scheduling with MSP Software provides good management and appropriate results. Skills and Techniques for Project Activities to Meet Project Requirements, P. M. Wale (2015) It is a planned capacity to act successfully for organizations, enabling them to connect project outcomes to organizational goals and, as a result, to compete more effectively in their marketplaces. Planning, arranging and regulating exciting resources, methods, and protocols in order to fully realize goals in scientific or everyday situations. assist in resolving issues with the standard planning and management methods. It aids in the most efficient/optimal organizing of tasks, aiding in the creation of a vision for completing the project on schedule and within budget. An effort is made to create an efficient plan and timetable for the (G+2) home building project, which will make project administration much simpler. Software is used to estimate the amount of time each task will take to complete (MSP 2010). Each of these activities is given the resources it needs to be completed. Weekly cash flow has been generated and the cost necessary to complete all activities and stages of development in the project is also examined (Vishnu, et al, 2017). According to a study by S.K. Nagaraju et al. (2012), when resource constraints are reduced by 10 to 50 percent, the overall time required to complete tasks increases by 2 to 18.23 percent. Reduction in resource constraints causes a 19.7% increase in the time needed for resources like masons. It will provide a surcharge for unforeseen expenses and, in the end, increase total job costs by about 1.684 percent. Countries all over the world give the construction industry a lot of preference because it significantly contributes to the development of a country. However, the use of traditional practices and improper planning reduces the efficiency of the industry, which has an impact on the project by lengthening it and increasing overhead costs as well as the quality of the work.

MSP software is a powerful project management solution that is introduced in order to fix these faults in building projects. In this study, the development of Unicon North Brooks 46 residential apartments uses project scheduling, estimating, and resource allocation. The building project's many tasks are estimated, and the operations are scheduled. By allocating resources, the project's cost, time, and supplies are determined. Earned value analysis is used to assess ongoing progress and analyze performance (Roopa, M., et al., 2019). Thus, the importance and benefits of adopting planning software will be described using the data findings. Multinational construction companies have been adopting software as a platform for scheduling, but due to a lack of knowledge about project management concepts and a distaste for using computer-based tools, small and medium-sized Indian construction firms face a variety of challenges, including poor planning, project delays, resource inefficiency, and other problems. As a result, it is feasible to compare how a building is planned using various pieces of software and determine how beneficial they are for planning multistore buildings that are being built (Shrikant R Kate, et al., 2018). In building projects, planning and scheduling play a crucial role. Inadequate planning can result in significant delays in the project work. Construction planning is the essential forewarning for Scheduling and determining basic sequence, defining labor duties, construction methods, and assigning responsibilities. A significant amount of documentation is needed for planning and scheduling tasks, which makes management exceedingly difficult. In this study, two software programs were employed to characterize the project in terms of how the programs operated. MSP and P6 are used to analyze projects in order to determine their completion dates. Due to the more accurate computation used in Primavera P6, it performs better than MSP when project management software like MS Project is tested during this investigation. One of the WSBs is taken into account when determining

both the software's ultimate dates of activity and its viability (Sudarshan. S. and Geena George, 2021). The primary factors used in the Earned Value Analysis calculation for cost control of civil construction projects are presented and discussed in this paper. This dissertation has three main goals. First of all, C# and Visual Studio 2008 were used to create the Earned Value Analysis software. SQL Server 2005 was also used. The produced software is compared to M.S. Project 2007, Primavera P6, and a few other characteristics. Thus, it can be inferred that the program might be employed in a variety of projects for the computation of earned value analysis (Sagar K. Bhosekar and Gayatri Vyas, 2012). Every construction project needs cash flow because it provides a detailed understanding of how much money we are spending on the project as a cash outflow and how much money we are receiving back from the project as a cash inflow. When we combine the two with the aid of a graph, we can understand how much money is coming in and going out each month, making it simple to compare and determine how much profit we are making. We can also plot an "S" curve using this information. For this case study, the floored building in Bavdhan collected data such as item-by-item quantities in each activity, basic labor & material rates, total consumption of items for each activity, and total BOQ from that, which demonstrates item-by-item quantity, rate, and amount. This project made use of MSP software, which allowed for the work breakdown structure creation of all the activities, the assignment of durations, the setting of baselines, and the connecting and tracking phases. The resource cost summary report is generated in MSP using visual reports for the entire project duration and we can do this for each month as well to understand how much cost was spent on each resource in each month. It gives the planned and actual duration of the project from which we can understand whether the project is as per plan or it is lagging and by how much duration it is lagging. The project duration can then be readily calculated using the inflow/outflow generated and a combination of inflow and outflow generated which can comprehend simultaneously. Like this, any project will generate cash flow, which is crucial for understanding how much money is being spent and how much is being recovered (Dipti, R. Shetye and S..S.Pimplikar, 2014).

They will get the chance to clearly see, notice, celebrate, and obey the differences between Microsoft Project and conventional planning methods thanks to the task that is being given. which, with the aid of a case study on a single wing of a project completed in Pune, Maharashtra, India, expedites construction and also makes the project cost-effective with proper planning. International journal papers were consulted for information on various factors that demonstrate (generating very little waste) planning and project execution, very different ways of doing things, and measures to find out (education that remedies anything) methods of operation. Adopted comprises identifying the problem statement, implying negative goals from the initial (or most important) data and secondary data acquired, carefully examining the data, and ultimately arriving at the end/end result (S. T. Gavde, et al, 2018). The most popular technique for analyzing a project's performance is earned value management. The project possibility, budget, and agenda procedures are all incorporated into EVM to help the project management team measure project performance from start to finish. It can make precise forecasts about project performance issues, which is a crucial function for project management. EVA depends on two crucial components, including thorough cost information and effective project development. If these two aspects of the project are well-organized, the profit will be valued without a doubt. The development, fundamental terminology, and practical application of earned value analysis in construction operations utilizing MSP Software are condensed in this paper. EVM can be implemented in the construction sector in a variety of ways. MSP is a programme that accurately and promptly defines earned value and its contributing factors (Lavanya S. and G. Narayana, 2019). Work delays are frequent in building projects. Delay significantly affects time and cost overrun. The use of project management can reduce or eliminate delays in future projects. Two private residential units are taken into consideration for evaluation in this article. While the second project lacks a software-based execution process, the first project did. The first project, which was prepared

