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Application of MSP in the process of building planning and design for G+14

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Abstract: Project management is a field that focuses on achieving project goals via the use of knowledge, skill, and proven techniques. Problems arise during implementation because the traditional construction approach is typically inefficient, time-consuming, and prone to mistakes. To overcome the problems of classic planning and administration methods, this research suggests using Microsoft Project, a modern Project administration solution. The program efficiently organizes project operations in the best possible way, giving a cohesive trajectory toward the successful completion of the project within the stipulated time and cost limits. In this study, we take a close look at how construction professionals make use of Microsoft Project. It incorporates many features, including planning, scheduling, allocating resources, keeping track of progress, and more. The research also stresses reducing waste produced by construction projects and maximizing the efficient use of available resources. By contrasting results from the program with those obtained in the field, the study proves that the proposed technique is effective. The report highlights the significant impact of Microsoft Project on achieving cost reductions by implementing thorough planning, scheduling, resource allocation, and tracking. The main aim of the present research is to explore the use of Microsoft Project as a tool for efficient project planning and execution within the construction industry. The document provides an overview of the project execution strategy, cost analysis, and resource allocation for a G+14-story building. The TM mixer machine incurs the highest cost, amounting to ₹ 16,150,000, while the concrete mixer machine incurs the lowest cost. The cost of work accomplished is recorded as Rs 32,789,825, but the real cost is documented as Rs 67,709,004.59. Based on the examination of the MSP data, it can be deduced that the male labor force has the most pronounced demand for work hours, particularly totaling 92,384 hours.

Index Terms –MSP, planning, G+14

I. INTRODUCTION

Establishing a strong basis for a construction project's management and execution can be challenging in and of itself. The procedure includes technological choices, resource estimating, task duration, task description, and the identification of cross-task interactions. Without a comprehensive building design, estimating costs or establishing a schedule is impossible. Planning is essential to managing a construction project, even if it isn't formally documented. In addition to these technical aspects of construction planning, decisions might have to be taken on the nature of the relationships among project participants and the selection of organizations to participate in the endeavor. The extent to which subcontractors will be used, for instance, is often determined during the design phase of a building project.

II. LITERATURE REVIEW

In this research (Muttaqin *et al.*, 2020), A method to improve employee performance is a must for the company's evaluations. The fact that workers often check in with what they've accomplished on any given day lends credence to this need. If there are more people under management or more projects, it will get difficult. The literature review revealed that popular project management tools like Microsoft Project, Oracle Primavera, and Trello do not adequately assist the delivery of project management education at most US colleges. The company's R&D division is exploring new innovation in order to create cross-platform apps that need just a single set of code. Research shows that Quasar Framework is a viable option. This structure allows for an impressive panorama to be created quickly. Black-box testing is used to check the functionality of the system after it has been built. The Unicode Indonesia Business Survey had 5 responses overall. The test results validate the system's practicability. The data from the tests shows that the PMIS is up to the task of helping the organisation achieve its goals.

(Cantarelli *et al.*, 2018) This document primarily serves as a summary of the Hangzhou-East Railway Station's successful use of BIM-based design visualisation. As one of the world's largest hub stations, the Hangzhou East Railway Station project presents unique challenges due to the complexity of its primary steel construction. The complicated spatial relations and steel erection installation of the structure are effectively addressed with the help of PKPM series 3D modelling and construction simulation software. The use of building information modelling (BIM) has resulted in more efficient building plans and timelines.

(Leyesa *et al.*, 2020)Software development frameworks are expanding and contracting at a dizzying rate in today's lightning-fast technological landscape. With its practicality and usefulness, the current information and processing technology doesn't need to be adapted. In this article, the authors suggest using custom-built software written in Microsoft Visual Studio as part of a strategic project integration management system (SPIMS) to keep track of each and every Project Job Order for the Philippine firm Combine Power Systems, Inc. At each step of a Project Job Order's lifecycle—from creation to delivery to closure—SPIMS can handle all of the associated paperwork. Based on the data collected, it seems that the target firm endorses SPIMS for Combine Power Systems, Inc.

(Ryzhakova *et al.*, 2022) Due to ongoing digitalization, the building industry must now turn its focus to digital platforms and digital twins when developing new methods and models. Due to the huge file sizes of CAD, GIS, and BIM technologies, construction project datasets rapidly amass, making them challenging to store and analyse. Since the value of such data resides on its accessibility and usage by all parties involved in a building project, managing such datasets is a challenging challenge. The article proposes setting up an information system for creating digital twins of construction project management as an integrator of Big Data Analytics and BIM technologies, which have become the norm in the digitalization of the construction sector. Ten features of Big Data are outlined in the paper, along with a description of four distinct digital twins for use in building projects. Research on digital twins in construction projects is conducted using a building information modelling (BIM) approach to understanding how Big Data is communicated and shared across stakeholders. Using Building Information Models, Big Data Analytics, and a Knowledge Base, the authors offer a way for developing digital twins of construction project management. The study provided Design Company with both a working example of using a BIM-oriented software package and a framework for developing a digital twin of a territorial urban planning project.

III. OBJECTIVE

The primary goal of the current study is to use Microsoft Project software to enhance the efficiency and efficacy of planning and executing building projects. The current document provides an overview of the project execution plan, cost analysis, and resource allocation for constructing a 14-story structure.

IV.METHODOLOGY

MS Project requires you to enter either a start date or an end date. After entering one date and other project responsibilities, restrictions, and dependences, MS Project will automatically determine the other date.

