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Project Management of Water Treatment Plant

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Abstract— Increasing urban population, especially in developing nations, both land and water are under extreme stress; it also causes too much water, many things that cannot be done. Therefore, water purification has become necessary due to the scarcity of drinking water and the needs of the growing world population. The use of water directly from rivers, streams and lakes is not safe today because it contains many diseases, viruses and other diseases that can affect human, plant and animal health. This weak and unsafe water source creates the need for water treatment plants. This study aims to evaluate project management practices for the construction of a 5 capacity water treatment plant.5 MLD is used to supply potable water to 30 villages in Shegaon, Maharashtra. Therefore, the responsibilities of project management include identifying business needs, making business decisions, monitoring progress, and correcting business gaps. The aim is to complete the project plan for the construction Treatment of water facilities by means of planning and carrying out and managing time, money, people and resources. The data for this study were obtained through interview questions from project managers, engineers, contractors, customers and site workers, and qualitative questions from people experienced in business and business development. This study aims to understand the water treatment plant construction project management application, evaluation and modification knowledge.

Keywords- water treatment plant, construction project management, drinking water, construction industry, public sector projects, labor-intensive culture.

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1 INTRODUCTION

Water purification plants play an essential function in ensuring that populations have access to pure and secure potable water. around the world. The successful implementation of these plants requires effective project management, which involves planning, organizing, and controlling the various stages of the project. This introduction provides an overview of the importance of

project management in the context of water treatment plants, highlighting the key objectives, challenges, and benefits associated with managing such projects.

Water treatment plant projects encompass a range of activities, including treatment facility design, building, and commission, as well as the implementation of necessary infrastructure and systems. Efficient project management ensures that these complex endeavors are executed within specified timeframes, budgets, and quality standards. Moreover, it facilitates coordination among different stakeholders, such as engineers, environmental experts, government agencies, and community representatives, to ensure a holistic approach to water treatment.

One of the primary objectives of project management in water treatment plants is to ensure the delivery of safe and reliable drinking water to the population. By employing effective project management methodologies, risks and uncertainties associated with the project can be identified, assessed, and mitigated. This reduces the chances of delays, cost overruns, and potential operational issues, thereby enhancing the overall efficiency and effectiveness of the water treatment plant.

However, managing water treatment plant projects comes with its own set of challenges. These projects often involve complex technical requirements, stringent regulatory standards, and the need to integrate multiple engineering disciplines. Additionally, environmental considerations, such as source water protection and wastewater management, add further complexity to the project. Effective project management strategies must address these challenges, ensuring that the project is executed in compliance with environmental regulations while maintaining the desired water quality standards.

Despite the challenges, efficient project management brings several benefits to water treatment plant projects. It promotes stakeholder engagement and collaboration, enabling the involvement of communities, government agencies, and relevant organizations in the decision-making process. Moreover, it facilitates the efficient allocation of resources, such as labor, equipment, and materials, leading to cost savings and optimized project schedules. Furthermore, project management methodologies aid in tracking and oversight of the development of projects, permitting swift modifications and corrections to ensure project success.

In conclusion, project management plays a vital role in the successful implementation of water treatment plants. It enables the achievement of key objectives, addresses challenges specific to these projects, and unlocks numerous benefits. By embracing effective project management practices, stakeholders can ensure the provision of clean and safe drinking water to communities, contributing to the overall well-being and sustainable development of societies worldwide.

1.2 WATER AND ITS QUALITY

Water is devoid of color, flavor, and odor. It is an outstanding fluid and destroys the majority of foods with which it comes into proximity. Therefore, natural water is always contaminated with molecular and microbiological impurities, i.e., decomposed minerals and organic

molecules and organisms. These compounds may originate from the discharge from mineral springs and landfills. Nevertheless, urban along with commercial garbage also generates numerous organic and inorganic contaminants. Breakdown and dissolution of minerals, soil, and sands produce inorganic compounds that are typically magnesium, calcium, sodium, and ammonium bicarbonates, chlorine, and sulfate nitrates and phosphates. Also, lead, copper, arsenic, iron

and manganese can be found in numbers. Organic compounds from decaying plant and animal matter and agricultural waste become natural home products of synthetic organics used for cleaning, pesticides, pesticides and solvents. These materials and how much they are can impact the integrity and utility of natural assets water resources.

the nation's daily drinking water supply The regular water consumption per individual generally includes the following items:

• Domestic needs such as drinking, cooking, bathing, bathing, toilet, building and ventilation.

• Institutional Needs

• Public use such as laundry or irrigation in parks, sewerage, water.

• Utilities and Small Business Fire Protection

• Livestock requirements and

• Minimum drainage (UFW).

1.3 PURPOSE OF WTP

The three main objectives of water treatment plants are: I. Producing safe water for human consumption II. Making water more attractive to consumers III. Create safe water and chemicals that can be produced and operated. Water at a reasonable price is the main purpose of the construction of water facilities; every drop is incredible. A well-designed plant is essential not only to ensure the safety of drinking water, but also to skillful and careful plant operation and attention to hygiene of water supply and distribution. The second purpose The objective in water remediation is to produce safe water for consumption. attractive to consumers. The most beautiful and attractive water is clear, colorless, pleasant to taste, odorless and cold water. It does not smudge, rust or flake and is very soft. Most customers are concerned not with the quality of their treatment plant, but with the quality of their faucets. Therefore, water management must ensure that the quality of water is not compromised during delivery, storage and distribution to consumers.

