

SWOT Evaluation of Project Management Software: MS Project Vs Primavera

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ABSTRACT— It is necessary to manage civil complex projects such as construction projects, infrastructure projects, megastructures, hydraulic structures and others, by using specialized programs to organize work and to prepare work break down structure organization for Planning and scheduling these projects. Projects are planned according to determining logic sequence between activities, defining resources to each task, methodology to construction and assigning organization to responsibilities. Without clear planning and scheduling can lead to delays in activities and work, this will lead to delaying the project. Due to many updates and changes plan of projects, software should be used programs MS Project or Primavera. The research employs a Strengths, Weaknesses, Opportunities, Threats “SWOT” analysis to assess two prominent comprehensively project management software solutions; Microsoft Project and Primavera. The study aims to offer insights into the distinctive features assessment, and drawbacks of each program, assisting organizations and decision-makers in making informed choices regarding their project management software. also, presented a case study about sample planning and scheduling solar pond project in Fayoum Governorate, Egypt.

KEYWORDS: SWOT; Primavera Program; MS Project Program; software; Decision Makers; Fayoum Governorate; Egypt.

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1. INTRODUCTION

Software for project management includes processes for scheduling, allocating resources, estimating, and sequencing tasks [1]. Construction planning and scheduling aim to efficiently manage the resources allotted while guaranteeing project completion on schedule. For market planning and scheduling, a variety of civil engineering software programs are commonly utilized, including Primavera and MS Project. Large-scale project planning usually entails a lot of paperwork and effort, but this difficulty can be lessened by utilizing the features of Primavera and MS Project software [2- 5].

Planning, securing, and realizing ideas is a logical and intellectual process that is a part of project management. Recent technological breakthroughs, improved communication, and efficient decision-making within firms have all contributed to the growing importance of project management. Managers now have instruments to help with the planning, carrying out, and overseeing of important tasks thanks to the development of diverse software technologies [6]. A key component in making these procedures easier to complete is project

management software. There are many other project management software solutions on the market, but Primavera and Microsoft Project are two of the most well-known and commonly utilized. These platforms provide a wide variety of instruments and methods for the expert administration of projects and programs [7], [8].

A comparative analysis is performed in order to evaluate the efficacy of every software. Innovative project management solutions like Primavera and Microsoft Project help users overcome the drawbacks of conventional planning and organizing techniques [9], [10]. They aid in the most effective and efficient planning of tasks, which helps ensure that the project is finished within the time frame specified [11, 12].

This research aims to investigate the advantages and disadvantages of Microsoft Project and Primavera, two widely used project management applications. There are many different software programs available in the current project management software industry. Software creation and acquisition are made possible by technical analysis, and software commercialization in the industry is made possible by various marketing strategies. Users give dependability, usability, affordability, and startup opportunities top priority when making software purchases. The need for online project management software-based digital marketing tools is rising. Two of the most popular project management programs are Primavera, created by Oracle Corporation, and Microsoft Project, created by Microsoft. A study is suggested to ascertain which software, Primavera or Microsoft Project, is more reliable, satisfies user needs, and delivers a solution that is generally more affordable in light of these factors. Also, the present paper makes an effort to find out the strengths and weaknesses of the widely used program software such as MS Project and Primavera program. The main target of the current study is to analyze by SWOT to the planning and schedule techniques, this makes use of the Primavera and Microsoft Project programs applied on a solar pond project as a case study.

2. Literature Review

Project management software has been studied by many researchers, In 2015 Maruthi S., was carried out in two stages. MS Project software was used in the first phase to manage the project schedule and allocated resources. In order to reduce rapid changes in demand, optimization was carried out in the second phase by modifying the number of workers needed for certain jobs. The analysis found that labour resources were optimized by changing the length of some activities and their predecessors without affecting the project's total time.

In 2015, Rhuta Joshi is study includes utilizing Microsoft Project 2013 to analyse a project with limited labour and resource levelling to evaluate time costs in home building. This method worked well for settling disputes over resources and reducing project time while sticking to a budget, which increased project profitability. The study's result stressed the potential for levelling to shorten project durations and save costs, as well as the negative effects of poor resource scheduling on delays.

