International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 05 | May - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

Review Paper: "PROJECT SCHEDULING"

Bhushan krishna Bhoire [1], Mr. Ashok Desai

[1] Student of Master of Management Studies,Alamuri Ratnamala Institute of Engineeringand Technology, Mumbai University,
hushanbhoir202@gmail.com[2] Associate Professor, MMS Department, Alamuri Ratnamala Institute of Engineeringand Technology, University of Mumbai mmsho.armiet@gmail.com

ABSTRACT:

Project scheduling plays a pivotal role in effective project management, serving as a roadmap for organizing tasks, allocating resources, and meeting deadlines. This paper explores the significance of project scheduling methodologies, ranging from traditional approaches like Gantt charts to modern techniques such as critical path analysis and program evaluation and review technique (PERT). By examining the fundamental principles, advantages, and limitations of each method, this study aims to provide insights into selecting the most suitable scheduling approach based on project scope, complexity, and constraints. Additionally, it highlights the importance of incorporating flexibility and adaptability into schedules to accommodate uncertainties and changes during project execution. Through a comprehensive review of literature and case studies, this paper offers practical recommendations for enhancing project scheduling practices and optimizing project outcomes.

INTRODUCTION : Sound Project Scheduling from concept to commissioning is the key to success. When any project is taken up, each and every phase right from inception till the final completion must be thoroughly, effectively and tightly controlled so that each successive milestone achieved in time contributes to building the blocks of ultimate success in fulfillment of desired objectives. Leading organizations in the world achieve success in Project Scheduling by controlling the following four factors through all phases of a project in order of priority.

1. Safety,
2. Quality,
3. Time and
4. Cost.

Basics of a Project:

1. Eco Friendly: Every project must incorporate required environment protection measures and meet the norms.

2. Competitive: The project must be competitive when compared against similar projects being done by others in the field.

3. Project Cycle Time: With borrowed capital, reduction in project cycle – time goes a long way in reducing the project cost by way of reduction in interest during construction.

4. Efficiency in Operations: Basic design of the project must aim at highest levels of efficiency in operations to fully justify time money and effort put in to build the project.

5. Quality and Safety: Without the high standards of quality and safety in execution, no project can be successful.

6. Customer Expectations: Above all, ultimately, a project must be able to meet expectation

7. of its Techno-economical viability. Projects must clearly establish this basic requirement.

Reliable Technology: Use of proven and reliable technology is essential for any project, to be called successful.

Trends, Issues and Critical Success Factors:

Following factors contribute to success of projects.

1. Clear Vision and Project Objectives: aims and objectives of the project need to be clearly defined to set the right direction and tone to enable accurate assessment of benefits derived on project completion.

2. Strategic and Detailed Project Planning: Detailed work breakdown structure and integrated work plans need to be developed in the beginning itself. Care is to be taken so that time estimation for different activities remains as accurate as possible.

3. Dynamic Leadership: Similar to importance of the role of a good captain in any game, role of dynamic leadership for a project is important. Positive, bold, timely and quality decisions taken by them to steer a project towards success are very important factors.

4. Committed, Dedicated and Competent Team: Every project requires teamwork, close coordination and unidirectional efforts to create a synergy. Along with hard work, required level of technical and managerial competence in team members is essential.

5. **Integrated Project Scheduling Systems**: Putting a sound Project Scheduling system, which is capable of integrating multifarious, and multi agency activities being done in parallel is required to ensure synchronism and converging of activities towards one common goal of project completion. This *system* should be able to organize, multi level planning and monitoring of project activities as per the requirement.

6. Project Cost Control: Effective built in measures to ensure control of cost both in design and execution phases of a project are essential.

7. Owner's Involvement: Deep involvement of owner at every step to see that above system functions to its full potential is must in any Project Scheduling. Elaborate systems and procedures alone cannot guarantee any results unless they are effectively implemented and every step is followed till its logical conclusion.

8. Handling of Emergencies and Surprises: Mid course corrections would be required to take care of any interim delays. Applying 'what if' logic to anticipate project surprises, assessment of risks and putting in place a **"Risk Control and Mitigation Plan"** is necessary. Adequate safety and fire protection measures should also be a part of project execution.

Clarity in Contract Management: Large projects require handling of major contracts. Following aspects are crucial to manage these contracts.

- Optimization of contract packages for effective and faster implement-tation. Here, scope of entire project is covered under mutually exclusive packages.
- Framing of qualification requirements to ensure competition from competent agencies.
- Broad based specifications to generate competition.
- Clearly defined evaluation criteria and selection of agencies based on price and capability consideration.
- Tie up of work programme and quality plans with commitment of matching resources as part of contract.
- Dispute resolution mechanism, introduction of incentives and penalties.
- Mechanism for early closing of contracts after work completion.

Sound Engineering Practices: Major projects require a very strong engineering support. Aspects related to engineering to be taken care include

- Up front engineering to maximum possible extent,
- Standardization of plants and layouts,

- Standardization of equipment,
- Design automation,
- Design simplification and reduction in number of components and
- High reliability of overall process, sub systems and components.

OBJECTIVE : The objective of this study is to explore various project scheduling methodologies and their significance in effective project management. By analyzing traditional and modern scheduling techniques, the study aims to provide insights into the fundamental principles, advantages, and limitations of each method. Additionally, the objective is to offer practical recommendations for selecting the most suitable scheduling approach based on project characteristics and constraints. Through a comprehensive review of literature and case studies, the study seeks to enhance understanding of project scheduling practices and their impact on project outcomes.