1.4 Aim:

• • The purpose of this investigation is to update and follow the construction management in a water treatment plant with a capacity of 5.5 MLD.

1.5 Objective:

Objectives of this study are as follows

- The benefits of application of construction project management in the public project like water treatment plant.
- Inefficiency, cost overruns, delays in construction, poor communication, poor construction, potential security, disputes and claims etc.
- The effects of project management on this construction of water treatment plant than the traditional approach of labour-intensive work.
- Use the findings of this research to assist public authorities in designing water treatment plants to use construction management techniques to improve their performance and prevent problems.

2. LITERATURE REVIEW

2.1 Construction Project Management in India

This paper published by [3] Atul Auti and Martin Skit more in International Journal of Construction Management used the methodology, a questionnaire Email requests for responses were sent to a randomized group of 150 organizations as well as interested parties. Potential respondents included diverse project supervisors, engineers, designers, investigators, and advisers who are presently active in the field in India and who were deemed suitable for delivering the requested comments. The conclusion of the authors was that efficient project management application could assist in the achievement of new levels of fulfillment and greater standards. The attributes of project management should alter the perception of the business sector and be valued by all parties, including customers, stakeholders, and end uses.

2.2 Factors Influencing Water Treatment Management Performance

This study published by [1] Abdunnasir in annals of faculty engineering Hunedoara – International Journal of Engineering used the methodology, the researcher had a session of interview and received essential data regarding all facility processes. A technician described each stage of water purification and each facility at the water treatment plant. Other information was gathered through the World Wide Web, literature, as well as previous studies. The conclusion drawn was that the disinfection facility accomplished its goal of providing consumers with potable water service. They have effectively provided consumers with pure water and are pleased alongside the efficacy of the facility processes. A number of elements' results were addressed and they indicated that the water treatment performance is satisfied.

2.3 Project Management Practice and Its Effects on Project Success in Construction Industry.

The paper published by[7] N A. Haron, P Devi, S Hassim, A H Alias M M Tahir, and A N Harun in International Conference on Architecture and Civil Engineering used the method, A questionnaire with 16 closed-ended questions and an equal number of multiple choice questions and 5-point Likert scale options was developed. A pilot test was conducted with 30 of the intended respondents in order to guarantee that they would comprehend the questionnaire's queries and identify any potential obstacles. Their decision was that a drastic application of project administration could be eschewed in order not to cause a disruption in the operation of the company. Education institutions should offer teaching or courses in project

administration in order to expand the competence of professionals. Construction industries have greater impact on climate and environment which could be taken into consideration by knowledge of project management.

2.4 Major Factors Influencing Productivity of Water and Wastewater Treatment Plant Construction

This paper published by [9] S. Mojahed, F. Aghazadeh, in the International Academy of Project Management, utilized the approach, and data was gathered from prior papers along with research. A survey of WTP market providers with annual sales exceeding $100 million was carried out. Several sewage and water treatment plant building sites were visited and analyzed in order to obtain an improved comprehension of the influence of main productivity variables and to recommend practices for enhancing output on construction locations. This paper suggests that it is possible to increase productivity by modifying working practices in the industry and focusing on accelerating the adoption of standard procedures on building locations. Comparing the main efficiency factors of this study to those of a study conducted in the United States thirty years ago as well as other international studies reveals that these primary efficiency elements vary across initiatives, businesses, and regions of the world.

2.5 Quality Management Practices of Building Construction Firms.

This study published by [5] Osegbo C U, Okolie K C, Okeke A U, Ezeokoli F O, Akaogu A C, in international journal of progressive research in science and engineering used the methodology, this study was carried out by using survey method. A total of 180 questionnaires a survey was distributed to various construction companies, and 120 responses have been received for analysis, comprising 66.67 percent of the population. The development of questionnaires to collect data from project supervisors, convey designers, contractors, standard supervisors, and any other important people involved in assessing the quality management plans of the various construction companies. The finding of the investigation was that management makes determinations regarding quality. Consequently, the management of an organization is liable for its quality practices. The investigation recommends that developers and companies create and carry out a well-defined quality assurance strategy, build character regulations, targets, and organizational direction, or teach workers on a regular basis to stay current on market developments around the world.

2.6 Project Management for Construction Projects

The purpose of this study is to examine infrastructure project management. This study illustrates various aspects of project management in terms of problems and issues and offers solutions to promote and improve project management through this study. Most researchers use qualitative methods and specific methods to complete their research projects. The researchers met with several experts in the field and conducted 36 interviews with the project manager. The analysis shows that the project management is faced with many problems and problems, the most important problems are poor planning, poor project management, poor communication between all parties and not reaching the best solution. It also demonstrates in many ways that the management process is the key to the success of any engineering project.

In addition, researchers try to demonstrate the effectiveness of construction projects to achieve good results for engineering firms and to meet the needs of social projects with efficient and effective engineering projects.