In 2015, B.S.K. Reddy et al worked on two ongoing projects to optimize resource usage in Dubai, United Arab Emirates. After levelling the resources one at a time, they aggregated and levelled the options by combining them. This strategy produced a 5.65% decrease in resource use in the subsequent options, making it the most cost-effective strategy. According to the study's findings, resource sharing between several projects may be possible with forward demand planning and resource levelling at the project site.

In 2013, Ismail Abdul Rahman study evaluated the usefulness of commonly used time management software and methodologies in large-scale building projects. The efficiency of the management strategies and software for the time field in the civil projects was evaluated using data collected from a big project-focused

construction organization and the Relative Importance Index computation.

In 2019, Minh Shrestha was discussed the purpose of program is to benefit to increase reports edit easy work while requiring less work than manual techniques. The objective of the chosen software is to efficiently meet the specific objectives of each project, taking into account its particular constraints regarding both cost and time. Furthermore, scheduling, tracking, and physical components are important factors to take into account while using project management software.

In 2015, Abhishek Sharma was discussed Inadequate planning, scheduling, and job completion cause time and cost overruns in many projects, which can result in a number of problems such facility provision delays, development setbacks, degraded construction quality, and increased project prices. Upon closer inspection, it can be shown that the availability of labour has an inverse relationship with the project completion time. The project completion time is shortened by increasing manpower and lengthened by decreasing manpower. Additionally, the Microsoft Project Management software application is used to compare the actual time and cost of project labour with the baseline duration and cost. The schedule report is examined, and the reasons behind the delays are examined. These reasons include insufficient workforce, contractors who fail to start multitasking on the job site, a lack of shuttering materials, and the careless execution of work activities on site.

In 2015, Wale was discussed to fulfil project criteria, specific skills and techniques are needed for project tasks. Organizations can achieve a competitive edge in their respective industries by aligning project outputs with organizational goals through the use of this planned ability. To accomplish goals in scientific or everyday situations, the process entails organizing, planning, stimulating, and regulating resources, procedures, and protocols. This helps to overcome challenges that are typically encountered in planning and management. This strategy makes it easier to organize tasks optimally and effectively while giving a clear picture of how to finish the project on schedule and within budget.

In 2014, Jayalakshmi was discussed the study compared the time performance of the Industrial Building System (IBS) approach and the conventional construction method for high-rise residential structures across the whole construction period. Primavera project planning software was used to create the schedule. One of the advantages of the comparison is that it promotes workplace wellness for people who work directly in the civil engineer field. To support modernization of the industry, it is imperative that key stakeholders including architects, engineers, town planners, developers, contractors, suppliers, and manufacturers actively improve their working procedures, management, and administration.

In 2015, E. Suresh kumar was discussed the scheduling process that involves resource allocation, activity sequencing, estimation, and timing is represented by the use of MS Project software. The construction schedule's main goal is to guarantee the project's timely completion while allocating resources according to the allotted period. A popular technique for estimating a project's completion date and overall cost, as well as evaluating its status at any given time, and examining discrepancies between the project's budget and schedule is called Earned Value Analysis. Effective control over the project is provided by scheduling with MS Project software.

In 2013, Rhuta Joshi was attempted to use project management approaches to arrange and coordinate different resources through regulated procedures in order to achieve profitability within the constraints of limited budgets and time. The Critical Path Method and Program Evaluation and Review Techniques are two examples of management systems that have been effective in several civil engineering projects. Even though

resources are usually limited in real project scenarios, these strategies help to achieve project objectives through the economical and efficient application of resources. It has been noted that insufficient resource supply is frequently the cause of project delays. The construction sector uses project management software such as Primavera Project and Microsoft Project. Using Microsoft Project for project management, schedule different building operations, allocate resources, and level resources for construction building projects.

In 2015, Raj saran was discussed increasing complexity of building projects, efficient planning and scheduling are essential. As the necessary first step before scheduling, construction planning includes critical work tasks, establishing priority ordering, construction techniques, and task distribution. Project implementation can be seriously delayed by inadequate planning. Recent endeavours require a lot of paperwork, which can complicate administration. Utilizing project planning software, which makes planning more formalized, can help overcome these obstacles. A research lab case is used in this study to demonstrate how to properly use Primavera software for scheduling and planning.