with a time schedule, resource allocation and levelling, estimation, billing, and cash flow all in detail using software tools, helps to execute the project with more profit and less delay in work execution, while the other experimental project, which had no plan, the same amount of resources, and poor execution, resulted in significant loss and increased stress for the builder (V. Subburaj, et al., 2019). A high-rise residential building is a style of housing with several dwellings constructed on the same piece of property. The rapidly expanding population, which is primarily urban, is driving up demand for tall structures. Global urbanization and population density in cities are rising as a result of the world's largest cities' expanding economies and constantly rising populations. In comparison to low-rise buildings in the same area, towering buildings may house a lot more people on a smaller plot of ground. It focuses mostly on managing high-rise construction projects. The scheduling of numerous activities has been done in MSP Software by adding multiple activities, time, resources required, and the cost of each activity. The many challenges encountered throughout the course of the project were also recognized and resolved (Affan Shaikh et al., 2021). This study compares two widely used project management programs based on their efficacy and efficiency. Primavera P6 R16.1 Professional Project Management and MSP 2016 are the programs taken into consideration. Performance features of the two software were chosen, and a questionnaire survey approach was employed to achieve the comparative purpose. The survey findings enable us to evaluate and compare the two pieces of software on a number of different criteria. The findings indicate that Primavera is a software that is significantly more effective than P6, but Microsoft Project is significantly more effective. The fact that MSP received a higher star rating only serves to emphasize the idea that people's usage of the software is not primarily determined by the sophisticated tools and features it offers, but rather by very basic things that make using the software easy and aid in the user's task completion. Primavera P6 is ultimately outperformed by MSP (Keshav Phophalia and Riddha Basu, 2018).

The scheduling and project monitoring processes are covered in the current study, along with a discussion of the key variables used to calculate Earned Value Analysis for cost control of construction projects. Project EVM calculations are performed using MSP 2016 software. The major goal of the project is to monitor the ongoing work and conduct analyses for efficient scheduling and cost-benefit calculations. For cost control and work rescheduling in this project, the use of earned value analysis has been effective. Better project tracking is achieved using it (Surendra Prakash Khandagale and Aparna Panganti, 2020). A high-rise building is constructed in a repetitive manner, using the same basic unit (a typical poor of structure) repeatedly. There is evidence that because of resource and time constraints, contractors avoid using Gantt charts and network schedules in extremely repetitive projects. Cost and schedule are the two key criteria that govern every construction project. The completion of the project on schedule, within budget, and with guaranteed quality is the main objective of project management. It is challenging to constantly assess plans, analyze costs and timelines, and carry out necessary corrective actions while using standard execution methodologies (Tushar Divekar, 2021). The maintenance of the Workflow, Resources, and Project Cost are only a few of the many complexities that are typically present in construction projects. MSP and Primavera are two common management software systems used to avoid or reduce the project complexity. Use MSP in this project to plan and schedule the construction of multi-story buildings. The building is a G+16 structure with 16 stories total, with the stilt floor being utilized for parking and the remaining 16 floors being used for apartments. The building has 32 4BHK apartments and 32 3BHK apartments. There are 64 flats total in it (B. Arun Kumar, 2019). The goal of the current effort is to investigate scheduling techniques and the construction system of work for multistory structures in order to use Microsoft Project software to the planning, scheduling, and cost of conformance for a multistory RCC building. To achieve the aforementioned goals, a fictitious RCC residential G+7 building is taken into consideration. This building's whole planning and scheduling are examined using traditional methods employed by

