ARTIFICIAL INTELLIGENCE IN PROJECT MANAGEMENT: SWOT ANALYSIS

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ABSTRACT

Every multifaceted project has its unique problems and challenges which can be overcome by good project management practices. Juggling three pillars of project management simultaneously which involves maintaining perfect balance between time, budget constraint while ensuring quality is a challenging task. At times, it is found that time and cost over-runs remain a widespread pain area in various types of projects. Project Management practices are currently being meticulously used in all kind of industries including educational institutes. The use of AI approaches in project management can be a way to improve the project management lifecycle's ability to deal with unpredictability. Artificial Intelligence has effectively produced a more comprehensive and competent means of completing the many project management functions, and there is no question that it will entirely alter project management in the next years. The goal of this research study is to determine the Strength, Weakness, Opportunities and Threats [SWOT] of AI techniques in project management. The research will aid industries in determining the best use of AI for project management that will meet the needs of all project stakeholders involved in project execution.

Keywords: *Artificial Intelligence, Machine learning, Project Management, SWOT.*

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Introduction

A project is a unique temporary task being performed with specific goals in mind that is quantified in terms of predefined parameters. A project is usually considered to be a success if it meets within the objectives of the acceptance criteria including time and budget. The application of standard techniques, methods, knowledge, skills and prior experience to meet the project objectives is known as project management. Project management is akin to juggling three balls at once since it necessitates striking a delicate balance between delivering on time, on budget, and with high quality. Overruns in both public and private projects continue to be a source of frustration. AI in Project Management is an approach that can manage several tasks without requiring a large number of resources. It does not necessitate any additional resources or expenditures. The duties can be completed automatically by utilising artificial intelligence. AI also aids in project decision-making and recognising the talents and skills of team members which are part of project.

In recent years, Artificial Intelligence (AI) has become one of the most thoroughly investigated and developed technologies. Artificially intelligent systems have quickly made their way into real-world applications, from smart personal assistants to self-driving cars, and they continue to do so at an exponential rate. Almost every career is being reimagined as AI systems, robots, and cognitive tools become more sophisticated, offering new opportunities.

Project managers must be ready to adapt to future advancements in order to keep up with the times. Purposeful AI will aid project managers in adding value at various stages of the project lifecycle. Machine learning in the project management environment aids project managers in forecasting stakeholder behaviour, income, and risks using historical data and organisational expertise. The ability of an organisation to gather the right data at numerous phases of a project and a knowledge management policy to capture the expertise and experience of its staff are both critical to the successful installation and reliability of a project management AI platform. All these developments bolster project managers' abilities.

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The research work aims at identifying the exact functions that can be done using AI required by the companies for managing the project management activities.

Problem Statement

Large-scale, complicated project management is entering an era of extraordinary complexity, one that demands more attention and investigation.

Expert judgement and parametric utilities are used to manage and monitor projects. Projects are the instruments via which organizations put their plans into well-defined action. Project success figures, on the other hand, remain exceptionally low. This is a troubling condition with considerable economic implications, hence new frameworks for project success rate prediction are to be derived to evaluate project success or uncover vital success elements. Artificial Intelligence frameworks can be used in several of these required tools. Most of the companies/project managers lack in the knowledge of progression of AI framework for their organization thus resulting to project failures at large.

The following major questions are addressed in this research.

- What are the gaps in existing project management frameworks
- Importance of Artificial Intelligence framework in project management knowledge areas for project success
- Evolution of application of AI in project management for project success
- What are the associated challenges for implementation of AI framework in Project Management

Research Objective

To study and analyse the major Strengths, Weaknesses, Opportunities and Threats [SWOT] of Artificial Intelligence framework in Project Management

Research Methodology

Analysis of literature sources concerning the SWOT analysis of usage of Artificial Intelligence in Project Management

Qualitative research method has been used in current research for carrying out SWOT analysis of usage of Artificial Intelligence in Project Management.

Qualitative method of research is adopted so that analysis of motivations, opinions and reasons become possible.

Research Analysis and Findings

- The Strengths, Weaknesses, Opportunities, and Threats (SWOT) technique is used to evaluate new projects and activities. SWOT analysis is a useful tool for assessing progress, developing strategies, and making future decisions.
- SWOT analysis may assist in identifying critical aspects such as competitive advantages and future development prospects while also bracing the organisation for impending dangers.
- Under the scrutiny of artificial intelligence systems, the SWOT matrix can be used in project management as a function to explore future opportunities and threats.
- Various Literature were studied to carry out SWOT Analysis. For each Strength, Weakness, Opportunities and Threats, 10 points has been compiled and enumerated below.