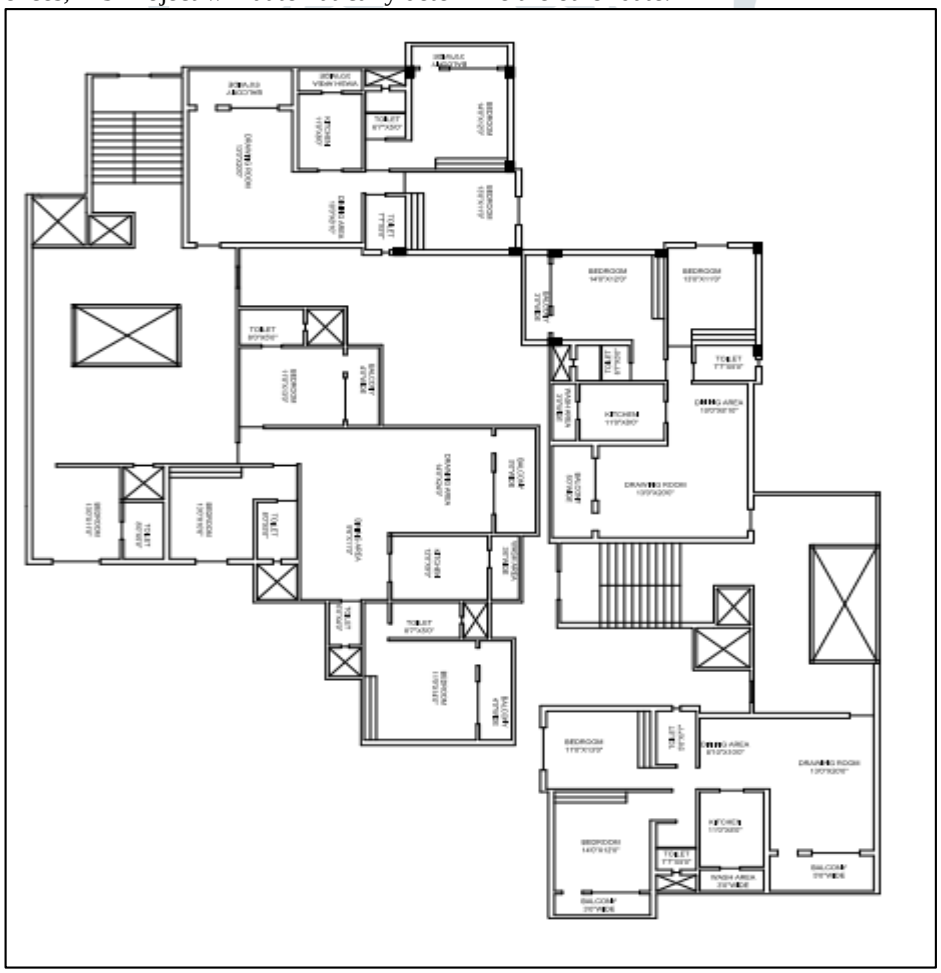

Figure 1: Floor plan for G+14 story building

A. Launch MS Project

- **Windows 7** − To launch Project 2013, go to the Start menu, choose All Programs, then Microsoft Office, and finally Project 2013.
- **Windows 8** − Select Project 2016 from the Start screen by tapping or clicking the corresponding button.
- **Windows 10** − Click on Start menu → All apps → Microsoft Office → Project 2016.

B. Create Blank Project

Microsoft Project presents a menu of alternatives. Select Blank Project from the available templates.

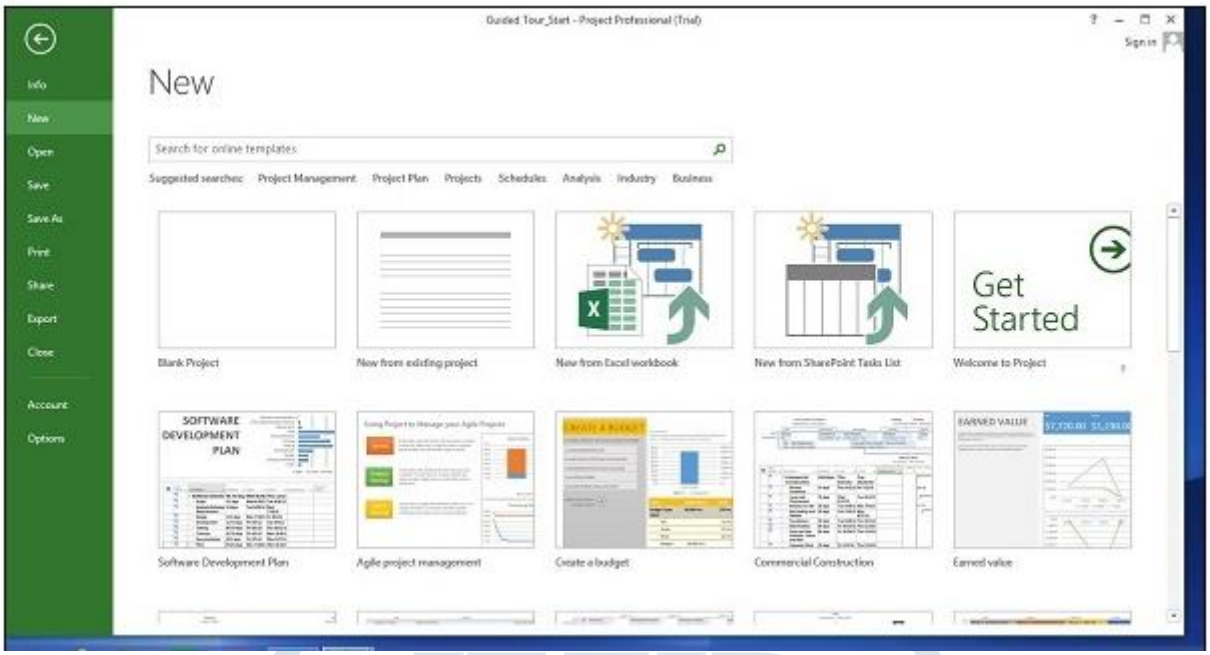

Figure 2: MS project options

The Project application automatically uses today as the plan's first implementation date. A skinny green vertical line in the chart section of the Gantt Chart Layout represents the present date.

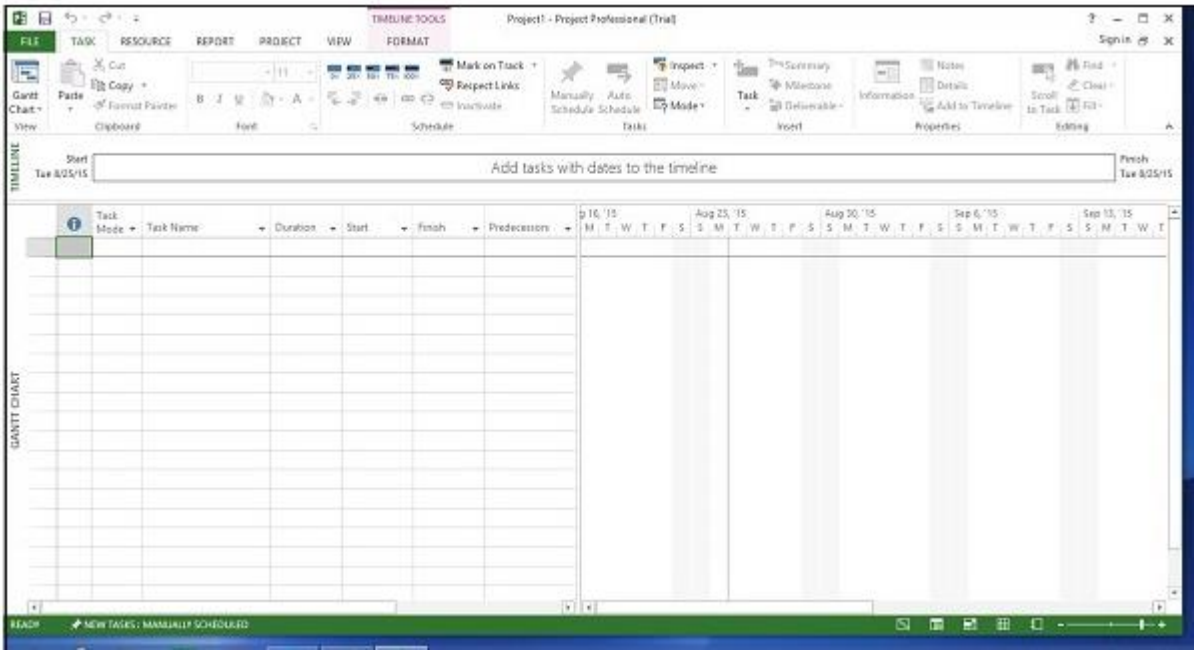

Figure 3: MS project date settings

C. Project Information

Let's update the development's inception date & add context.