architects, engineers, and contractors and are then contrasted using contemporary computerized methods. The RCC building is scheduled and planned using MSP software in this method. By using schedule crunching and project crashing techniques, Microsoft Project software generates Gantt charts for the scheduling of construction projects effectively and delivers the shortest possible construction time. The current paper (Sachin Pashupatihal and Vidyasagar V. Moogi, 2019) provides valuable information about the use of Microsoft project software for the planning and scheduling of building construction. The building industry is one in which both time and money are crucial factors. Because each project in this sector has specific characteristics, it is crucial to plan and schedule each project's numerous operations. The resulting delays increase costs, which put a strain on the budgeted cost. As a result, planning and scheduling must be done and adhered to for the project to be completed successfully. In this piece, a residential building project is taken into consideration, and MSP is used to plan and schedule its implementation (Prajakta Prasad Gauns and Amey A. Kelkar, 2019). Planning, arranging, handling, and storing inventory are all related. a sufficient level of inventory that best meets consumer demand. Using Microsoft Project software, it connected to schedule performance and safety productivity. Our study's major goals are to analyze inventory control in building projects and inventory management with the aid of Microsoft Project. We create a work schedule and level the resource prior to construction in accordance with MSP's predetermined project duration. When the material is managed according to activity, it provides information on when the material is needed. ABC analysis and EOQ analysis are the first inventory control techniques to be used. To make an inventory report easier to understand, it might be prepared according to the construction project's activities. The study's invent reports fort the final product—shows the activity and material requirements (Pritilata H. Patorkar and N.W. Ingole, 2021). The fundamental goal of a construction project is not simply to carry it out or finish it; rather, it should be to do it within the allotted time frame, with higher efficiency and economy, as these factors are crucial to the project's successful conclusion. According to research, the conventional way of estimating project length is laborious. The construction process can be optimized to avoid time and expense overruns using a variety of tools and strategies. The effects of using MSP software to manage building projects have been investigated (Dhanashri M. Panchbhute and P. P. Bangale, 2018). A well-known project management tool is earned value. It is a widely used technique for gauging a project's progress over time, estimating its completion date and total cost, and tracking changes in the schedule and budget as the project moves along. Using the quantity of work completed and the baseline cost for the task, assignment, and resources, it calculates how much of the budget should have been spent on the project. The use of the building software that is currently on the market should be effective in organizing using this entire information. In order to exercise better project management, this thesis stresses the usage of these strategies in contemporary software like Microsoft Project (Devanshu S Varia, et al, 2018). Despite the fact that project management best practices are widely known, they are frequently not used in India's conventional construction projects. It has inspired us to work on a project utilizing a contemporary project management tool that is on the market, and to compare it to the currently used traditional software (Excel). To get a sense of the different project management approaches used in the construction sector, an online poll was conducted with a focus on all project stakeholders. Notably, Microsoft Excel is still used by 80% of India's construction industries for project planning, scheduling, and control, and 86% of those companies believed that they needed to adapt to new software. Then, we approached a Pune-based construction firm where Excel continues to be the main tool for project management. Its goals and ambition to use MSP to work on a project. In comparison to those produced by utilizing conventional software, the outcomes were noticeably better (Shubham Laddha, et al, 2017). Analyzes the viability of creating construction schedules using critical path method models. MSP software and CPM calculations were used to assess networks. The use of CPM scheduling software is now required by many contracts, therefore it's here to stay. The majority of people that use MSP on

construction projects discover that it works great for planning the work but is very challenging to utilize for updating the status and accurately anticipating project completion. Additionally challenging to utilize while doing delay analysis is MSP. This will clarify the ideal way to use MSP in place of P6 or other scheduling tools that are more status-oriented (Gokul. G, et al, 2019). Utilizing MSP Software for scheduling requires estimation, sequencing of the tasks, and resource allocation/timing. The goal of construction scheduling is on-time project completion and resource allocation. A project's scheduling with MSP Software provides good control and a clear schedule. The typical approach of evaluating a project's progress at any given point in time, forecasting its completion date, estimating its final cost, and analyzing variances in the project's budget and schedule is called EV Analysis. This study focuses on apartment building scheduling utilizing MSP and EV Analysis. Process time and cost overruns are prevented in this way (A. Daisy Rany and T. Sathis Kumar, 2020).

III. METHODOLOGY

BIM is a technique that combines technology and information to generate a digital model of a project that incorporates data from sources and changes over the course of the actual project (timeline, including design, and construction). BIM is software that enables collaboration between owners, architects, and contractors on all facets of building design by enabling the creation of a realistic digital representation of a building.

1. Project Management Software

The following software was used in order to create 3D models such as Autodesk AutoCAD, Revit Architecture, MSP, and Navis works. It's possible to adopt the MSP software in order to achieve the desired objectives like scheduling/cost flow/allocation of resources/Gannt chart (Figure 1 Flowchart of Project methodology) for this research work. Thus, the project's goals in the current study effort are as follows: design the proposed building's layout using AutoCAD; create a three-dimensional model of the structure using Rivet, and estimate the building's cost. As shown in Figure 2, a methodology can also be used to compare cost estimation methods using BIM software and manual approaches.

Figure 1: Flow chart of Methodology

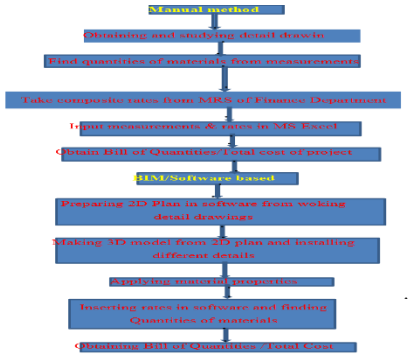


Figure 2: Compare cost estimation by Manual/BIM based software

This study compares manual and BIM software-based ways to cost estimation. This project intends to apply a centre line method for manual/Revit software for BIM-based approaches. The goals of this project are to estimate quantities using the manual centre line approach, estimate costs using the BIM tool Rivet, and then compare manual and BIM/software-based estimation. Bangalore is the location of the building site chosen for cost estimation in this study. The software's actual input, including WBS, activities, start dates, finishes, resources, and daily updates, is completed and examined. A Gantt chart is created, and results between actual time and the time needed according to the software should be compared. According to Pinto (1986), the project management process is complex and demands close attention from all parties to a wide range of human, financial, and technical elements. Different project success elements might contribute to a project's success. MSP software is used for resource scheduling and

allocation in this particular study project. The planning, scheduling, and monitoring of the construction of a Residential Block at Banaglore (G+4) floor building project are the topics of the current study. Without having to go through a lengthy list of tasks, as is the case in the case of the current study work, it is possible to immediately detect late tasks from the project schedule (Table 1). A late task is one that has a baseline start and finish date but whose current planned or actual start and finish dates are later than the baseline start and finish dates, or whose actual work effort is lower than the baseline work effort up to that point. It is a basic/daily responsibility for project managers to flag late assignments in MSP. The creation of the project's work plan is one of the first significant responsibilities in project delivery. Utilize the Built-In Late Tasks/Option Highlighting Use the Customized Highlight feature in MS Project, a Custom Status Field, or the Baseline Feature to display slippage and delay. Use the built-in filters and the built-in and custom groups. Use the Status Field/Status Indicator Field.