In 2014, Sushant Pradhan was discussed construction sector is very competitive in terms of projects, methods, tools, equipment, and management. As the industry strives for greater financial returns, it sets higher goals every time and works on a variety of initiatives. The task becomes more challenging when balancing client happiness with timely delivery and quality. Companies rarely fail to honour this guarantee. There have always been difficulties for businesses, especially when handling several tasks at once. Inadequate project management has resulted from problems like excessive data, overspending, delays, and excessive resource allocation.

In 2014, T.Subramani was compare the time performance of the Industrial Building System methods with the traditional construction method for high-rise residential structures, the study used scheduling simulation modelling to develop industry norm benchmarks over the whole construction period. Facilitating a salubrious work environment for those directly employed in the construction sector is one of the favourable consequences. jobs performed on schedule and within budget result in happier clients who are more inclined to come back for other jobs, which improves customer satisfaction. With the ability to lower scheduling risk and expenses, intelligent project management systems also help to maintain long-lasting client-manager relationships. Clear visibility into project progress is provided, resource management is optimized, and project activities may be easily planned and managed with the use of these technologies. Moreover, they allow for quick and straightforward forecasting of Work Breakdown Structures, activities, or projects.

In 2015, Y.Umesh was discussed construction projects to be mitigated and project delays managed, effective planning and scheduling are critical. Because of poor planning and scheduling, the construction sector wastes a large amount of money, time, and resources every year. Building projects are now more sophisticated and larger as a result of their globalization. Project planning software can help to reduce the large amount of documentation involved in preparing these kinds of projects. With Primavera software, a residential project is planned, scheduled, and monitored in this study. It seeks to ascertain which approach is best for the chosen residential project by examining the findings.

In (2015), Veena H.C was given the resource-intensive nature of the construction industry and the gradual rise in construction resource prices over the past few decades, resource management is an essential part of construction project management in the contemporary economy. By effectively using the resources at hand to complete the project, this method seeks to shorten the project's duration. Nonetheless, it is clear that in actual project circumstances, resources are frequently scarce. As such, inadequate resource supply is often the cause of project delays.

In 2021, Benzaghta, M. A., et al was discuss essential technique used by firms for strategic planning in the SWOT analysis. Even after more than sixty years of academic study on SWOT, there is still a dearth of knowledge regarding how to use it. New theoretical frameworks and views emerged as a result of the integrative literature evaluation this study conducted to access, examine, and summarize the SWOT literature. The study's goal was to improve knowledge of SWOT analysis across industries and the various approaches taken in SWOT studies by looking at previous SWOT analyses. It also sought to fill the knowledge vacuum in the area of strategic planning and offer managers practical suggestions for enhancing their strategic decision-making processes.

In 2015, Tuncay, M. highlights the critical function of strategic management in the public sphere and highlights the critical elements of the SWOT analysis that ought to be incorporated into the strategic management model. It does this by demonstrating the importance of strategic management in a variety of sectors. A comprehensive strategic management project was conducted in-person citizen expectation survey with 1500 participants and questionnaires for internal and external stakeholders. A SWOT analysis was then carried out to evaluate the municipality's advantages, disadvantages, opportunities, and threats. This article's main goal is to raise awareness of the value of SWOT analysis in strategic management for the public sector.

In 2012, Dana, B. G. was discussing a case study of a small business, this article seeks to demonstrate quality indicators in management services and provides insights into enhancing quality management with SWOT analysis. The study focuses on a number of environmental elements that have a big influence on the company. Everything that affects the organizational and personal subsystems is included in the term "environment". The idea and practice of overall quality management are challenged by these elements, either separately or in combination. The firm must keep up with the evolving dynamics of its workforce because it functions in a diversified setting. This means knowing the environment that the personnel come from as well as the environment that the firm currently inhabits.

In the Large-scale project planning involves many obstacles in creating an accurate and workable strategy. Software for managing projects, such Primavera Program and Microsoft Project program are widely used in the construction sector. This study uses the SWOT analysis method to analyse schedule control techniques by activity types and restrictions. Specifically, it uses the Primavera software and MS Project program to examine a solar pond technology as a case study.

3. Methodology

The information used in this study was collected from previously published works written by various researchers in the field of project management software, and it is provided as follows:

3.1 Design of Research

This study takes a qualitative approach, applying a SWOT analysis framework to analyse Primavera and Microsoft Project methodically.