1. Step 1: Start Date

Click Project tab → Properties Group → Project Information.
There is a dialog box here. Enter the day you'd like to begin your subscription in the space provided, or use the calendar that appears when you click the down arrow.
Appropriate the first day of work by clicking the OK button.

2. Step 2: Set Up Calendar

Click Project tab → Properties Group → Project Information.
To change the current date, select the arrow next to the box. A roster containing three primary calendars displays.

- **24-Hour** − With this schedule, there are no days off.
- **Night Shift** − Monday through Friday, 11 p.m. to 8 a.m. night schedules with hour-long intervals.
- **Standard** − Monday through Friday, 8 a.m. to 5 p.m., with a 60-minute lunch break.

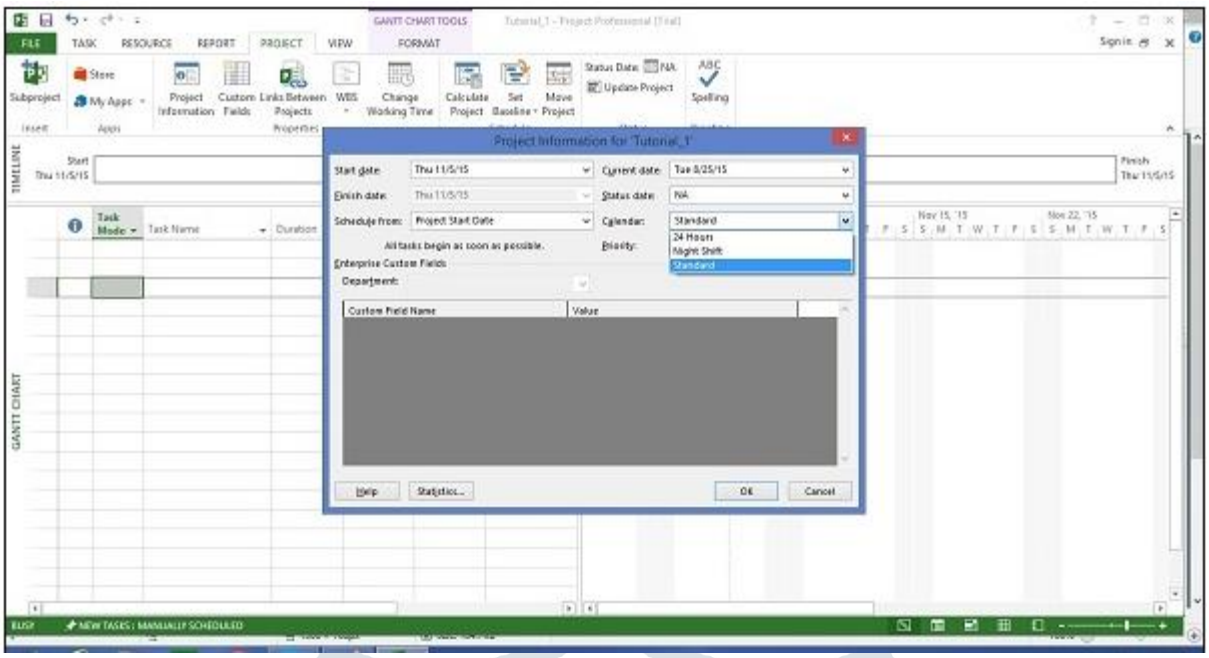

Figure 4: MS project date settings

Make use of a regular calendar for the duration of the project. Use the "Cancel" or the "OK" button to dismiss the alert box.

V. RESULTS AND DISCUSSION

The project involves the construction of a G+14-storey structure. The task information is shown in the first column. The project includes design development, architectural drawings, surveying, site assessment, site preparation, layout planning, excavation, sand placement, and damp-proof course installation. The following column provides information on the total time required to perform the activity. The work requires a total time length of 3386 days.

Table 1: Gantt chart

Task Mode	Activity	Duration	Start	Finish	Predecessors	Resource Names	Cost	% Complete
Auto-Scheduled	**Start of Project**	**3386 days?**	**Mon 1/2/23**	**Tue 3/19/30**			**₹ 67,709,004.59**	**100%**
Auto-Scheduled	Start the Project	1 day?	Mon 1/2/23	Mon 1/2/23			₹ 0.00	100%
Manually Scheduled	**Design**	**20 days**	**Sat 1/7/23**	**Mon 1/23/23**			**₹ 30,000.00**	**100%**
Auto Scheduled	Architecture Drawings	20 days	Sat 1/7/23	Mon 1/23/23	5	Drawing Engg	₹ 30,000.00	100%
Auto Scheduled	**Survey**	**3 days**	**Mon 1/2/23**	**Wed 1/4/23**			**₹ 15,800.00**	**100%**
Auto Scheduled	Site Surveying	1 day	Mon 1/2/23	Tue 1/3/23	2	Site Engineer, Supervisor	₹ 1,700.00	100%
Auto Scheduled	Site Cleaning	2 days	Tue 1/3/23	Wed 1/4/23	6	Excavator,Labour Male[200%],Supervisor,Site Engineer	₹ 10,300.00	100%
Auto Scheduled	Layout	1 day	Tue 1/3/23	Tue 1/3/23	6	Labour Male[400%], Site Engineer, Supervisor, Drawing Engg	₹ 3,800.00	100%
Auto Scheduled	**Foundation**	**92 days**	**Wed 1/4/23**	**Thu 3/16/23**			**₹ 1,675,800.00**	**100%**
Auto Scheduled	Excavation	5 days	Wed 1/4/23	Sat 1/7/23	8	Excavator,Labour Male[400%],Labour Female[200%],Site Engineer,Drawing Engg	₹ 61,000.00	100%
Auto Scheduled	Sand Filling	2 days	Sat 1/7/23	Mon 1/9/23	10	Excavator,Site Engineer,Labour Male[400%],Labour Female[200%]	₹ 21,400.00	100%
Auto Scheduled	PCC	3 days	Mon 1/9/23	Wed 1/11/23	11	Supervisor,Site Engineer,Excavator,Labour Male[400%],Labour Female[200%]	₹ 34,200.00	100%
Auto Scheduled	Footing Shuttering	20 days	Wed 1/11/23	Thu 1/26/23	12	Supervisor, Labour Male, Bar Bender[400%]	₹ 44,000.00	100%
Auto Scheduled	Footing Concrete	30 days	Fri 1/27/23	Sat 2/18/23	13	TM Mixer Machine,Concrete Lifter,Mistry[200%],Labour Male[400%],Labour Female[200%],Cement[1,000]	₹ 1,173,000.00	100%
Auto Scheduled	Pedestal Shuttering	8 days	Mon 2/20/23	Sat 2/25/23	14	Mistry[200%],Labour Male[400%],Bar Bender[200%]	₹ 21,600.00	100%
Auto Scheduled	Pedestal Coloum Concrete	10 days	Sat 2/25/23	Sat 3/4/23	15	TM Mixer Machine,Concrete Lifter,Labour Male[400%],Vibrator[200%]	₹ 287,000.00	100%
Auto Scheduled	Back Filling	14 days	Mon 3/6/23	Thu 3/16/23	16	Labour Male[400%],Supervisor,Labour Female[200%]	₹ 33,600.00	100%