2.7 Introduction to Water Treatment

Purpose of water purification - to provide safe drinking water without impurities, odors or colors; Provides adequate water for domestic, commercial, industrial and fire protection needs. Even if only about 1% of the water produced is used for drinking and cooking, all water produced in public water systems must be of potable quality. This study covers the purpose of water treatment plants and describes the water treatment process. In this study, the work and the process are explained. The study was carried out through the observation of WWTP workers who determined the treatment process and obtained operational results by describing the water treatment need and the temporary process from raw water to treatment. After distribution after purification, aeration, coagulation and flocculation, sediment filtration and laboratory and safety disinfection.

2.8 Small Scale Wastewater Treatment Plant Project

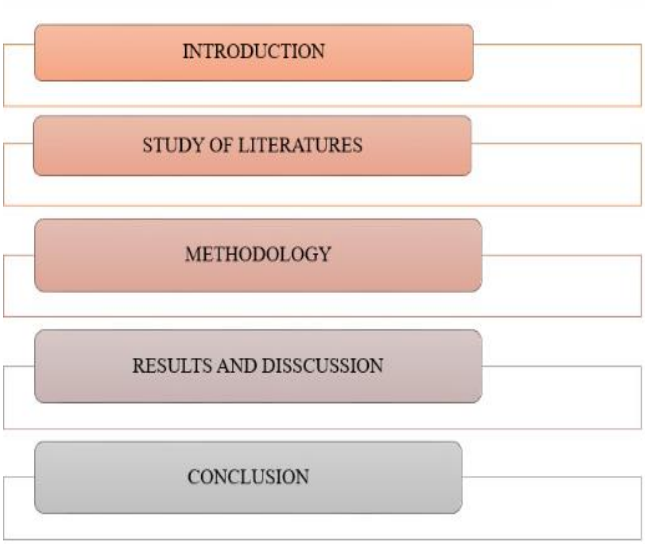
The paper published by [8] Schozel & Bower (1999), The project's primary objective is to discover current disposal and purification methods, ongoing cleaning programs and initiatives, and potential pilot project locations. The objective of this study as stated by the author is management and need of wastewater treatment plant by identifying the wastewater treatment technologies and scope of the plant in villages on a small-scale basis. The study concluded by explaining the various types of plants that can be opted for the small-scale projects of wastewater treatment plants by analysing the cost efficiency, material management, quality control and operation cost.

2.9 Quality Control Management in Building Construction

Construction projects are extremely complex undertakings that involve a vast array of factors. Numerous factors, which include design, materials, apparatus, geographical features, geology, hydrology, meteorology, building science, ways of operations, technical specifications, and management systems, influence the quality of construction. To provide more high-quality, safe, appropriate, and cost-effective composite products, building contractors have to stick to the tenet of quality first and insist on high standards based on artificial control and protection. The primary objective is to conduct a qualitative and quantitative evaluation of the grade of concrete used in India's construction industry. After conducting statistical evaluation on example test results gathered from building locations and verifying the conformance to these compression strength test findings via Indian Standards, this methodology was used to evaluate the amount of quality assurance being implemented. upon analyzing the obtained results, the study found that a manual on the making of concrete must be put together and utilized as an outline on construction areas, since concrete is a significant building material and a structural component. During concrete production processes, a quality assurance strategy must be developed and properly implemented, which identifies the essential tasks and aids in undertaking suitable

steps at any stage. Structured and nicely organized oversight by a nonprofit organization is beneficial for enhancing the quality of concrete used in building initiatives.

3. METHODOLOGY



3.1 Flow Chart

1.Project Initiation

- Identify the need for a water treatment plant project and establish clear project objectives.
- Conduct a feasibility study to assess the technical, financial, and environmental viability of the project.
- Define the project scope, stakeholders, and project team roles and responsibilities.

2. Project Planning

- Develop a comprehensive project plan that outlines the project's objectives, deliverables, timeline, and budget.
- Identify and analyze potential risks and develop risk mitigation strategies.
- Determine the required resources, including personnel, equipment, and materials.
- Create a communication plan to ensure effective information flow among project stakeholders.
- Establish performance metrics and milestones to track progress throughout the project lifecycle.

3. Project Execution

- Procure necessary resources and equipment based on the project plan and specifications.
- Implement the construction and installation of water treatment plant components according to engineering design.
- Regularly monitor and control project activities to ensure adherence to quality standards and timeline.

- Conduct regular team meetings to address any issues, provide updates, and maintain alignment with project objectives.
- Document all project activities, changes, and decisions for future reference and audit purposes.

4. Project Monitoring and Control

- Continuously monitor project performance against predetermined metrics and milestones.
- Conduct regular inspections and quality assurance checks to ensure compliance with design and regulatory requirements.
- Identify and resolve any deviations, risks, or issues that may arise during the project implementation.
- Modify the project's outline as required, taking into account any unexpected occurrences or changes to the project's demands
- Maintain effective communication channels with stakeholders to provide updates and address any concerns.

5. Project Closure

- Complete all project deliverables and conduct final inspections to guarantee conformity with specifications.
- Acquire the requisite licenses as well as certifications for the water treatment plant's operation.
- Perform an exhaustive assessment of the endeavor to evaluate its efficacy and determine learning learnt.
- Archive all Documentation of the endeavor, involving plans, states, and pertinent info for use later on.
- Provide proper training and handover to the plant's operational staff.