3.2 Collecting data

We collect the primary data through interviews and user surveys. Users of both software solutions are given surveys, and in order to gather more detailed information, project managers and team members are interviewed. User reviews, industry reports, and product documentation are the sources of secondary data.

3.3 Analysing Data

Statistical analysis is performed on qualitative survey data, while theme analysis is performed on qualitative

interview data. Using these two approaches together guarantees a thorough and thorough assessment of the advantages, disadvantages, opportunities, and dangers related to Primavera and Microsoft Project.

4. Comparison between Primavera with MS Project

By comparing Primavera program software with MS Project program software, it's critical to identify the unique characteristics of each tool, assess their applicability for various project management requirements, and use the solar pond project as a case study.

4.1 Primavera Program

Primavera is a powerful tool for scheduling, risk analysis, opportunity management, and resource management [13]. It is a comprehensive corporate project portfolio management software. Primavera Systems began providing support for its older products, such as P3 and Sure-Trak, in 2008 in addition to the more recent P6 version. In all of its incarnations, the P3 product had achieved a high level of adoption, especially in the heavy construction sector, where its main client base accounted for about 25% of its utilization. After a 27-year version life, Oracle discontinued marketing the P3 version on December 31, 2010 [14- 16]. The advent of mobile PPM in 2012 through the P6 Team Member for iPhone and Team Member Web Interface was one of Primavera's subsequent enhancements. This made it possible for the project team members to communicate more effectively both in the office and in the field. In the same year, Primavera P6 Analytics Release 2.0 also brought new enterprise-reporting tools and dashboards for monitoring and analysing performance data, including geographic analysis. Content from Oracle's 2012 purchases of Instantis and Skire was also incorporated into Primavera P6 Enterprise Project Portfolio Management version 8.4, which was made available in April 2013. The latest version of Primavera P6 Professional, 21.12.0.42339, is noteworthy for demonstrating the platform's continuous development [17], [18].

In this research paper, used Primavera P6 Professional 21, Release: 21.12 applied in case study of solar pond project planned and scheduling as shown the figure (1).