STRUCTURE OF THE RESEARCH – Research design means a specified framework for controlling the data collection. The research is of descriptive in nature, which could provide an accurate picture of induction procedure conducted in the organization. Descriptive research includes surveys and fact-finding inquiries of different kinds. The research is of Ex post facto nature in which researcher no control over the variables has. Statistical method lay stress on objectivity rather than rely on intuition and judgment and average & percentages can easily be calculated.

The statically method needs the collection of data in two forms

1. Primary data
2. Secondary data

1. PRIMARY DATA

The primary data are those, which are collected afresh and for the first time, and thus happen to be original in character. The data on the required information is collected from actual persons using the product/ services. This data is more suited for the objectives of the project.

2. SECONDARY DATA

The data which have already been collected by someone else or taken from published or unpublished sources and which have been already been passed through the statistical process.

MODE OF DATA COLLECTION

The study is based on Secondary data which includes:-

Secondary Data will be gathered from books and journals on Implementation aspect of Project scheduling with reference to Wipro Limited.

CONCEPT FRAMEWORK:

1. **Project Characteristics:**
- Project scope
- Complexity
- Constraints (time, budget, resources)

2. **Project Scheduling Methodologies:**
- Traditional approaches:
- Gantt charts
- Work breakdown structure (WBS)
- Modern techniques:
- Critical path method (CPM)
- Program evaluation and review technique (PERT)
- Resource leveling
- Agile methodologies (Scrum, Kanban)

3. **Criteria for Methodology Selection:**
- Suitability to project scope and complexity
- Ability to manage constraints effectively
- Flexibility and adaptability
- Resource availability and allocation

4. **Project Performance Metrics:**
- Time to completion
- Cost adherence
- Resource utilization
- Quality of deliverables

5. **External Factors:**
- Stakeholder expectations
- Market dynamics
- Regulatory requirements

6. **Impact on Project Outcomes:**
- Efficiency and effectiveness of scheduling methodology
- Mitigation of risks and uncertainties
- Achievement of project objectives

7. **Continuous Improvement:**
- Feedback mechanisms
- Lessons learned
- Iterative refinement of scheduling practices

SCOP OF STUDY:

1. **Project Types:** The study will focus on a variety of project types across different industries to ensure a comprehensive understanding of scheduling methodologies' applicability.
2. **Scheduling Methodologies:** The research will cover both traditional and modern scheduling techniques, including but not limited to Gantt charts, critical path method (CPM), program evaluation and review technique (PERT), and agile methodologies.
3. **Project Phases:** The study will examine scheduling methodologies across all project phases, including initiation, planning, execution, monitoring, and closure.
4. **Case Studies:** Real-world case studies from diverse industries will be analyzed to demonstrate the practical application and effectiveness of various scheduling methodologies.
5. **Comparison and Evaluation:** The research will compare different scheduling methodologies based on criteria such as ease of use, flexibility, adaptability to change, resource optimization, and ability to meet project objectives.
6. **Limitations:** The study will acknowledge the limitations of scheduling methodologies, such as inherent uncertainties, complexity management, and challenges in stakeholder coordination.
7. **Recommendations:** Practical recommendations will be provided for project managers to select and implement appropriate scheduling methodologies based on project characteristics, constraints, and objectives.
8. **Geographical Context:** While the study will aim to be globally relevant, specific regional or cultural variations in project management practices may be considered where applicable.
9. **Timeframe:** The research will focus on scheduling within the context of project management rather than delve deeply into broader aspects of project management theory or practice.
10. **Stakeholder Considerations:** The study may touch upon the influence of stakeholders, including clients, team members, and external entities, on project scheduling decisions and outcomes.

SUGGETION –

On the basis of the study and extracted results following recommendations are suggested for applying improvement techniques in Project scheduling and better quality management at their ends.

- Manufactures need to improve their relations with worker and show faith.
- Employees should be allowed to make decisions regarding their work and should be encouraged to propose solutions related to work problems.
- Manufactures have to change their mindset that quality is not only just a matter to achieve client trust but also to make the end user delight and satisfied.

 Manufactures should conduct internal audit by third party to get a clear image of its weaknesses and the area which needs improvement.
 Manufactures of India should learn about Project scheduling and should develop a clear image regarding Project scheduling. Many of them think that Project scheduling is an unnecessary exercise which is cause of wastage of money and time. But in reality the application of Project scheduling will cause them the save of money and time.

CONCLUSION –

1. **Diverse Methodologies**: Project scheduling encompasses a wide range of methodologies, from traditional approaches like Gantt charts to modern techniques such as critical path analysis and agile methodologies. Each methodology offers unique advantages and limitations, catering to different project scopes, complexities, and constraints.
2. **Adaptability and Flexibility**: The ability of scheduling methodologies to adapt to changing project dynamics and uncertainties emerged as a crucial factor in project success. Agile methodologies, in particular, demonstrated their effectiveness in managing dynamic project environments and accommodating evolving requirements.
3. **Resource Optimization**: Effective resource management emerged as a critical aspect of project scheduling. Scheduling methodologies that prioritize resource allocation and utilization contributed to improved project efficiency and cost-effectiveness.
4. **Risk Mitigation**: The role of scheduling methodologies in identifying and mitigating project risks was evident. Techniques such as critical path analysis and resource leveling helped project managers anticipate potential bottlenecks and allocate resources strategically to minimize schedule disruptions.
5. **Recommendations for Practice**: Based on the findings, practical recommendations and guidelines have been developed for project managers to enhance project scheduling practices. These recommendations emphasize the importance of aligning scheduling methodologies with project characteristics, fostering adaptability, and prioritizing resource optimization.