4. RESULT DISCUSSION

4.1 Analysis of Data Collected

The collected from the questionnaire survey of experienced professionals was analyzed by using MS Excel software by cross tabulating analysis method. Cross tabulation analysis carries out the relationship between the two, three or multiple parameters of the data collected the data was analyzed with reference to the designation and experience of the respondents. Therefore, the results obtained by this method was reliable as the priority was given to the experienced one with having a better designation in the industry.

The data gathered from the telephone conversation was processed using the technique of thematic examination for the qualitative part of this research, as theme evaluation combines (often very large) data sets corresponding to their similarities. The questionnaire asked to individuals were categorized and similar interests was analysed regarding. Qualitative analysis was done to combine the data collected and was represented to meet the objective of this study.

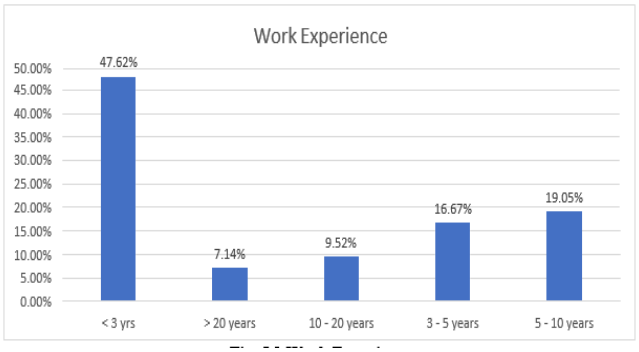


Fig. 4.1 Wor Experience

- As, shown in the above fig.4.1 it is clear that the respondents were professional and having a good experience in the field of civil engineering. Mostly 47.6% of personnel were having experience of less than 3 years while there were quite experienced personals having experience up to 10 years. So, it can be stated as the results obtained were reliable. The respondents were quite qualified for this study as 52.38 % were graduated and 33.33 % were the post graduates having a good experience in the industry. As well-educated responses make the study reliable and trustworthy due to good technical knowledge.
- 88.37% of respondents were aware of the concept of construction management resulting that there is quite a good understanding of the construction management and need of construction management can be established by using the results.

Fig. 4.2 Rating as Manager on a Construction Site

As the study is purely based on the construction management, so the respondents were asked that, “How would you rate yourself as a manager on a construction site?”. The obtained responses were analysed on the designation basis of the respondents in which it is found that the Construction Manager, Architect, Supervisor, Team Leader, Executive Engineer, Labour Contractor, Project Manager and Site Engineer rated themselves as best manager as shown in the fig.4.2 above. So, it can state as there are quite good manager in the industry who build up the construction industry.

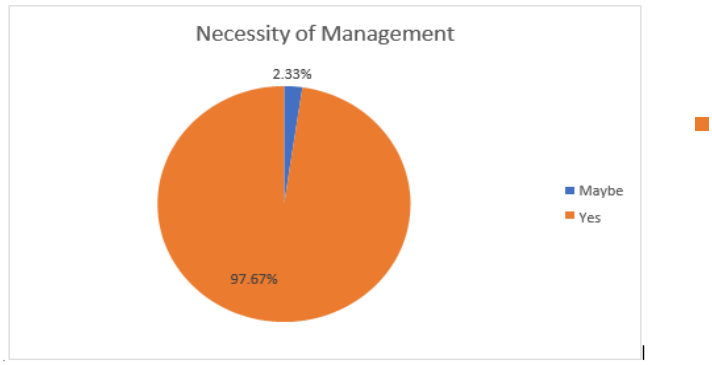


Fig. 4.3 Necessity of Management

Since the respondents are the best manager in this study, but they also responded in majority of 97.67% as there is need of construction management for the public projects like Water treatment plant. Construction management is much needed concept for the future of industry. The result analysed can be clearly seen in the fig. 4.3.

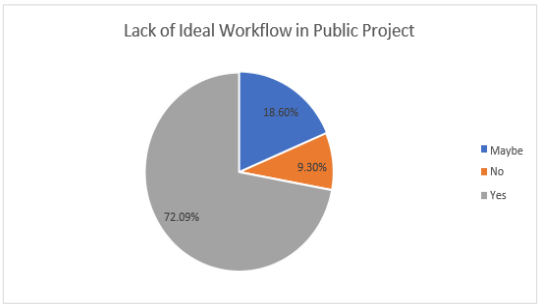


Fig 4.4. Lack of Ideal Workflow in Public Project

Since the majority of people i.e., almost 98% of people thinks that there is a serious need for the proper management in the construction of the government projects since they lack in the management skills which leads to various problems which were further asked, that 72% of people thinks that these kind of projects like water treatment plant and various other public projects lacks the ideal flow of the work which is very necessary for the management point of view.