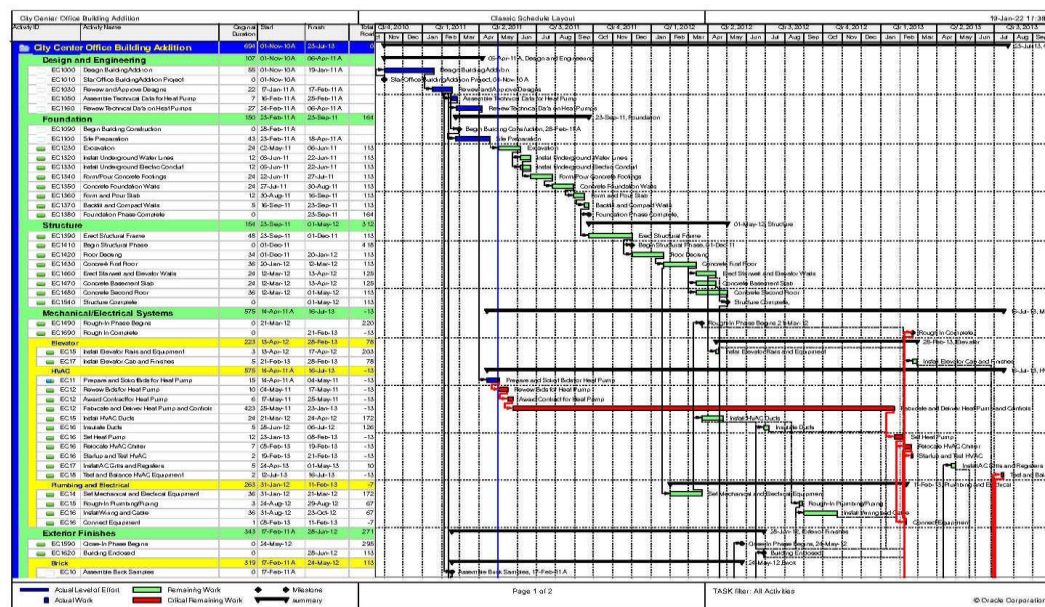


Figure 1: Elaborate activities on Primavera program

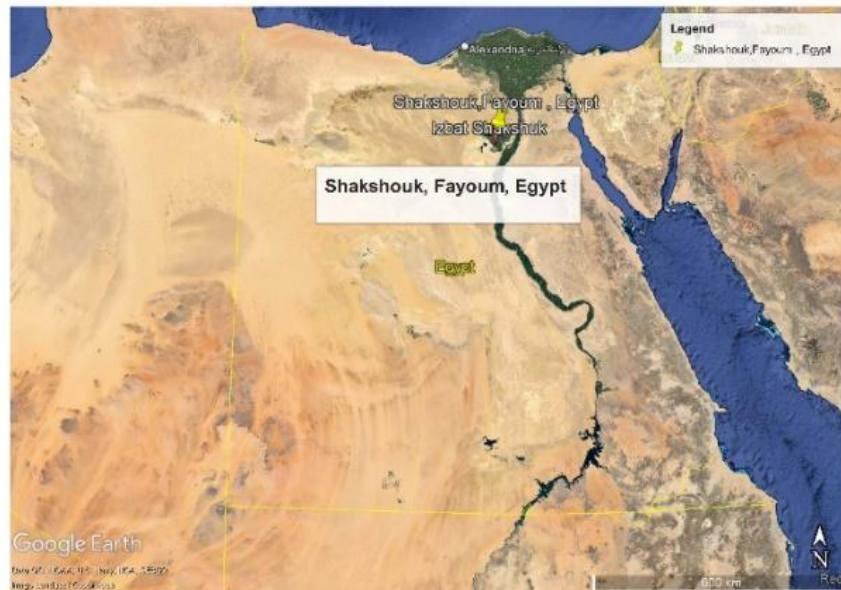


Figure 3: Location of solar ponds in Fayoum governorate, Egypt

The creation of gradients in both temperature, salt concentration geomembrane types in order to heat the bottom pond and harvest energy was the subject of a feasibility study conducted through an experimental test program where the gradients in salt concentration as shown in the figure 4. It was possible to obtain a salinity profile by performing extensive measurements [28]. It was discovered after further examination and discussion of the data that the solar pond successfully established an appropriate salinity profile, reaching a temperature of 70°C where the design of solar pond depend on many factors as shown in the figure 5. In the category of non-conventional energy sources, these results strongly imply that the solar pond has the potential to be a practical energy source [29].

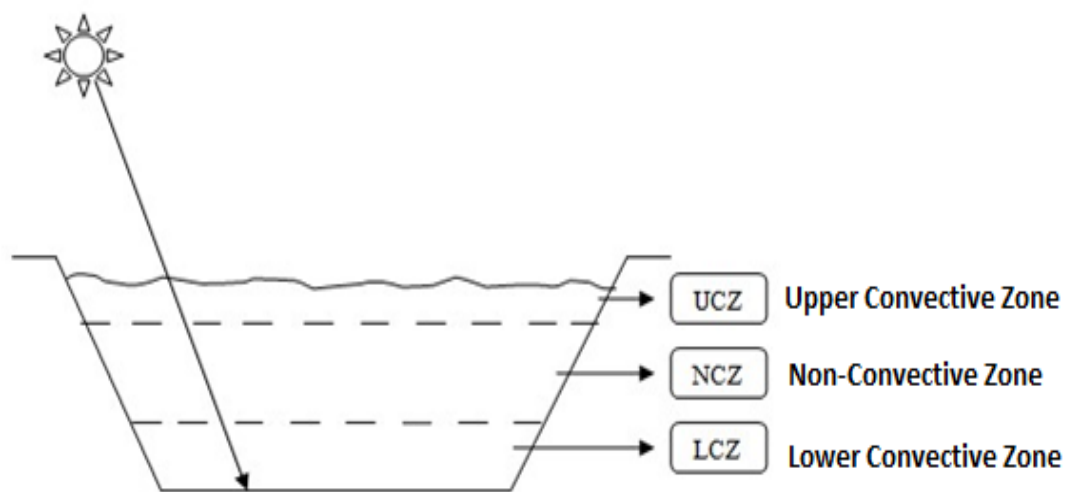


Figure 4: Concept of Solar Pond layers project



Figure 5: Implemented solar pond in Fayoum governate

We used planning and scheduling in the solar pond project to handle the increasing complexity of project management. This included pre-construction planning for work order, labour job division, construction method establishment, and resource and responsibility allocation. The need for application software in construction management duties is becoming more and more apparent given the significant amount of paperwork involved in planning and scheduling.