Strength Analysis

- **Data Preparation**

    AI is perfect for processing vast amounts of data and information.

- **Lower the Project's Costs**

    For some industries, AI may be able to help lower project costs.

- **Project Management for Technical Projects**

    The various tasks required in managing and conducting a project are referred to as technical project management. The areas that are mostly served by the AI systems that are currently available are simple to identify. Intelligent project management teammates, software programmes, and machine learning algorithms assist project managers in daily tasks by analysing status and supporting data-driven experiences and forecasts based on a database built from past projects.

- **Business and Strategic Management**

To investigate, judge (based on both rules and sentiments), or make different or better company decisions, strategic and trade management skills are required. AI can assist in the design of parameters, the identification of interdependencies, and the determination of trade results. The better AI can assist the project manager, the more complex the basic models are, and the more precise and information streams are available.

- **Leadership**

This domain encompasses a variety of interpersonal skills such as guiding, driving, and encouraging people from various backgrounds. The AI frameworks that are currently available can help with candidate selection by showing a short list or positioning based on a defined set of requirements and designs, but they are still unable to take

- **Increasing Productivity**

Instead of wasting hours of people on trivial, recurring activities, AI will allow us to manage massive projects more efficiently than before.

- **Management of Assets**

We can use these technologies to manage all of our digital assets. I also enable us to manage versions without requiring additional effort. Previously, we used a variety of technologies to manage all of this, which necessitated a variety of skill sets.

- **Risk Reduction**

Overall, it reduces risk and keeps the project on schedule. We receive notifications as soon as any disparities appear, and we have a mechanism to audit the system and correct the problems. It reduces the chances of a project failing. If there are any complications with the project, we will be aware of them ahead of time.

- **Avenues Available**

Rapid advancement of AI technology in project management, engineers will be in greater demand to develop, research and test AI based systems.

- **Skills Requirements**

The demands of an AI based environment will require an educational system which provides industries with talent that is ready to add relevant value.

Weakness

- **Influence**

In a variety of ways, the project manager might persuade the team to complete the task. He takes on the position of a leader. If you use influence correctly, you may persuade the entire team to work toward a common goal. Without a doubt, when the entire team works together, we achieve superior deliverables and a successful project. These may lack with AI based project management.

- **Negotiation**

AI tools will be useful for follow up and reminders, but at times you may need to have talks to better appreciate the issues or learn about the project's positive aspects. You will be able to make changes in the future if you have a regular touch point.

- **Inspiration**

Good leaders inspire their teams to complete their tasks. It's a human trait; individuals want to see the broad picture or outcome of the work they're doing. You've already won half the battle if your team is dedicated to achieving a common goal.

- **Fill in the Missing Information**

When you start a project, there are always some unknowns; the PM fills in the gaps, and as the project progresses, we discover new tasks or solutions. The PM's job is to constantly seeking for answers while the rest of the team is focused on their own assignment.

- **Human Touch**

When working with humans, we cannot overlook the importance of human contact. Humans are a social species. We desire to collaborate with one another. A skilled project manager will assist the team connect and identify solutions to problems, as well as bring the entire team together for a celebration after the project is completed.

- **Assisting with AI powered PM tool**

We may require a skilled PM to build the PM tool for the first time in order to handle projects on it. To achieve the best results, you must provide the system with the correct information. We may require a technical person to build the system, but the PM will be in control of the system and will be accountable for providing the information needed to build the system prior to the launch of the project.

- **Big Data**

Data cleansing and processing takes a long time, and assuring data integrity takes much longer.

- **Regulations and Standards**
  - Ambiguous ethical standards
  - Uncharted legal/liability and regulatory issues, as well as standards
  - Uncertainty about existing regulations' compliance
  - In highly regulated businesses, the risks of algorithmic explainability and compliance
  - There aren't any industry-specific best practises available.

- **Criteria for Qualifications**

The needs of a techno environment, particularly in AI, will necessitate an educational system that provides industries with required resources that will immediately add value.

- **Adaptability**
  - As previous procedures become obsolete at a faster rate to keep up with technological breakthroughs, adaptability will be an essential characteristic.
  - Having trouble acquiring and developing talent.
  - AI initiatives competing with other projects in the firm Safety aspects of AI systems
  - Cultural stumbling blocks to AI adoption

Opportunities

- **Integration**

AI automation technologies have made it possible to connect multiple platform tools for project reporting and progress tracking. It can look into resource allocations, task status and issue alerts if any risk occurs utilising these tools. It also allows us to send notifications to the appropriate stake holders to reduce risk. Project Management tools can also be linked to the source controls thus allowing for real-time tracking Project status.