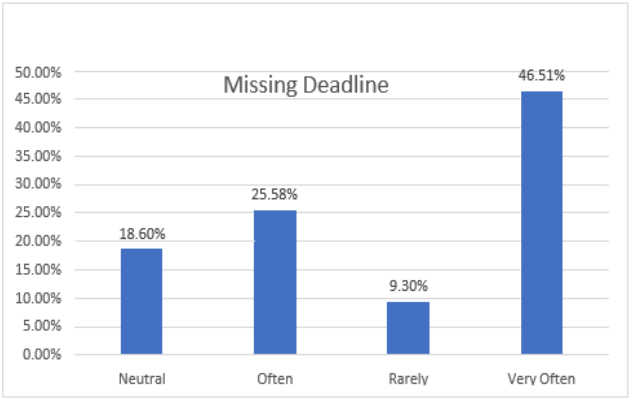


Fig. 4.5 Missing Deadline

As there is a need of management for the projects which are not meet resulting in missing the deadline of the complicated projects like water treatment plant. 46.5 % of responses clearly shows in the fig.5.5 above that deadline of activity are very often missed resulting in the delay. In India, the construction industry is much more dependent on labours and there is very less knowledge and management skills for using the advanced technologies and various machineries which can not only save the time but also make the work for labours far easier.

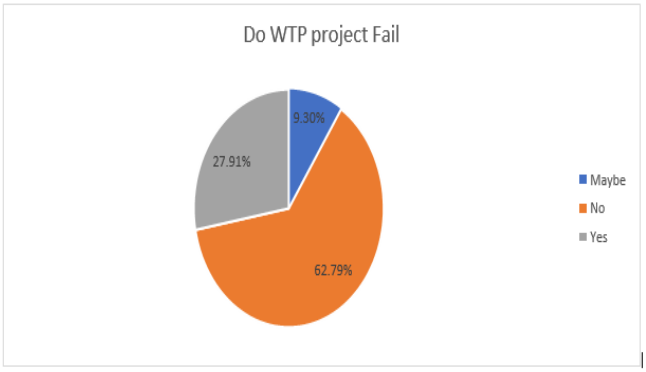


Fig 4.6 Do WTP Project Fail

The result in the fig.4.6 clearly shows that there is very slight chance of failing of WTP projects. 62.79% of respondents stated that there is no chance of failure of this project which is a good result for management point of view.

Fig. 4.7 Availability of Skilled Labour on Construction Site

The availability of skilled labour is quite good according to the responses most of the respondents Architects, Contractor, Labour contractor, Site Engineer, Project Manager, Supervisor and Project Engineer can make the availability of skilled labour easily but they commented there opinion as it requires more cost for immediate need or the labour needs a steady work flow since they are on the daily wages.

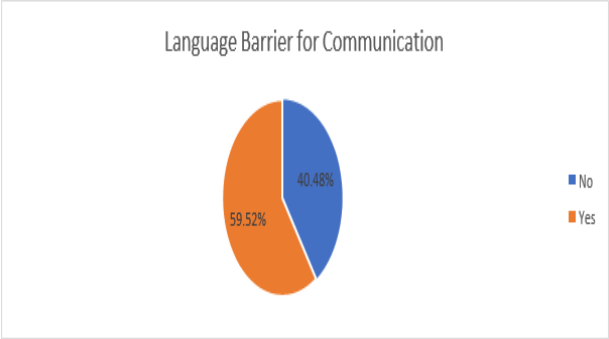


Fig. 4.8 Language Barrier in Communication

Communication problem arises during the construction project and especially in the complex structure like water treatment plants, and one of the main reasons is the language barrier since there are various local languages spoken among the sub-contractor, labours, supervisors and engineers it gets hard to understand even the simple activities. The response also shows the same result in the fig. that 40.48% of the personnel find the problem in the communication due to language while 59.52 % have no problem regarding.

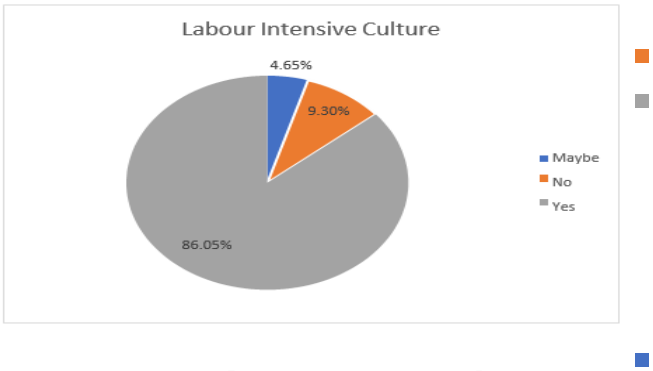


Fig. 4.9 Labour Intensive Culture

The fig.5.9 clear state one of the main reasons for the need of construction management in the public projects due to labour intensive culture. As shown in the fig. 86 % of the experienced respondents states that construction industry in India is quite labour intensive.

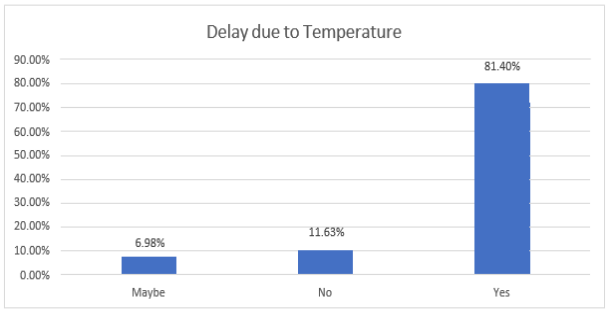
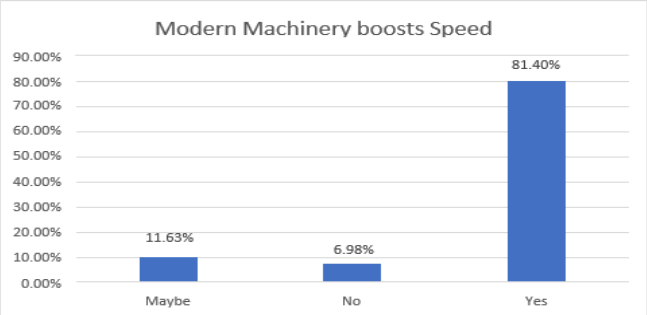


Fig. 4.10 Effect of Delay due to Temperature

There is also another reason in India that there is quite high temperature weather all over which also makes the labour dependent work tasks getting delayed on daily basis. Climate play's vital

role for any construction project which is believed by 81.4% of the respondents according to survey and it gets tough due to higher temperature.