Auto Scheduled	**Sub Structure**	**15 days**	**Thu 3/16/23**	**Tue 3/28/23**			**₹ 78,000.00**	**100%**
Auto Scheduled	Brick Work up to Ground Beam	15 days	Thu 3/16/23	Tue 3/28/23	17	Mason[400%],Labour Male[400%],Labour Female[800%]	₹ 78,000.00	100%
Auto Scheduled	**Ground Beam Work**	**54 days**	**Tue 3/28/23**	**Tue 5/9/23**			**₹ 413,400.00**	**100%**
Auto Scheduled	Brick Work up to DPC Bottom	25 days	Tue 3/28/23	Sat 4/15/23	19	Mistry[200%],Mason[400%],Labour Male[800%],Labour Female[1,000%],Bhisti (Kuli)[400%],Site Engineer	₹ 245,000.00	100%
Auto Scheduled	DPC	5 days	Mon 4/17/23	Thu 4/20/23	21	Mistry[200%],Labour Male[400%],Bhisti (Kuli)[200%],Labour Female[400%]	₹ 18,000.00	100%
Auto Scheduled	Ground Beam Shuttering	9 days	Thu 4/20/23	Thu 4/27/23	22	Mistry[400%],Labour Male[800%],Site Engineer,Bar Bender[200%]	₹ 52,200.00	100%
Auto Scheduled	Bitumen Coat	2 days	Thu 4/27/23	Fri 4/28/23	23	Bitumin[10],Labour Male[400%],Labour Female[200%]	₹ 53,400.00	100%
Auto Scheduled	Plinth Filling	10 days	Fri 4/28/23	Sat 5/6/23	24	Mistry[200%],Labour Male[400%],Labour Female[200%],Bhisti (Kuli)[200%]	₹ 31,000.00	100%
Auto Scheduled	Floor PCC	3 days	Sat 5/6/23	Tue 5/9/23	25	Concrete Mixer,Mistry[200%],Labour Male[400%],Labour Female[200%]	₹ 13,800.00	100%
Auto Scheduled	**Super Structure**	**3386 days?**	**Mon 1/2/23**	**Tue 3/19/30**			**₹ 65,496,004.59**	**100%**
Auto Scheduled	**Slab Level**	**215 days**	**Tue 5/9/23**	**Mon 10/23/23**			**₹ 13,411,850.00**	**100%**
Auto Scheduled	Coloum Concrete Shuttering	15 days	Tue 5/9/23	Sat 5/20/23	26	Mistry[600%],Labour Male[600%],Labour Female[300%],Bhisti (Kuli),Bar Bender[200%]	₹ 87,000.00	100%
Auto Scheduled	Coloum Concrete	150 days	Sat 5/20/23	Thu 9/14/23	29	Bar Bender[200%],TM Mixer Machine[200%],Concrete Lifter,Site Engineer,Supervisor,Labour Male[400%],Vibrator[200%],Cement[1,000]	₹ 7,890,000.00	100%
Auto Scheduled	Slab Beam Work	12 days	Thu 9/14/23	Sat 9/23/23	30	Bar Bender[200%],Mistry[400%],Labour Male[600%],Labour Female[300%]	₹ 59,400.00	100%
Auto Scheduled	Slab Concrete Shuttering	12 days	Sat 9/23/23	Tue 10/3/23	31	Bar Bender[200%],Mistry[400%],Labour Male[600%],Labour Female[400%],Bhisti (Kuli)[200%],Steel[70,000]	₹ 4,618,400.00	100%
Auto Scheduled	Slab Concrete	1 day	Tue 10/3/23	Tue 10/3/23	32	TM Mixer Machine[600%],Concrete Lifter,Mistry[400%],Vibrator[200%],Site Engineer,Supervisor,Labour Male[600%],Labour Female[200%],Cement[800]	₹ 398,300.00	100%
Auto Scheduled	One Line Brick Work up to Slab Beam	25 days	Wed 10/4/23	Mon 10/23/23	33	Site Engineer,Mistry[300%],Mason[600%],Labour Male[1,000%],Labour Female[2,000%],Bhisti (Kuli)[400%]	₹ 358,750.00	100%
Auto Scheduled	**Stair Case**	**16 days**	**Mon 10/23/23**	**Sat 11/4/23**			**₹ 247,850.00**	**100%**
Auto Scheduled	Stair Case Shuttering	14 days	Mon 10/23/23	Thu 11/2/23	34	Site Engineer,Supervisor,Drawing Engg,Mistry,Steel[400],Labour Male[200%],Labour Female,Bar Bender	₹ 62,750.00	100%
Auto Scheduled	Stair Case Concrete	2 days	Fri 11/3/23	Sat 11/4/23	36	TM Mixer Machine[300%],Concrete Lifter,Mistry,Labour Male[200%],Cement[100]	₹ 185,100.00	100%
Auto Scheduled	**Plumbing**	**10 days**	**Sat 11/4/23**	**Sat 11/11/23**			**₹ 482,000.00**	**100%**
Auto Scheduled	All Plumbing Works	10 days	Sat 11/4/23	Sat 11/11/23	37	Supervisor,Drawing Engg,Plumber[400%],Plumber Helper[800%],Plumber Equipments[8]	₹ 482,000.00	100%
Auto Scheduled	**Fitting (All Types of Fittings)**	**8 days**	**Mon 11/13/23**	**Sat 11/18/23**			**₹ 341,100.00**	**100%**
Auto Scheduled	Door	2 days	Mon 11/13/23	Tue 11/14/23	39	Supervisor,Drawing Engg,Carpainter[200%],Carpainter Helper[400%],Door[35]	₹ 253,400.00	100%
Auto Scheduled	Window	3 days	Tue 11/14/23	Thu 11/16/23	41	Supervisor,Carpainter[200%],Carpainter Helper[400%],Labour Male[800%],Window[20]	₹ 79,900.00	100%
Auto Scheduled	Ventilation	3 days	Thu 11/16/23	Sat 11/18/23	42	Carpainter[200%],Carpainter Helper[400%],Labour Male[200%]	₹ 7,800.00	100%
Auto Scheduled	**MEP (Mech, Electrical & Plumbing)**	**1133 days**	**Sat 11/18/23**	**Fri 4/17/26**			**₹ 1,218,000.00**	**100%**
Auto Scheduled	Mechanical Work	59 days	Sat 11/18/23	Tue 3/24/26	43	Lift Mechanical,Labour Male[400%],Supervisor,Site Engineer,Bhisti (Kuli)[200%]	₹ 1,002,000.00	100%
Auto Scheduled	Electrical Work	15 days	Wed 3/25/26	Sat 4/4/26	45	Drawing Engg,Site Engineer,Electrician[400%],Electrician Helper[400%],Bhisti (Kuli)[400%]	₹ 106,500.00	100%