Details about Residential Building

Case study on a Residential building project at Bangalore with a (G+4) floor with staircase room which costs about Rs. 2,31,92,132 consisting of Ground floor/First floor/Second floor/Third floor/Fourth floor. Concrete M10 grade for PCC, M20 grade for Footing, M 25 grade for Columns, Beams/Slabs, M25 grade of concrete for Stair case (12/16 mm diameter bars) were used. Sump brick work-4-inch block, M 20 grade of concrete for Plinth beam, Footing reinforcement-20/8 mm diameter of steel. Column fabrication-25 mm diameter of steel with 252.54 MPa. Beam fabrication-12 (260 MPa)/16 (260 MPa)/20 (260 MPa)/25 (12.5 MPa) mm diameter of steel bars and for in case of slabs fabrication 8 mm diameter were used. Walls and Corridors primer paint- 1 coat primer of celling, 1 coat primer walls, 2 coat putty, 1 coat paint, final coat painting tractor Asian paint. Tiles-Tile cladding (granting)-Granolithic flooring. Flooring- Flooring for rooms/Corridor staircase-ceramic tiles. Electrical work-Galvanized wires 100 mm, and Curtain wires were used. Plumbing work-Plumbing pipe CPVC. General excavation in all soils up to 0.50 mts depth excluding hard rock and soft rock. Filling of the earth in plinth with surplus earth available at site including watering/ramming. Earthwork excavation for foundation in all soils excluding hard rock/soft rock up to 1.80 m depth including back filling of excess earth. Antitermite treatment for foundation and plinth in three stages: foundation, plinth/after completion of flagging coarse. Providing and laying P.C.C 1:4:8 for foundation by using 40mm /down size aggregate including ramming/curing. Providing and laying RCC 1:1.5:3 by using 20mm/down size aggregate for column Footings with necessary shuttering including curing. Plastering with lime rendering in C.M 1:5 for internal walls including scaffolding and curing. Plastering with lime rendering in C.M 1:4 for ceilings including scaffolding/curing. Providing/construction of Brick masonry 230mm thick in C.M 1:6 including scaffolding and curing. Providing/construction of Brick masonry 115 mm thick in C.M 1:6 including scaffolding and curing. Providing/constructing R.C.C 1:1.5:3 underground Rain water sump with necessary excavation 1:4:8 and internal water proof plastering in C.M 1:4. RCC roof cover slab, with glazed tiles dadooing for all inside surfaces. Providing/fixing Doors with Honne wood frame/Designer flush shutters.

IV. DISCUSSION ABOUT RESULTS

1. Late Tasks

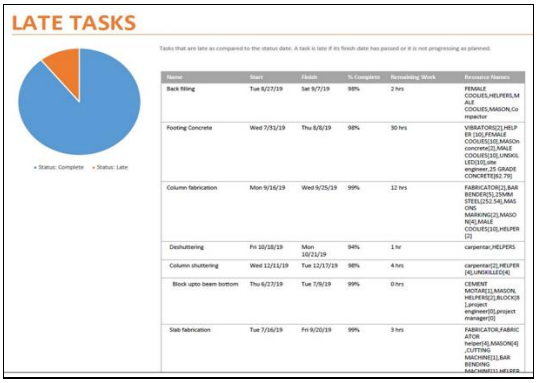
In MS Project terms, late means that the task is running behind the baseline start and baseline finish dates. You can have a task that has not started (late starting), has started (on time) but will finish late, started early but will finish late, or finished late (Table 1).

Create a Late Task Report in MS Project

Click the View tab → Data group → Filters → More Filters → choose filter as Late tasks, Slipping task. MS Project 2013 will filter the task list to show only the tasks filtered in this process. So, if you select Slipping Task, you will view only incomplete tasks. Any task that is already completed will not show up. Tasks that are in progress with future completion dates are reported as late. All the tasks are manually scheduled.

There are no predecessors or successors. There are no deadlines or constraints assigned and they are not milestones. Percent Complete is a field that is calculated based on Actual Duration and Duration and it indicates how much progress has been made on the project or on tasks. How is % complete calculated? The % complete has the following formula % complete = (Actual Duration/Duration) *100.

Table 1: Details of Late task



					5[3],8MM STEEL[21],10MM STEEL[50],project engineer,project manager
Concreting	Sat 7/6/19	Tue 7/9/19	94%	8 hrs	25 GRADE CONCRETE[2.5],MASON,HELPERS[3],VIBRATORS[1],FEMALE COOLIES[4],TOWER CRANE[1],OPERATOR ,RM 800[1],MALE COOLIES
Block upto beam bottom	Fri 2/21/20	Wed 3/4/20	99%	0 hrs	CEMENT MOTAR[1],MASON,HELPERS[2],BLOCK[8],project engineer[0],project manager[0]
acid wash	Thu 5/2/19	Mon 5/6/19	96%	2 hrs	acid,FEMALE COOLIES[2]
Beam and slab concreting	Thu 3/12/20	Sat 3/14/20	92%	4 hrs	20 GRADE CONCRETE[32.92],MASON,HELPERS[4],MALE COOLIES[2],FEMALE COOLIES[4],project engineer,project manager
Beam and slab deshuttering	Mon 4/13/20	Fri 4/17/20	97%	1 hr	carpentar,HELPERS
Fabrication	Wed 12/25/19	Fri 12/27/19	99%	0 hrs	FABRICATOR,FABRICATOR helper,8MM STEEL[0.1],12MM STEEL[0.3],16MM STEEL[0.1]
Laying upto lintel level	Mon 6/3/19	Sat 6/22/19	99%	0 hrs	MASON,HELPERS[2],BLOCK[15],CEMENT MOTAR[1]
Lintel beam	Sat 6/22/19	Sat 6/29/19	99%	0 hrs	MASON,HELPERS[2],BLOCK[1],CEMENT MOTAR[1]
Block upto beam bottom	Sat 6/29/19	Thu 7/11/19	99%	0 hrs	CEMENT MOTAR[1],MASON,HELPERS[2],BLOCK[8],project engineer[0],project manager[0]