- **Documentation**

Project management necessitates extensive documentation. AI tools aid in the creation of document templates, the collection of data from diverse systems, and the recording of successful initiatives. It also keeps some recurring documentation on hand for when it's needed.

- **Reporting**

Tools for project management can check the current progress of the task on the fly, making reporting simple. We don't have to waste time creating reports because they appear in the report as soon as we finish our activity. We can also tailor reports to meet your specific requirements.

- **Forecasting**

AI tools can be used for forecasting, budgeting, risk management and resource allocation. It also allows to utilise resources to their full potential. It all adds up to company growth and profit sharing in the end.

- **Analytical Prediction**

Using AI techniques, we can develop future models based on past learnings. When it comes to leveraging AI, data is king. Data aids in the development of appropriate models. The more, the better. So, as we work on ongoing projects, these AI based tools are collecting all required data in order to build the tool smarter and assist us in making judgments for the project life cycle. It will allow us to propose project strategies based on our previous initiatives using data backup.

- **Budgeting**

These tools can be used for project budgeting and forecasting. Tools also aids in keeping projects within budget and highlighting any potential spending hazards. AI based tools can track the entire project budget, which will aid for proper auditing.

- **Notifications and Reminders**

    Notifications and reminders can be set based on project criteria which will aid PM's to ease the distress of multiple follow up and tasks which requires attention.

- **Allocation of Resources**

    Using the PM tool, we may allocate resources and personnel to the project. It will keep you from having to deal with multiple allocations. We may also use these technologies to track resources and discover the correct competence based on previous initiatives.

- **Workflow and Approvals**

    Within AI-enabled technologies, workflow and approvals for project activity are simple to handle. It also provided approval notifications and reminders and Communication channel that are less error-prone and speedier.

- **Digital PMO**

    Within AI-enabled technologies, Digital PMO can be created to help all new projects to get the required data from organisation project repositories.

Threats

- **Reduction in Employment**

    Often people imagine that due to artificial intelligence usage rise in employment losses may occur.

- **Human Control Efficacy**

    Engineers believe that AI will become so intelligent that no humans will be required for execution of the projects which appears to be a distant concern.

- **Lack of Comprehension**

    Engineers aren't sure how AI anticipated outcomes have been calculated. This not only presents confidence challenges but also poses legal and accountability concerns.

- **Complementing Technological Advancements**

    Data analytics is rapidly evolving, making it challenging to stay up with technological breakthroughs and the benefits they bring.

- **Management of Resources**

    Many businesses simply lack the IT infrastructure and knowledge required to successfully use big data.

- **Conclusions that are incorrect**

    AI Data: Unprepared Due to bias in algorithms, data, or the teams in charge of administering multiple projects, incorrect conclusions may be reached.

- **Cost Implications**

    Top managements are cautious to invest in new AI based systems since they have already spent considerably in old software systems.

- **Management of Risk**

    AI is not without its drawbacks. Algorithms are being built to simulate human behaviour as close as feasible. As a result, algorithms may induct human bias. While AI is useful for unorganised data, mandatory classification, forecasting and predictions but not suitable for grasping the "why" particularly when several external factors are stakeholders.

- **Ethical Concerns**

    Many ethical difficulties are to be adopted by AI, which necessitates comprehensive due persistence and impact evaluation.

- **Early Developmental Stages**

    Project Management AI Applications are still in the early stages of development and need to be improved on a regular basis.

Conclusion

AI can help with the administration and execution of various processes that are frequently repeated.

Project managers are diverted from dealing with strategic issues by such duties. However, using AI in the project management is a relatively new endeavour associated with some risks. It's important to remember that even the trained AI algorithms in project management systems can't ensure that they'll run smoothly, so staff should keep an eye on the data that AI consumes on a frequent basis to avoid outcomes that are skewed.

Main conclusion from the reviewed papers is that inclusion of AI with project management practices has proven to be beneficial for increasing success of the project. Although AI technologies lack sensitive and reasoning capabilities but at the same time it holds powerful tools for investigating and forecasting project management success or failure.

However, there are certain challenges such as high skills, maintenance, high cost which needs to be look upon before implementing AI in any organisation. To conclude, AI can be seen as an optimistic opportunity in project management as it aids various project management activities for project success and AI tools will be really aid for the project manager to monitor and control the project.

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