Auto Scheduled	Plumbing Work	16 days	Mon 4/6/26	Fri 4/17/26	46	Drawing Engg,Supervisor,Plumber[400%],Plumber Helper[400%],Bhisti (Kuli)[200%]	₹ 109,500.00	100%
Auto Scheduled	**Finishing Works**	**1686 days?**	**Mon 1/2/23**	**Tue 8/4/26**			**₹ 4,812,000.00**	**100%**
Auto Scheduled	Wall Layer (Assemblies)	90 days	Fri 4/17/26	Fri 6/26/26	47	Site Engineer,Supervisor,Wall Assembler[200%],Bhisti (Kuli)[400%]	₹ 3,843,000.00	100%
Auto Scheduled	Plaster	10 days	Fri 6/26/26	Sat 7/4/26	49	Mistry[800%],Supervisor,Labour Male[400%],Labour Female[800%],Bhisti (Kuli)[400%],Cement[500]	₹ 235,000.00	100%
Auto Scheduled	Paint	20 days	Sat 7/4/26	Mon 7/20/26	50	Painter[400%],Painter Helper[400%],Paint[1,000]	₹ 314,000.00	100%
Auto Scheduled	Tiles	20 days	Mon 7/20/26	Tue 8/4/26	51	Tiles[1,800],Mistry[800%],Labour Male[800%],Bhisti (Kuli)[400%],Labour Female[200%]	₹ 420,000.00	100%
Auto Scheduled		1 day?	Mon 1/2/23	Mon 1/2/23			₹ 0.00	100%
Manually Scheduled	**1ST Floor Work**	**30 days?**	**Mon 1/2/23**	**Tue 1/24/23**			**₹ 2,993,029.59**	**100%**
Auto Scheduled	Coloum Work	90 days	Wed 8/5/26	Tue 10/13/26	52	Site Engineer,Drawing Engg,Mistry[1,000%],Labour Male[1,000%],Labour Female[600%],Bhisti (Kuli)[400%],Bar Bender[400%]	₹ 248,479.59	100%
Auto Scheduled	Coloum Concrete	15 days	Wed 10/14/26	Sat 10/24/26	55	TM Mixer Machine,Concrete Lifter,Vibrator[200%],Mistry[200%],Labour Male[400%],Bhisti (Kuli)[200%],Cement[350]	₹ 556,500.00	100%
Auto Scheduled	Slab Beam Work	10 days	Mon 10/26/26	Mon 11/2/26	56	Bar Bender,Mistry[400%],Labour Male[200%],Labour Female[200%],Bhisti (Kuli)[200%],Site Engineer	₹ 47,000.00	100%
Auto Scheduled	Slab Concrete	1 day	Mon 11/2/26	Tue 11/3/26	57	TM Mixer Machine[600%],Concrete Lifter,Mistry[400%],Vibrator[200%],Site Engineer,Supervisor,Labour Male[600%],Labour Female[200%],Cement[700]	₹ 368,300.00	100%
Auto Scheduled	Brick Work	20 days	Tue 11/3/26	Wed 11/18/26	58	Drawing Engg,Supervisor,Mason[400%],Labour Male[800%],Labour Female[400%],Bhisti (Kuli)[200%],Bricks[50,000]	₹ 462,000.00	100%
Auto Scheduled	Electrical Work	15 days	Wed 11/18/26	Mon 11/30/26	59	Drawing Engg,Supervisor,Electrician[400%],Electrician Helper[400%],Labour Male[200%]	₹ 96,000.00	100%
Auto Scheduled	Water Supply	15 days	Mon 11/30/26	Fri 12/11/26	60	Drawing Engg,Supervisor,Plumber[400%],Plumber Helper[400%],Labour Male[200%],Bhisti (Kuli)	₹ 114,750.00	100%
Auto Scheduled	Plaster Work	30 days	Fri 12/11/26	Mon 1/4/27	61	Supervisor,Mason[600%],Labour Male[600%],Labour Female[600%],Bhisti (Kuli)[300%],Cement[200]	₹ 292,500.00	100%
Auto Scheduled	Finishing Works (Tile & Others)	20 days	Mon 1/4/27	Tue 1/19/27	62	Supervisor,Mistry[400%],Labour Male[400%],Labour Female[400%],Bhisti (Kuli)[200%],Cement[100],Tiles[2,000]	₹ 434,000.00	100%
Auto Scheduled	Fitting (Door, Window, ETC)	10 days	Wed 1/20/27	Wed 1/27/27	63	Supervisor,Site Engineer,Carpainter[400%],Carpainter Helper[400%],Labour Male[200%],Bhisti (Kuli)[200%],Labour Female,Door[35],Window[20]	₹ 373,500.00	100%
Manually Scheduled		1 day	Mon 1/2/23	Mon 1/2/23			₹ 0.00	100%
Manually Scheduled	**2ND Floor Work**	**30 days?**	**Mon 1/2/23**	**Tue 1/24/23**			**₹ 2,876,550.00**	**100%**
Auto Scheduled	Coloum Work	82 days	Mon 1/2/23	Sat 7/29/23	64	Site Engineer,Drawing Engg,Mistry[1,000%],Labour Male[1,000%],Labour Female[600%],Bhisti (Kuli)[400%],Bar Bender[400%]	₹ 132,000.00	100%
Auto Scheduled	Coloum Concrete	60 days	Mon 1/2/23	Thu 9/14/23	67	TM Mixer Machine,Concrete Lifter,Vibrator[200%],Mistry[200%],Labour Male[400%],Bhisti (Kuli)[200%],Cement[350]	₹ 556,500.00	100%
Auto Scheduled	Slab Beam Work	60 days	Fri 1/27/23	Sat 7/20/24	68	Bar Bender,Mistry[400%],Labour Male[200%],Labour Female[200%],Bhisti (Kuli)[200%],Site Engineer	₹ 47,000.00	100%
Auto Scheduled	Slab Concrete	8 days	Wed 1/25/23	Tue 2/24/26	69	TM Mixer Machine[600%],Concrete Lifter,Mistry[400%],Vibrator[200%],Site Engineer,Supervisor,Labour Male[600%],Labour Female[200%],Cement[700]	₹ 368,300.00	100%
Auto Scheduled	Brick Work	101 days	Mon 1/2/23	Thu 5/14/26	70	Drawing Engg,Supervisor,Mason[400%],Labour Male[800%],Labour Female[400%],Bhisti (Kuli)[200%],Bricks[50,000]	₹ 462,000.00	100%