Electrical fitting	Fri 8/23/19	Sat 9/21/19	96%	5 hrs	ELECTRICAL FITTINGS[6],ELECTRICIAN,electrician helper,project engineer,project manager
final coat painting	Fri 6/19/20	Tue 6/30/20	99%	1 hr	tractor asian paint[1],PAINTER,HELPERS,project engineer,project manager
toilet,balcony.utility water proofing	Thu 11/5/20	Mon 11/16/20	99%	1 hr	FOSROC CHEMICAL IN BATHROOM[1],MASON,HELPERS,project engineer,project manager
Shuttering with lubrication	Thu 6/11/20	Mon 6/15/20	96%	1 hr	carpentar,HELPERS
Fabrication	Mon 6/15/20	Wed 6/17/20	96%	1 hr	FABRICATOR,FABRICATOR helper,8MM STEEL[0.1],12MM STEEL[0.3],16MM STEEL[0.1]
Concreting	Fri 6/19/20	Sat 6/20/20	78%	7 hrs	25 GRADE CONCRETE[2.5],MASON,HELPERS[3],VIBRATORS[1],FEMALE COOLIES[4],TOWER CRANE[1],OPERATOR ,RM 800[1],MALE COOLIES
Deshuttering	Sat 6/20/20	Mon 6/22/20	88%	1 hr	carpentar,HELPERS
Laying upto lintel level	Mon 6/3/19	Sat 6/22/19	99%	0 hrs	MASON,HELPERS[2],BLOCK[15],CEMENT MOTAR[1]
Lintel beam	Sat 6/22/19	Sat 6/29/19	99%	0 hrs	MASON,HELPERS[2],BLOCK[1],CEMENT MOTAR[1]
Block upto beam bottom	Sat 6/29/19	Wed 7/10/19	99%	0 hrs	CEMENT MOTAR[1],MASON,HELPERS[2],BLOCK[8],project engineer[0],project manager[0]
Flooring for rooms	Wed 8/28/19	Fri 9/6/19	99%	4 hrs	CEMENT MOTAR[10],ceramic

					tiles[50.43],MASON,HELPERS[2],MALE COOLIES[2]
Corridor staircase	Fri 9/6/19	Wed 9/18/19	99%	3 hrs	CEMENT MOTAR[3.3],ceramic tiles[40],MASON,HELPERS,MALE COOLIES[2]
inner door fixing frame and windows frame	Mon 7/29/19	Sat 8/3/19	99%	0 hrs	MASON,HELPERS,PLYWOOD DOOR SHUTTER[9.11],DOOR STOPPERS[13],HANDLES[13]
Terrace water proofing	Thu 5/2/19	Mon 5/13/19	99%	1 hr	MASON,HELPERS,project engineer,project manager,FOSROC CHEMICAL
False Ceiling	Mon 5/13/19	Thu 5/23/19	99%	4 hrs	gypsum (false ceiling)[80],carpentar[2],HELPERS[4]
acid wash	Thu 5/23/19	Thu 6/6/19	99%	2 hrs	acid,FEMALE COOLIES[2]
balcony railing	Thu 6/20/19	Fri 6/21/19	95%	6 hrs	MASON,HELPERS[2],railings[6]
Column shuttering	Fri 5/22/20	Fri 5/29/20	98%	4 hrs	carpentar[2],HELPER[4],UNSKILLED[4]
Shuttering with lubrication	Thu 6/11/20	Mon 6/15/20	96%	1 hr	carpentar,HELPERS
Concreting	Fri 6/19/20	Mon 6/22/20	95%	8 hrs	25 GRADE CONCRETE[2.5],MASON,HELPERS[3],VIBRATORS[1],FEMALE COOLIES[4],TOWER CRANE[1],OPERATOR ,RM 800[1],MALE COOLIES
Deshuttering	Sat 6/20/20	Tue 6/23/20	94%	1 hr	carpentar,HELPERS
Block upto beam bottom	Fri 10/25/19	Fri 11/8/19	99%	0 hrs	CEMENT MOTAR[1],MASON,HELPERS[2],BLOCK[8],project engineer[0],project manager[0]

2. Cash Flow

The net cash flow related to the project for that year is known as the project cash flow. Calculation: Sources of Cash - Uses of Cash = Project Cash Flow. The method of indicating the cash flow incidence for the project or account is provided by project financial planning. Cash flow is impacted by the occurrence of cash flow. All cash from operating, investing, and financing activities should be added to or subtracted from. Add the final result to the starting cash balance. Cash Flow is then calculated as follows: Cash Flow = Cash from Operating Activities + (-) Cash from Investing Activities + (-) Cash from Financing Activities + Beginning Cash Balance. It is possible to project account payables clearly with good cash flow management. Have access to the ingredients you need when you need them. When the cash flow is consistently positive, you can begin to consider extending your product offering. Profit is what is left over from income after expenditures are removed, whereas cash flow is the money that comes in and goes out of a construction project over the course of a specific time period. Complex and dangerous are construction undertakings. Poor cash flow can cause profitable construction enterprises to fail. Effective cash flow management is a crucial influence on contractor cash flow during the construction process if one wants to thrive in this rapidly changing industry. Every construction project needs sound financial management to ensure the availability of funding for tall buildings. The management of cash flow is essential to a project's success from the viewpoints of the owner and the contractor. Where the project cost and schedule overlap is in the cash flow. An inadequate cash flow forecast could prevent the project from being