The solar pond project lifecycle is composed of several essential phases that direct the development journey from beginning to end. Initially, the feasibility study phase evaluates the project's practicality, focusing on financial, technical, and operational considerations. Next step is the design phase, where comprehensive plans and specifications are developed to guide the construction process. After the design is approved, the contracting phase follows, during which contracts are signed with contractors and suppliers. The construction phase then takes place, where the actual building work occurs, turning the designs into tangible structures. Lastly, the handover phase includes transferring the finished project to the client, confirming that all specifications have been fulfilled and the project is ready for use. Each of these phases plays a vital role in ensuring the project's success, necessitating meticulous planning and implementation as shown in the figure 6 elaborate the variance to project stages with different cost to each stage.

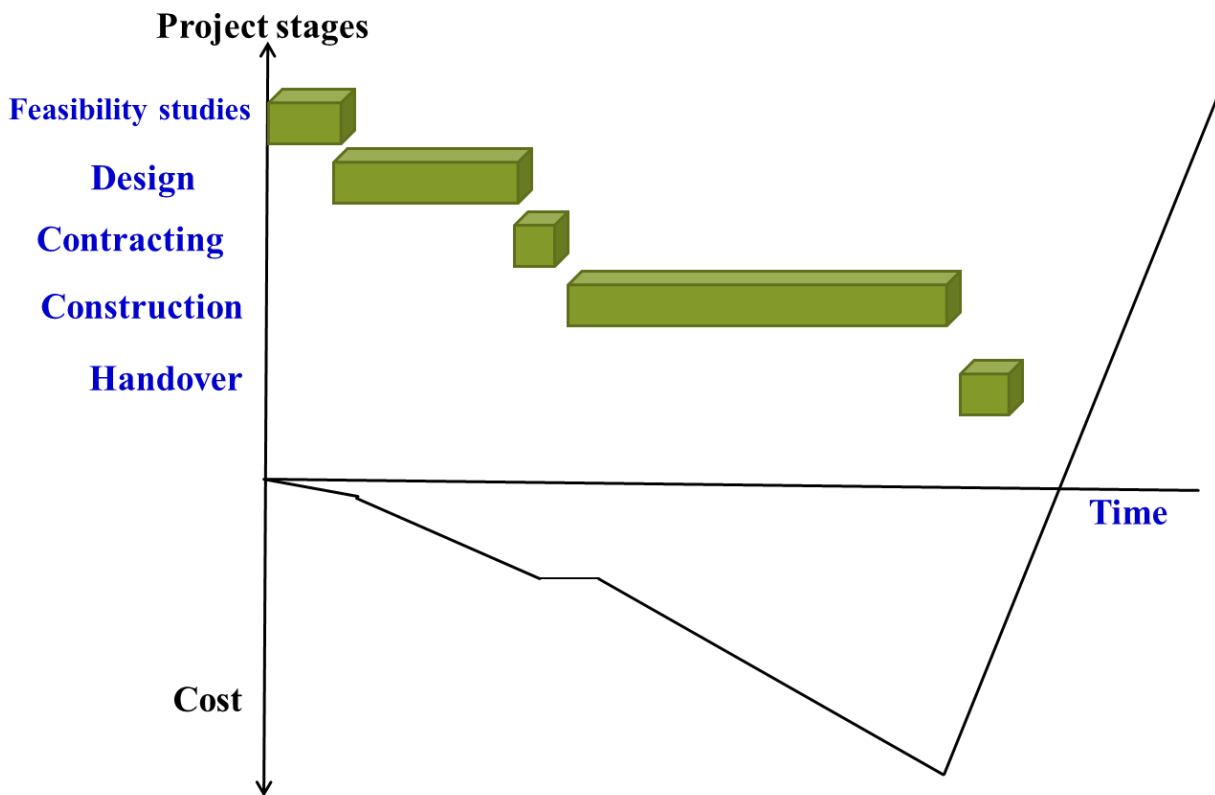


Figure 6: Life cycle of the solar pond Project

5. Results Analysis and Discussion

5.1 Primavera program SWOT analysis

The field of programming significantly influences the evolution of project management, with Primavera standing out as one of the top software solutions. This SWOT analysis examines Primavera's strategic position, focusing on its strengths and opportunities while also considering its weaknesses and the potential threats it faces in the competitive project management software market as show in table 1 were elaborate Primavera program SWOT analysis.