Auto Scheduled	Electrical Work	50 days	Wed 1/4/23	Mon 2/3/25	71	Drawing Engg,Supervisor,Electrician[400%],Electrician Helper[400%],Labour Male[200%]	₹ 96,000.00	100%
Auto Scheduled	Water Supply	75 days	Mon 1/2/23	Fri 2/14/25	72	Drawing Engg,Supervisor,Plumber[400%],Plumber Helper[400%],Labour Male[200%],Bhisti (Kuli)	₹ 114,750.00	100%
Auto Scheduled	Plaster Work	69 days	Mon 1/2/23	Tue 4/15/25	73	Supervisor,Mason[600%],Labour Male[600%],Labour Female[600%],Bhisti (Kuli)[300%],Cement[200]	₹ 292,500.00	100%
Auto Scheduled	Finishing Works (Tile & Others)	95 days	Mon 1/2/23	Fri 7/25/25	74	Supervisor,Mistry[400%],Labour Male[400%],Labour Female[400%],Bhisti (Kuli)[200%],Cement[100],Tiles[2,000]	₹ 434,000.00	100%
Auto Scheduled	Fitting (Door, Window, ETC)	60 days	Mon 1/2/23	Tue 12/16/25	75	Supervisor,Site Engineer,Carpainter[400%],Carpainter Helper[400%],Labour Male[200%],Bhisti (Kuli)[200%],Labour Female,Door[35],Window[20]	₹ 373,500.00	100%
Manually Scheduled		1 day	Mon 1/2/23	Mon 1/2/23			₹ 0.00	100%
Manually Scheduled	**3RD Floor Work**	**30 days?**	**Mon 1/2/23**	**Tue 1/24/23**			**₹ 2,876,550.00**	**100%**
Auto Scheduled	Coloum Work	92 days	Mon 1/2/23	Wed 2/21/24	76	Site Engineer,Drawing Engg,Mistry[1,000%],Labour Male[1,000%],Labour Female[600%],Bhisti (Kuli)[400%],Bar Bender[400%]	₹ 132,000.00	100%
Auto Scheduled	Coloum Concrete	75 days	Mon 1/2/23	Fri 4/19/24	79	TM Mixer Machine,Concrete Lifter,Vibrator[200%],Mistry[200%],Labour Male[400%],Bhisti (Kuli)[200%],Cement[350]	₹ 556,500.00	100%
Auto Scheduled	Slab Beam Work	60 days	Wed 2/15/23	Thu 8/8/24	80	Bar Bender,Mistry[400%],Labour Male[200%],Labour Female[200%],Bhisti (Kuli)[200%],Site Engineer	₹ 47,000.00	100%
Auto Scheduled	Slab Concrete	8 days	Wed 1/25/23	Wed 2/25/26	81	TM Mixer Machine[600%],Concrete Lifter,Mistry[400%],Vibrator[200%],Site Engineer,Supervisor,Labour Male[600%],Labour Female[200%],Cement[700]	₹ 368,300.00	100%
Auto Scheduled	Brick Work	108 days	Mon 1/2/23	Wed 6/24/26	82	Drawing Engg,Supervisor,Mason[400%],Labour Male[800%],Labour Female[400%],Bhisti (Kuli)[200%],Bricks[50,000]	₹ 462,000.00	100%
Auto Scheduled	Electrical Work	60 days	Mon 1/16/23	Wed 2/26/25	83	Drawing Engg,Supervisor,Electrician[400%],Electrician Helper[400%],Labour Male[200%]	₹ 96,000.00	100%
Auto Scheduled	Water Supply	90 days	Mon 1/2/23	Mon 3/10/25	84	Drawing Engg,Supervisor,Plumber[400%],Plumber Helper[400%],Labour Male[200%],Bhisti (Kuli)	₹ 114,750.00	100%
Auto Scheduled	Plaster Work	109 days	Mon 1/2/23	Fri 12/12/25	85	Supervisor,Mason[600%],Labour Male[600%],Labour Female[600%],Bhisti (Kuli)[300%],Cement[200]	₹ 292,500.00	100%
Auto Scheduled	Finishing Works (Tile & Others)	95 days	Mon 1/2/23	Tue 3/24/26	86	Supervisor,Mistry[400%],Labour Male[400%],Labour Female[400%],Bhisti (Kuli)[200%],Cement[100],Tiles[2,000]	₹ 434,000.00	100%
Auto Scheduled	Fitting (Door, Window, ETC)	60 days	Mon 1/9/23	Tue 6/9/26	87	Supervisor,Site Engineer,Carpainter[400%],Carpainter Helper[400%],Labour Male[200%],Bhisti (Kuli)[200%],Labour Female,Door[35],Window[20]	₹ 373,500.00	100%
Manually Scheduled		1 day	Mon 1/2/23	Mon 1/2/23			₹ 0.00	100%
Manually Scheduled	**4TH Floor Work**	**30 days?**	**Mon 1/2/23**	**Tue 1/24/23**			**₹ 2,876,550.00**	**100%**
Auto Scheduled	Coloum Work	101 days	Mon 1/2/23	Mon 3/4/24	88	Site Engineer,Drawing Engg,Mistry[1,000%],Labour Male[1,000%],Labour Female[600%],Bhisti (Kuli)[400%],Bar Bender[400%]	₹ 132,000.00	100%
Auto Scheduled	Coloum Concrete	81 days	Mon 1/2/23	Tue 8/6/24	91	TM Mixer Machine,Concrete Lifter,Vibrator[200%],Mistry[200%],Labour Male[400%],Bhisti (Kuli)[200%],Cement[350]	₹ 556,500.00	100%
Auto Scheduled	Slab Beam Work	60 days	Mon 2/27/23	Wed 8/28/24	92	Bar Bender,Mistry[400%],Labour Male[200%],Labour Female[200%],Bhisti (Kuli)[200%],Site Engineer	₹ 47,000.00	100%
Auto Scheduled	Slab Concrete	8 days	Thu 1/26/23	Thu 2/26/26	93	TM Mixer Machine[600%],Concrete Lifter,Mistry[400%],Vibrator[200%],Site Engineer,Supervisor,Labour Male[600%],Labour Female[200%],Cement[700]	₹ 368,300.00	100%
Auto Scheduled	Brick Work	117 days	Tue 1/17/23	Fri 7/3/26	94	Drawing Engg,Supervisor,Mason[400%],Labour	₹ 462,000.00	100%