funded. Before receiving final clearance, a project normally goes through several stages, including determining the number of things, estimating costs using market prices, planning activities using a bar chart, and carrying them out as intended. Additionally, a cash flow estimate is created to assist with funding choices at each stage. As the project gets closer to final approval, the intricacy of the cash flow prediction rises. The cash flow prediction for each project varies depending on how it is carried out (Dipti R. Shetye and M. R. Apte, 2013). Contractors who did not do cash flow analysis before to submitting project bids are those contractors who experienced failures in their annual project contracts, which can be attributed to poor cash flow management or forecasting. According to a survey, material management, followed by inventory and procurement, is crucial to the management of cash flow in the construction business. A survey also revealed that corporate assets, credit, and advance or progress payments are the main sources of capital. The finest example of managing cash flow in a construction project is inventory management (Vaidehi P. Nirmal, et al, 2019). A constraint is a circumstance, organization, or force that prevents the achievement of an aim or target. Due to the high amount of uncertainty inherent in the nature of construction projects, the construction business is one of the riskiest industries. Despite the fact that there are numerous causes, a lack of cash is one of the major issues endangering the success of construction projects and contributing to business bankruptcies. Therefore, while taking into account the risks and uncertainties of building projects, an appropriate cash planning technique is required for adequate cost control and effective cash management (Rupeesh S and P. A. Prabakaran, 2022).

It describes how money enters and leaves a company in relation to active projects. It is measured using an incremental type and covers revenue and project costs. It is crucial to calculate cash flow since it shows the overall intake and outflow of the project, and their combination produces cash flow, which makes it simple to calculate the project's profit. Similar to this, the cash flow analysis for the current research project may be predicted for the residential building, which is shown in Figure 3, from the years 2019 to 2022.

3. Cost Overview

The Forecasted Cost ('Cost') for the entire project is displayed in the report's upper left corner and is comprised of the Actual Cost plus the Remaining Cost. Along with the percentage of the project that is finished, it also displays the Remaining Cost separately. Keep in mind that the length that has passed is what this percentage pertains to. It makes no mention of the work that has been completed, the actual costs incurred, or the fact that the finished physical product has been created.

The Progress Versus Cost chart demonstrates whether or not your project is over budget. Your project can be over budget if the blue line is lower than the orange line. For each top-level task, the Cost Status table displays the Actual Cost, Remaining Cost, Baseline Cost, Cost, and Cost Variance. The Cost Status chart is a combo chart that displays the Actual Cost, Remaining Cost, and Baseline Cost in stacked columns for each top-level activity. The example makes it very evident that the preparation is almost complete and that it really costs less than the baseline cost (Actual Cost + Remaining Cost vs Baseline Cost) (Figure 4).

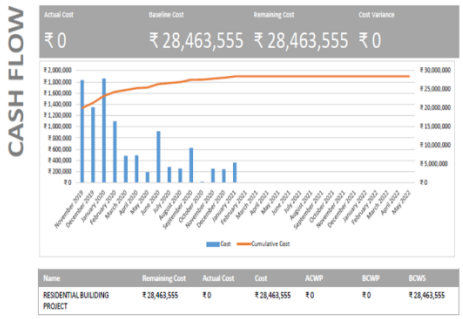


Figure 3: Cash flow analysis

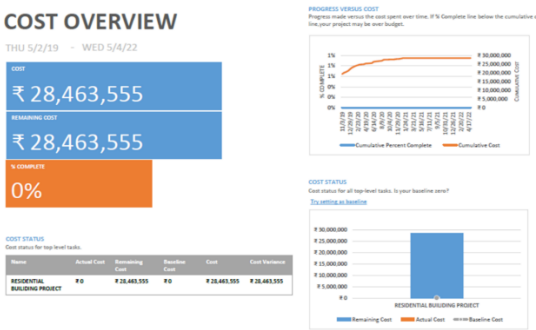


Figure 4: Overview of Cost

The Cost Overview report is a typical MS Project report that falls under the "Status Reports" category and offers comprehensive information on the project's cost status. The project manager can use this report to inform choices and take action to keep the project within budget by showing how financial resources are allocated over the course of the execution term. These reports can be examined from either the standpoint of resource costs or the cost of tasks, depending on the point of view. The baseline costs and cost variance can be shown in the report, which aids in spotting any possible cost overruns. These reports can be modified to become reports that fall under the "Baselines" or "Variance" categories, which provide comparisons between the intended and actual values.

4. Resource over Allocation

It is a procedure for managing and allocating assets in a way that aids a company in achieving its strategic goals. As shown in Figure 5 for the current research endeavor, it is possible to forecast the resources allotted for residential constructions. Resource scheduling, which is the planning of the activities and associated resources required for those tasks to be completed, is also known as resource allocation. Resources are either under or over-allocated when they are poorly managed. When there are more resources available than are needed to complete the task at hand, under-allocation takes place. Losses in money, potential, and production result from this. Over allocation covers areas where resources are misused. Resource over allocation can be caused by lengthening job duration, dwindling unit availability, and resources working full-time on numerous projects at once. The simplest way to cope with the over allocation is to postpone one of those tasks, ideally one with a lower priority than the others (Figure 5).

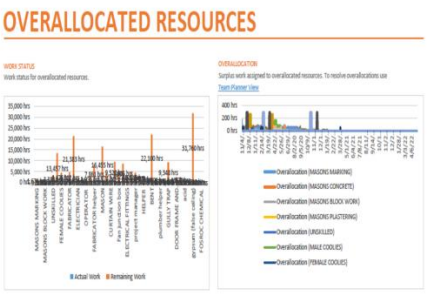


Figure 5: Resource Over allocation

When a resource is scheduled for more work than they can reasonably complete in their regular work capacity, they are said to be overloaded. The resource calendar and the resource availability parameters in the Resource Information dialogue box establish a resource's work capacity. Delaying one of those jobs, ideally one with a lesser priority than the others, is the easiest way to address the over allocation.