4.11. Modern Machinery Boosts Speed

As the work gets easy workflow gets ideal and speed of the construction activities improves. This can be achieved by minimizing the manual labour work by replacing by modern tools, equipment and machineries which not only saves the time but also improves the quality of work and provides better results. This can be justified in the fig.4.11 analysis of the respondents of which 81.4 % believe in.

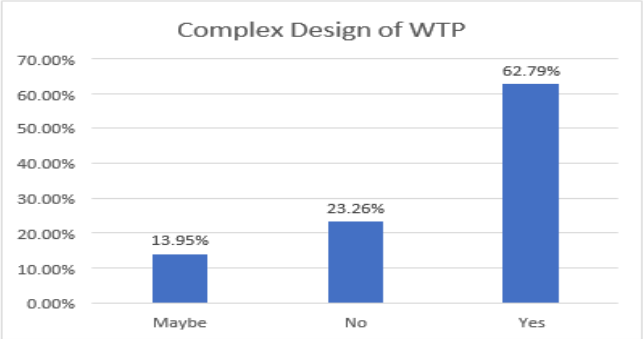
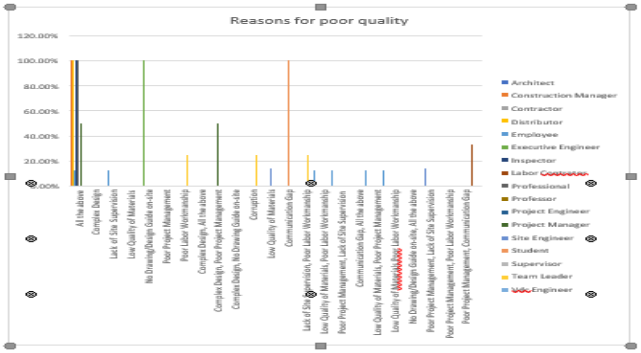


Fig. 4.12 Complex Design of WTP

As shown in the fig.4.12, 62.79 % of responses clearly states that the water treatment plants have complicated design. There are various factors to be considered while doing any activity for the future coming activity as the structure is completely water based so flow, level, jumps, collection, etc. are needed to be considered. Therefore, during the construction an experience personal is needed who can also manage the project.



.4.13 Reasons for Poor Quality

Quality is the most important factor that guarantees the project life and its success. The various factors that affect the quality of the construction activity is well showed in the fig.

4.13 above. The main reasons for poor quality can be stated as poor project management, complex designs, communication gap, lack of supervision and poor workmanship. These factors can be managed and eliminated by good planning and management skills during the construction activities.

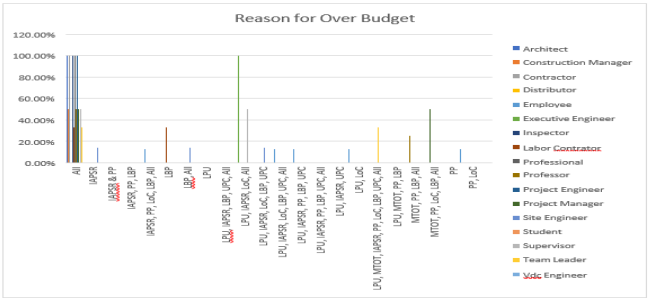


Fig. 4.14 Reasons for Over Budget

(Note: LPU-Lack of project understanding, MTOT-Multiple teams instead of one team, IAPSR-Incorrectly assessing project scheduling of rates, PP- Poor Planning, LoC-Lack of Coordination, LBP-Lack of Backup Plan, UPC-Underestimating Project Complexity and All-All the above reasons).

Over budget is one of the reasons that leads a delay or complete stoppage to any activity of project or an entire project. Budget planning is the most important for any construction activity, after all money is the only factor for which all the parties are working. It can be clearly seen in the fig.5.15 that the main reasons for overbudgeting are incorrect assessing project schedule rates, Poor Planning and lack of project understanding with lack of coordination. The reasons can be eliminated by better project management resulting in the budget friendly project.