						Male[800%],Labour Female[400%],Bhisti (Kuli)[200%],Bricks[50,000]		
Auto Scheduled	Electrical Work	60 days	Fri 1/27/23	Fri 3/21/25	95	Drawing Engg,Supervisor,Electrician[400%],Electrician Helper[400%],Labour Male[200%]	₹ 96,000.00	100%
Auto Scheduled	Water Supply	90 days	Fri 1/13/23	Wed 4/2/25	96	Drawing Engg,Supervisor,Plumber[400%],Plumber Helper[400%],Labour Male[200%],Bhisti (Kuli)	₹ 114,750.00	100%
Auto Scheduled	Plaster Work	116 days	Mon 1/2/23	Wed 11/5/25	97	Supervisor,Mason[600%],Labour Male[600%],Labour Female[600%],Bhisti (Kuli)[300%],Cement[200]	₹ 292,500.00	100%
Auto Scheduled	Finishing Works (Tile & Others)	80 days	Fri 1/13/23	Thu 1/22/26	98	Supervisor,Mistry[400%],Labour Male[400%],Labour Female[400%],Bhisti (Kuli)[200%],Cement[100],Tiles[2,000]	₹ 434,000.00	100%
Auto Scheduled	Fitting (Door, Window, ETC)	60 days	Tue 1/17/23	Fri 4/17/26	99	Supervisor,Site Engineer,Carpainter[400%],Carpainter Helper[400%],Labour Male[200%],Bhisti (Kuli)[200%],Labour Female,Door[35],Window[20]	₹ 373,500.00	100%

Tracking Gantt Chart

The following step is to create the monitoring Gantt chart. The monitoring Gantt chart may show the job mode and other preliminary information. Most of the work is scheduled automatically, but some is planned by hand. Some examples of manually planned tasks are Maintenance on the Basement and all floors first to the Top Floors.

Table 2: Tracking Gantt chart

Task Mode	Activity	Duration	Start	Finish	Predecessors	Resource Names	Cost	% Complete
Auto Scheduled	**Start of Project**	**3386 days?**	**Mon 1/2/23**	**Tue 3/19/30**			**₹ 67,709,004.59**	**100%**
Auto-Scheduled	Start the Project	1 day?	Mon 1/2/23	Mon 1/2/23			₹ 0.00	100%
Manually Scheduled	**Design**	**20 days**	**Sat 1/7/23**	**Mon 1/23/23**			**₹ 30,000.00**	**100%**
Auto Scheduled	Architecture Drawings	20 days	Sat 1/7/23	Mon 1/23/23	5	Drawing Engg	₹ 30,000.00	100%
Auto Scheduled	**Survey**	**3 days**	**Mon 1/2/23**	**Wed 1/4/23**			**₹ 15,800.00**	**100%**
Auto Scheduled	Site Surveying	1 day	Mon 1/2/23	Tue 1/3/23	2	Site Engineer, Supervisor	₹ 1,700.00	100%
Auto Scheduled	Site Cleaning	2 days	Tue 1/3/23	Wed 1/4/23	6	Excavator,Labour Male[200%],Supervisor,Site Engineer	₹ 10,300.00	100%
Auto Scheduled	Layout	1 day	Tue 1/3/23	Tue 1/3/23	6	Labour Male[400%], Site Engineer, Supervisor, Drawing Engg	₹ 3,800.00	100%
Auto Scheduled	**Foundation**	**92 days**	**Wed 1/4/23**	**Thu 3/16/23**			**₹ 1,675,800.00**	**100%**
Auto Scheduled	Excavation	5 days	Wed 1/4/23	Sat 1/7/23	8	Excavator,Labour Male[400%],Labour Female[200%],Site Engineer,Drawing Engg	₹ 61,000.00	100%
Auto Scheduled	Sand Filling	2 days	Sat 1/7/23	Mon 1/9/23	10	Excavator,Site Engineer,Labour Male[400%],Labour Female[200%]	₹ 21,400.00	100%
Auto Scheduled	PCC	3 days	Mon 1/9/23	Wed 1/11/23	11	Supervisor,Site Engineer,Excavator,Labour Male[400%],Labour Female[200%]	₹ 34,200.00	100%
Auto Scheduled	Footing Shuttering	20 days	Wed 1/11/23	Thu 1/26/23	12	Supervisor, Labour Male, Bar Bender[400%]	₹ 44,000.00	100%
Auto Scheduled	Footing Concrete	30 days	Fri 1/27/23	Sat 2/18/23	13	TM Mixer Machine,Concrete Lifter,Mistry[200%],Labour Male[400%],Labour Female[200%],Cement[1,000]	₹ 1,173,000.00	100%
Auto Scheduled	Pedestal Shuttering	8 days	Mon 2/20/23	Sat 2/25/23	14	Mistry[200%],Labour Male[400%],Bar Bender[200%]	₹ 21,600.00	100%
Auto Scheduled	Pedestal Coloum Concrete	10 days	Sat 2/25/23	Sat 3/4/23	15	TM Mixer Machine,Concrete Lifter,Labour Male[400%],Vibrator[200%]	₹ 287,000.00	100%
Auto Scheduled	Back Filling	14 days	Mon 3/6/23	Thu 3/16/23	16	Labour Male[400%],Supervisor,Labour Female[200%]	₹ 33,600.00	100%
Auto Scheduled	**Sub Structure**	**15 days**	**Thu 3/16/23**	**Tue 3/28/23**			**₹ 78,000.00**	**100%**
Auto Scheduled	Brick Work up to Ground Beam	15 days	Thu 3/16/23	Tue 3/28/23	17	Mason[400%],Labour Male[400%],Labour Female[800%]	₹ 78,000.00	100%
Auto Scheduled	**Ground Beam Work**	**54 days**	**Tue 3/28/23**	**Tue 5/9/23**			**₹ 413,400.00**	**100%**
Auto Scheduled	Brick Work up to DPC Bottom	25 days	Tue 3/28/23	Sat 4/15/23	19	Mistry[200%],Mason[400%],Labour Male[800%],Labour Female[1,000%],Bhisti (Kuli)[400%],Site Engineer	₹ 245,000.00	100%