The project's completion date won't be impacted by adding a delay as long as it's less than or equal to the amount of leeway on the job. As a result, resource over allocation occurs when there are more tasks assigned than what your assigned resources can fairly handle or finish in an eight-hour workweek. A resource that is assigned to work full-time on more than one task at once is said to be over allocated. For instance, if you assign a resource to two tasks that last for eight hours each on the same day, only one task of that length can be completed on that day. How to deal with this specific resource over-allocation:

- Change Activity Relationships.
- Lengthen Activity Duration to Reduce Units/Time.
- Exchange One Resource for Another.
- Use The 'As Late as Possible' Constraint.
- Accept The Resource over-allocation.
- Reduce The Budgeted Units/Time Allocation.
- Summary.

Resources, when poorly managed, are either under-allocated or over-allocated. With under-allocation, it means that there are more resources on hand than it is necessary to complete the job at hand. This results in wasted money, potential, and lower levels of productivity. Benefits of resource allocation:

- There’s a reason resource allocation is a top priority among enterprises, small businesses, and everything in between.
- Without it, things can get out of hand and lead to employee burnout, poor performance, and missed deadlines.
- Advantages of efficient resource allocation
- Helps you plan
- Improves team well-being and morale
- Keeps everybody in the loop

5. Work Breakdown Structure

Work breakdown structure (WBS) codes are outline numbers that you can apply to tasks and edit to match the specific needs of your business. Project automatically provides basic outline numbers for each task, but you can apply your own customized outline scheme to the project at any time. From the present research work breakdown structure, it is possible to estimate the duration (942 days) for the residential building, which begins on Thursday, May 2, 2019, and ends on Wednesday, May 4, 2019, and costs around Rs 28,463,555. (Table 2).

Create a Work Breakdown Structure

Go to Project Service > Projects.
Click the project you want to work on.
In the bar across the top of the screen, select the down arrow next to the project name and then click Work breakdown structure.
To add a task, click Add Task.

To View WBS Codes, Display a Task View.

- To display the Task Sheet view, on the View menu, click More Views. In the Views box, click Task Sheet, and then click Apply.
- To display the Gantt Chart view, on the View menu, click Gantt Chart.

Create a Work Breakdown Structure for a Project

Create a work breakdown structure to represent the sequence of tasks in a project.

The work breakdown structure includes tasks, requirements for each task, and revenue and cost information. In your work breakdown structure, you can add:

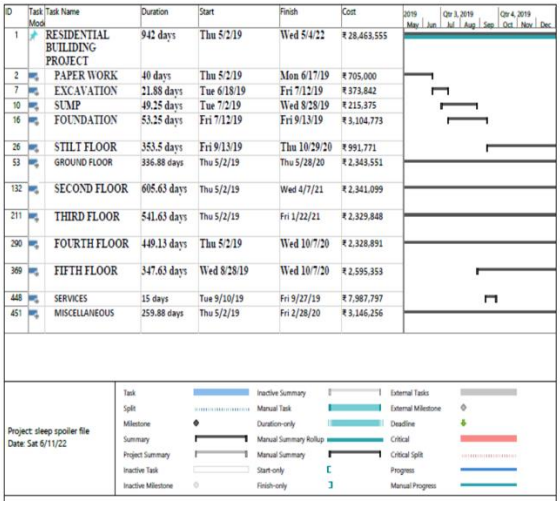
- The sequence of tasks in a hierarchy
- Other tasks, if any, that must be completed before a task can be started
- The starting date, ending date, and duration of a task
- The number of hours required for a task/Any required worker skills and education
- The workers who are assigned to a task/Estimated revenue and costs

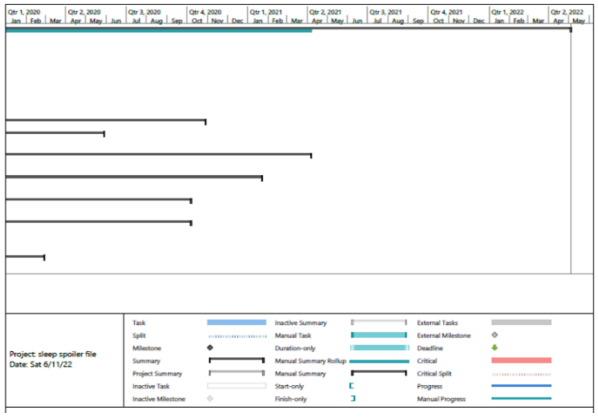
6. Usage of WBS

- Planning and budgeting/Scheduling/Estimating costs/Analyzing cost drivers
- Identifying risks / Making resource assignments/ Measuring and controlling performance
- Configuration management (work added or deleted)
- Communicating with the customer and other key stakeholders (especially about scope)
- Does not describe work at the smallest sub-tasks

Table 2: Work break down structure

ID	Task Mode	Task Name	Duration	Start	Finish	Cost
1		RESIDENTIAL BUILIDING PROJECT	942 days	Thu 5/2/19	Wed 5/4/22	₹ 28,463,555
2		PAPER WORK	40 days	Thu 5/2/19	Mon 6/17/19	₹ 705,000
7		EXCAVATION	21.88 days	Tue 6/18/19	Fri 7/12/19	₹ 373,842
10		SUMP	49.25 days	Tue 7/2/19	Wed 8/28/19	₹ 215,375
16		FOUNDATION	53.25 days	Fri 7/12/19	Fri 9/13/19	₹ 3,104,773
26		STILT FLOOR	353.5 days	Fri 9/13/19	Thu 10/29/20	₹ 991,771
53		GROUND FLOOR	336.88 days	Thu 5/2/19	Thu 5/28/20	₹ 2,343,551
132		SECOND FLOOR	605.63 days	Thu 5/2/19	Wed 4/7/21	₹ 2,341,099
211		THIRD FLOOR	541.63 days	Thu 5/2/19	Fri 1/22/21	₹ 2,329,848
290		FOURTH FLOOR	449.13 days	Thu 5/2/19	Wed 10/7/20	₹ 2,328,891
369		FIFTH FLOOR	347.63 days	Wed 8/28/19	Wed 10/7/20	₹ 2,595,353
448		SERVICES	15 days	Tue 9/10/19	Fri 9/27/19	₹ 7,987,797
451		MISCELLANEOUS	259.88 days	Thu 5/2/19	Fri 2/28/20	₹ 3,146,256