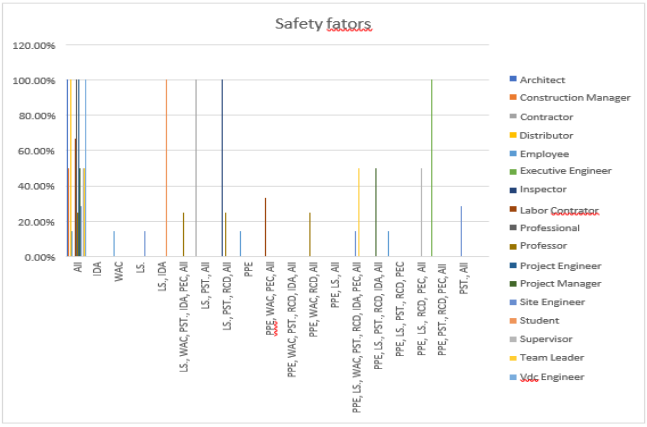


Fig. 4.15 Safety Factors for Construction Activities

(Note: PPE-Personal Protective Equipment, LS-Ladder Safety, WAC-Keep the Work Area Clean, PST-Proper Site Training, RCD-Reporting and clearing defects, IDA-If in doubt, ask, PEC-Precautions for environmental changes, All-All the above).

At every construction project safety is must. Safe practices for any construction activities should be encouraged like providing the proper site training, PPE should be provided to the personnel working on site and visitors too. Keeping the work area clean is a good practice while if there are any defects that should be reported to the supervisor or in charge. All of the factors are necessary for safety as seen in the fig.5.16 as any accidents or damages not only results in delays in construction activities but also affects the health of the personnel involved.

Fig. 4.16 Need of Planning and Management

1. Conclusion for Need of Management

The data collected was cross referenced to the percentage of respondents' states that they agree to the reasons for need of planning and management for a complex project of water treatment plant. The data was summarized in order to understand the necessity of construction management due to the reasons showed in fig. 5.17. The respondents who strongly agree for the reasons behind need of planning and management were taken into consideration for the result of the study. The data was further analysed in terms of the percentage and the reasons were ranked accordingly that causes the need of construction management of water treatment plant. The labour-intensive culture was ranked first as main reason for the need of planning and management for construction projects while language barrier for communication was ranked at the bottom summarizing the reasons for planning and management.

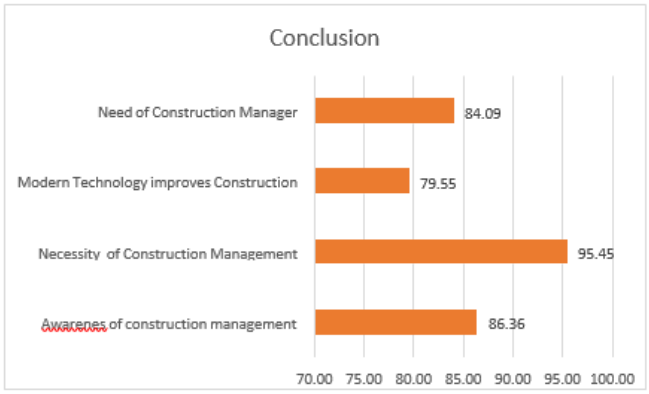


Fig. 4.17 Opinion

The data that was collected and analysed on MS Excel software was further concluded that

95.45 % of the respondent strongly believes that there is necessity of construction management for water treatment plant out of which 86.36 % were aware about the concept and benefits of construction management who strongly believes that utilization of modern technologies, tools and equipment can improves the construction activities resulting in better outputs. The construction management can be done by a construction manager who is capable of overcoming the reasons and solving the problems in construction activities of water treatment plant to which 84.09 % of the professionals strongly agree.

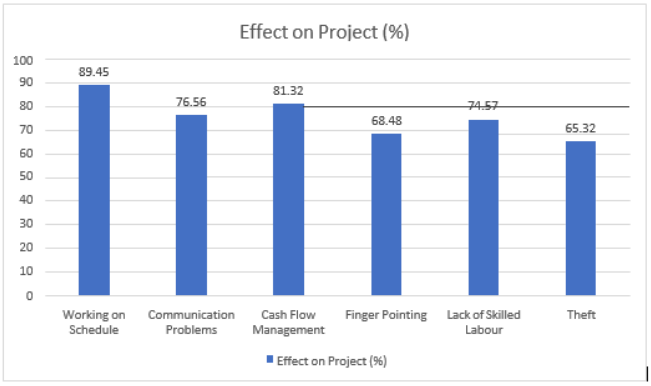


Fig. 4.18 Effect of Difficulties on Project

• For working on a schedule there are various factors to be taken into considerations like adaption of modern technologies and equipment. The skilled labors play a vital role in construction of especially WTP as there are various complications in the design the structure basically works on the elevation from the other structure as it is water based and plays a vital role for the smooth flow of water. The blame game should be eliminated by appointing a neutral party which can also be helpful for solving the communication problems which can be one by hiring the construction or project manager. The manager not only helps in those difficulties but also helps in the construction flow on schedule and can also be helpful for the fund management of the project. The problems of theft and vandalism can be overcome by hiring a watchman and an overnight supervisor which could be helpful for saving the materials and equipment from the site.

• This question was well answered by the parties that the planning is always done before beginning any activity and the duration to be considered during this activity is also been set and the material management is to be taken into consideration accordingly the current market rates. The client plans the activities according to the time duration and the climatic conditions while the contractor plans according to availability of labors, equipment, funds, current market values and many other factors.

Completing the activity in a given time is one of the hardest tasks in eyes of every party in the WTP. As climate plays a vital role for meeting the deadline like in the summer season the deadline is often meet but as soon as the monsoon begins there occurs the delay in activities and deadline is mostly meet. Funds is an important factor for meeting project on time as the cash flows smoothly the construction works smoothly and every party is happy.