Auto Scheduled	DPC	5 days	Mon 4/17/23	Thu 4/20/23	21	Mistry[200%],Labour Male[400%],Bhisti (Kuli)[200%],Labour Female[400%]	₹ 18,000.00	100%
Auto Scheduled	Ground Beam Shuttering	9 days	Thu 4/20/23	Thu 4/27/23	22	Mistry[400%],Labour Male[800%],Site Engineer,Bar Bender[200%]	₹ 52,200.00	100%
Auto Scheduled	Bitumin Coat	2 days	Thu 4/27/23	Fri 4/28/23	23	Bitumin[10],Labour Male[400%],Labour Female[200%]	₹ 53,400.00	100%
Auto Scheduled	Plinth Filling	10 days	Fri 4/28/23	Sat 5/6/23	24	Mistry[200%],Labour Male[400%],Labour Female[200%],Bhisti (Kuli)[200%]	₹ 31,000.00	100%
Auto Scheduled	Floor PCC	3 days	Sat 5/6/23	Tue 5/9/23	25	Concrete Mixer,Mistry[200%],Labour Male[400%],Labour Female[200%]	₹ 13,800.00	100%
Auto Scheduled	**Super Structure**	**3386 days?**	**Mon 1/2/23**	**Tue 3/19/30**			**₹ 65,496,004.59**	**100%**
Auto Scheduled	**Slab Level**	**215 days**	**Tue 5/9/23**	**Mon 10/23/23**			**₹ 13,411,850.00**	**100%**
Auto Scheduled	Coloum Concrete Shuttering	15 days	Tue 5/9/23	Sat 5/20/23	26	Mistry[600%],Labour Male[600%],Labour Female[300%],Bhisti (Kuli),Bar Bender[200%]	₹ 87,000.00	100%
Auto Scheduled	Coloum Concrete	150 days	Sat 5/20/23	Thu 9/14/23	29	Bar Bender[200%],TM Mixer Machine[200%],Concrete Lifter,Site Engineer,Supervisor,Labour Male[400%],Vibrator[200%],Cement[1,000]	₹ 7,890,000.00	100%
Auto Scheduled	Slab Beam Work	12 days	Thu 9/14/23	Sat 9/23/23	30	Bar Bender[200%],Mistry[400%],Labour Male[600%],Labour Female[300%]	₹ 59,400.00	100%
Auto Scheduled	Slab Concrete Shuttering	12 days	Sat 9/23/23	Tue 10/3/23	31	Bar Bender[200%],Mistry[400%],Labour Male[600%],Labour Female[400%],Bhisti (Kuli)[200%],Steel[70,000]	₹ 4,618,400.00	100%
Auto Scheduled	Slab Concrete	1 day	Tue 10/3/23	Tue 10/3/23	32	TM Mixer Machine[600%],Concrete Lifter,Mistry[400%],Vibrator[200%],Site Engineer,Supervisor,Labour Male[600%],Labour Female[200%],Cement[800]	₹ 398,300.00	100%

Resource Sheet

In this section, we will create a resource table to help with project management and resource allocation. Materials, tools, and people are all part of the resources at your disposal. Table 3 displays the data sheet that was used.

Table 3: Resource sheet

Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar
Aggregate	Material		A	Bags		₹ 20.00		₹ 0.00	Prorated	
Sand	Material		S	CuFt		₹ 30.00		₹ 0.00	Prorated	
Cement	Material		C	CuFt		₹ 300.00		₹ 0.00	Prorated	
Bricks	Material		BK	No.		₹ 6.00		₹ 0.00	Prorated	
Steel	Material		ST	KG		₹ 65.00		₹ 0.00	Prorated	
Paint	Material		P	Ltr.		₹ 250.00		₹ 0.00	Prorated	
Tiles	Material		TL	Sqft		₹ 150.00		₹ 0.00	Prorated	
Paint Supliments	Material		PS	KG		₹ 1,000.00		₹ 0.00	Prorated	
Bitumin	Material		BIT			₹ 5,000.00		₹ 0.00	Prorated	
TM Mixer Machine	Work		T		700%	₹ 25,000.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Concrete Mixer	Work		CM		100%	₹ 2,000.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Concrete Lifter	Work		CL		100%	₹ 1,500.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Excavator	Work		E		100%	₹ 1,000.00/hr	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Vibrator	Work		V		300%	₹ 500.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Mistry	Work		M		1,000%	₹ 450.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Labour Male	Work		LM		3,000%	₹ 300.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Labour Female	Work		L		2,000%	₹ 250.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Bar Bender	Work		BB		600%	₹ 300.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Bhisti (Kuli)	Work		B		500%	₹ 250.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Mason	Work		MM		1,000%	₹ 500.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15
Electrician	Work		E		400%	₹ 600.00/day	₹ 0.00/hr	₹ 0.00	Prorated	Calendar G+15

VI. CONCLUSION

Traditional planning methods sometimes over-allocate resources or incorrectly assign them to individual tasks because they do not sufficiently break down the principal job. Microsoft Project is an innovative application for managing projects that can help alleviate some problems that might arise from using more traditional approaches. Achieving desired results and finishing a project within the allotted time and budget are aided by a well-planned schedule and sequence of actions. One of the prevailing and very effective tools used by building organizations in contemporary times is Microsoft Project (MSP), also employed in our project.

- In this context, many project management activities, such as planning, scheduling, resource allocation, leveling, and tracking, were used to ensure the effective execution of the project.
- Efficiently managing and maintaining resources during building projects is crucial to minimize improper waste. Additionally, a comparison was conducted between the results generated from the program and those seen on the real construction site, concluding that our technique is more successful.
- The TM mixer machine incurs the highest cost, amounting to ₹16150000, while the concrete mixer machine incurs the lowest cost.
- The actual cost of work performed is Rs 32789825, and the actual cost is Rs 67709004.59. Using the MSP results in a significant cost reduction of Rs34,919,179.59, which may be attributed to implementing planning, scheduling, resource allocation, leveling, and tracking strategies.
- Based on the analysis of the MSP data, it can be inferred that the male labor force exhibits the highest demand for work hours, specifically amounting to 92384 hours.

REFERENCES

[1] Rashmi J V, Amey A Kelkar, Vishwanath K G, Planning and scheduling of a multi-storeyed residential building with conventional execution approach as compared with application of project management techniques, International Research Journal of Engineering and Technology (IRJET), e-ISSN: 2395-0056 and p-ISSN: 2395-0072, July, 2017, pp. 2682-2685.

[2] Abhishek Sharma and K.K. Pathak, Manpower Planning, Scheduling and Tracking of a Construction Project Using Microsoft Project Software, Journal of Today's Ideas – Tomorrow's Technologies, ISSN Print: 2321-3906 and ISSN Online: 2321-7146, December, 2015, pp. 161-169.

[3] Chourajit K Sharma, Jay A Mistry, Ravi V Gohel, Vishal B Chauhan, Amit N Bhavsar, Study of MS Project Software and Its Application in Construction Project and Case Study at Anand, International Journal of Advance Research and Innovative Ideas in Education (IJARIIE), ISSN(O): 2395-4396, 2016, pp. 2862-2870.

[4] E. Suresh Kumar and S. Krishnamoorthi, Scheduling and Financial Analysis of a High Rise Building, IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE), e-ISSN: 2278-1684, p-ISSN: 2320-334X, Nov. - Dec., 2015, pp. 01-06.

[5] Raj Thakur and Harish Kumar Dwivedi, Planning and Scheduling of Residential Building Using Microsoft Project, International Journal of Technical Innovation in Modern Engineering & Science (IJTIMES), e-ISSN: 2455-2585, February, 2019, pp. 368-373.

[6] Dipti R. Shetye and Dr. S.S.Pimplikar, Cash Flow of High Rise Residential Building, International Journal of Engineering Research and General Science, ISSN 2091-2730, June-July, 2014, pp. 465-478.

[7] E. Suresh Kumar and S. Krishnamoorthi (2015) In their study they focused on scheduling using MSP and earns value analysis for an apartment building.

[8] Hoang, Nhat Minh Shrestha, Swastik (2014) hinted that the main function of a software is to offer help, and enhance the quality of output with less effort than manual ways.

[9] J. Jayalakshmi (2014), This study compared time performance of the conventional method of construction for high- rise residential and Industrial Building System (IBS) method by overall construction period.