7. Costs in Microsoft Project

Microsoft Project has several methods for adding costs depending on cost type.
Work Resources – Paid for by the hour
Material Resources – paid for by the quantity
Cost Resources – Items with changing costs
Fixed Costs – One-off costs.

Resource Cost Overview

Work Resources

Resource Type Work: A 'Work' resource is paid for by the hour, and that may include machines/human resources. Labor rates can be added to each resource in Microsoft Project on the Resource Sheet. Any work, then assigned to a resource will generate associated costs:

Cost = Labour rate x Work hours

Material Resources

Resource Type Material: Material costs are paid for by the quantity, and the 'Material' field can then be used to describe the quantity (Box, Crate, Container). The cost is therefore a set amount per that quantity.

Cost = Resource quantity x Unit Cost

Use material costs when the cost is fixed for that material, and it may be used on many tasks. Assigning material resources to tasks will again automatically calculate the associated costs on the 'Cost Table'. The variation of Cost status/cost distribution which is as shown in Figure 6.

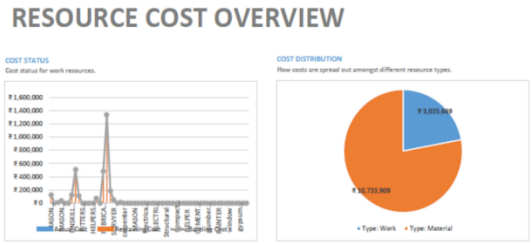


Figure 6: Resource cost Overview

In project management terminology, resources are required to carry out the project tasks. They can be people, equipment, facilities, funding, or anything (except labor) required for the completion of a project task. Optimum Resource Scheduling is the key to successful project management.

8. Resource Overview

The work status of all people (work resources) who are working on the project so it will know how much work is complete/what's left to be done. The Work Overview report is another report that belongs to the "Status Reports" category, with the main emphasis on the project work (actual work, remaining work, work stats). The report indicates what has been done to date and what's left to be done (Figure 7).

Figure 7: Overview of Resource

10. Work Overview

It is possible to examine the number of building floors, which will reduce the time and expense. MSP is a project management tool that aids in resolving issues that arise with conventional. MSP provides proper project planning, allowing management to set up the resources as needed for the project. MSP software can be used to calculate the time required (942 days) for a residential building that will begin on Thursday, May 2, 2019/end on Wednesday, May 4, 2019, and which will cost around Rs 2,84,63,555. According to the work overview chart, the baseline cumulative working hours (80,000 hours) were on 11/3/19 and continued to decrease until they reached zero on 11/29/20. They then stabilized until 4/17/22. The chart also shows that 99% of work has been accomplished, 125 hours of work remain, and 201,119.93 hours have been put in Real working hours range from 201,040-201,120 whereas the remaining working hours are between these two numbers (Figure 8).

Figure 8: Work Overview

V. CONCLUSION

The present research study attempted to make 3D model G+4 Residential building by using Auto desk

Revit software, and from that it's possible to obtain different floor elevations.

- The present Research work was aimed to study the scheduling/tracking of construction activities by MSP software.
- There is a possibility to analyze the number of building floors which will mitigate the time/cost.
- It's possible to assess construction activities, scheduling, Gantt chart for present research work in the case of G+4 Residential building.
- It's possible from MSP software to assess the time duration (942 days) for the Residential building which starts on Thu 5/2/19 and finishes on Wed 5/4/22, in turn, costs about Rs 28,463,555
- From the work overview chart, it confirmed that baseline cumulative working hours (80,000 hrs) was on dated 11/3/19 and its working hours go on decreasing, reaching zero working hours on 11/29/20, maintaining equilibrium working hours until on dated 4/17/22. It's also concluded from the chart that, 99% of work was completed, the remaining work 125hrs, and actual work 201,119.93hrs.

- to bathing, dental hygiene, menstrual hygiene management, and general cleanliness.
- **Hygiene awareness and behavior change**: Evaluate the level of awareness and understanding of hygiene practices within the community. Identify opportunities for promoting behavior change through education and awareness campaigns.

1. The present research study attempted to make 3D model G+4 Residential building by using Auto desk Revit software, and from that it's possible to obtain different floor elevations.
2. The present Research work was aimed to study the scheduling/tracking of construction activities by MSP software.
3. There is a possibility to analyze the number of building floors which will mitigate the time/cost.
4. It's possible to assess construction activities, scheduling, Gantt chart for present research work in the case of G+4 Residential building.
5. It's possible from MSP software to assess the time duration (942 days) for the Residential building which starts on Thu 5/2/19 and finishes on Wed 5/4/22, in turn, costs about Rs 28,463,555
6. From the work overview chart, it confirmed that baseline cumulative working hours (80,000 hrs) was on dated 11/3/19 and its working hours go on decreasing, reaching zero working hours on 11/29/20, maintaining equilibrium working hours until on dated 4/17/22. It's also concluded from the chart that, 99% of work was completed, the remaining work 125hrs, and actual work 201,119.93hrs.

ACKNOWLEDGEMENT

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