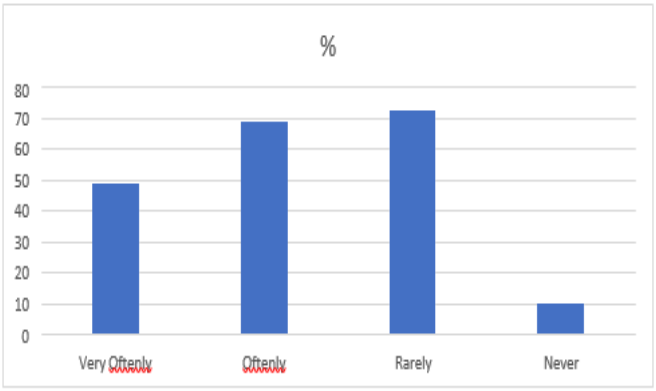


Fig. 4.19 Meeting the Deadline

Various parties have various roles in crisis, like if the theft happens the problem should be solved by the site in charge and watchman itself. If there are any problems related to the drawing or design the problem should be solved by site engineer, the designer and the clients' representatives. Like if there are certain issues with fund, higher authorities like contractor and client will have to solve the problem. But every one of the parties stated that these issues could be resolved if there is a construction project manager who himself can handle all these issues.

Yes, for sure if there is a perfect planning and the problems which may arise are taken into consideration then the activity surely successfully completed in the given time with the quality work.

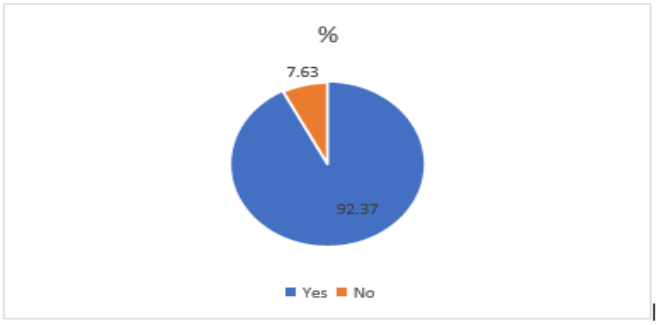


Fig. 4.20 Completing activity with full proof planning

- Multiple answers were recorded for this particular question, the labor contractor needs guidance on daily basis while the site engineer states that it can be done without any help from outside that he himself is capable. The clients' states that guiding on daily basis and managing day to day activity can give a quality of work within the time to which the general contractor agrees as the work load of contractor is educed and don't have to look into every problem.
- The Management of this particular plant is quite impressive as there are various parties involve to solve the crisis on their authorities' level which is a must need, meanwhile this site also has a project head who acts just quite similar to the construction manager. Which gives the answer to this whole study of management of public projects. As the project id to be completed within one and half year and the quality of work is maintained thoroughly. As there is already a manager and he looks into all problems and activities so the project is already is delivering on time and is there is no doubt in delay of the WTP testing. As in various kind of way the cost of running is saved the material is properly managed there is quality of work and every party is quite impressed so there is a plus point and a big advantage that the manager is there to save a day, which gives answers to next three questions in the line.
- Construction project management in India is very poor. Government allocates more money to mega cities and urban population which leads to neglecting the rural population of India which contributes majority of population of India. While there is poor execution which takes more time and effort and the parties are not impressed and leads to the failure of project. Work with the client, the the designer, vendors, and sellers to come up with schedules for building and completion dates constitutes good planning. Planning encompasses more than simply creating the building schedule. In addition, there is lack of modern technologies and equipment with lack of skilled labours. Planning and building rules and regulations leads to issues plus there is politics involve in the small projects in small cities which leads to failure of project or mass destruction.

5.CONCLUSION

Effective project management plays a pivotal role in ensuring the successful implementation and operation of a water treatment plant. By employing sound project management principles, such as comprehensive planning, diligent execution, and proactive risk management, project managers can navigate the complex challenges associated with water treatment projects.

The key takeaway is that project management provides a structured approach to coordinate and integrate various aspects of the project, including engineering design, procurement, construction, and commissioning. It enables teams to adhere to schedules, allocate resources efficiently, and monitor progress closely, ultimately resulting in the timely completion of the water treatment plant.

Moreover, effective communication and collaboration among stakeholders, including engineers, contractors, regulatory authorities, and community representatives, are critical throughout the project lifecycle. By fostering open lines of communication and encouraging

collaboration, project managers can ensure that all parties remain aligned with project objectives and swiftly address any emerging issues.

Additionally, the incorporation of sustainable practices in project management can lead to long-term benefits for the water treatment plant and its surrounding environment. Emphasizing the use of eco-friendly technologies, optimizing energy consumption, and implementing robust maintenance strategies can contribute to the plant's efficiency, reliability, and overall environmental sustainability.

In summary, successful project management of water treatment plants hinges on meticulous planning, effective execution, continuous monitoring, and collaboration among stakeholders. By embracing these principles, project managers can drive the implementation of high-quality, sustainable water treatment infrastructure that meets the needs of communities and safeguards precious water resources for future generations.

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Project Management of Water Treatment Plant

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