Table 1: Primavera program SWOT analysis

Strengths	Weaknesses
- Primavera provides a comprehensive suite of project management tools, featuring capabilities for scheduling, resource management, and risk analysis, it is ideal for handling complex projects. - The software is user-friendly, with users enabling them to easily navigate features, which boosts overall productivity. - Primavera incorporates sophisticated risk analysis tools that assist in identifying, evaluating, and mitigating	- Primavera software is packed with features, but its wide range of capabilities may be daunting for new users, resulting in a learning curve that could lead to early inefficiencies. - Primavera software is demand for significant system resources can be a drawback for users with less robust hardware.

project risks, essential for ensuring successful project outcomes. • Primavera is highly regarded as a premier project management solution, especially within the construction and engineering industries, further enhancing its credibility and trust.	• Primavera software is only Solar Year calendar
Opportunities	Threats
• As more companies acknowledge the significance of efficient project management, Primavera has a chance to grow its user base. • Primavera has an opportunity to integrate with emerging technologies like AI and machine learning, which could enhance its functionality and offer improved predictive analytics. • Providing thorough training programs can empower users to fully leverage the software's features, resulting in higher customer satisfaction and improved retention rates.	• The rapid evolution of technology requires Primavera to consistently innovate to remain pertinent and address the changing needs of users. • economic downturns can result in tighter budgets for project management solutions, which may negatively affect sales and the rate of adoption.

5.2 MS Project program SWOT analysis

The influence of MS Project program is crucial in shaping the field of project management, with Microsoft Project recognized as one of the leading software solutions. This SWOT analysis focuses on Microsoft Project, outlining its strategic advantages and opportunities while examining its weaknesses and the possible threats it encounters within the competitive project management software as show in table 2 were elaborate MS Project program SWOT analysis.

Table 2: MS Project program SWOT analysis

Strengths	Weaknesses
• Microsoft project software can be used any calendar such that Lunar Year (Hijiri calendars), Solar Year,etc • Microsoft Project integrates effortlessly with other Microsoft applications like Excel, Teams, and SharePoint, improving collaboration and data management for its users. • Its user-friendly interface streamlines project planning and scheduling, making	• The basic functionalities of the software are user-friendly, and some of its advanced features may present a steep learning curve, which could result in users not fully utilizing its capabilities. • Some users might discover that the software offers limited customization options like a number of columns, posing a challenge for organizations

it suitable for both beginners and seasoned project managers. • The software provides a comprehensive array of features, including Gantt charts, resource management capabilities, and reporting tools, all of which facilitate effective project tracking and oversight. • Being part of the Microsoft ecosystem, it enjoys a strong reputation and user trust, contributing to higher rates of adoption.	that have unique project management requirements.
Opportunities	Threats
• Rising Need for Remote Project Management Solutions With the growth of remote work, there is a heightened demand for efficient project management tools, creating an opportunity for Microsoft Project to increase its user base. • Improvements through AI and automation by integrating artificial intelligence and automation features, the software could boost efficiency and enhance decision-making, making it more attractive to users. • Expansion of Training and Support where providing improved training resources and support can enable users to fully leverage the software's capabilities, resulting in greater satisfaction and improved retention rates.	• The project management software market is filled with a wide range of competitors, including well-known companies and new startups, which can influence Microsoft Project's share in the market. • Fast-Paced Technological Advancements where evolution of technology necessitates ongoing updates and innovations to ensure that the software remains relevant and competitive.

5.3 Compare between MS Project and Primavera program

When it comes to development project management, there are a few key differences between Primavera and MS Project. Advanced features that set MS Project apart include creating linkages between activities, translating documents to HTML, integrating risk management into project schedules, and designing a Hjri calendar for multiple user access.

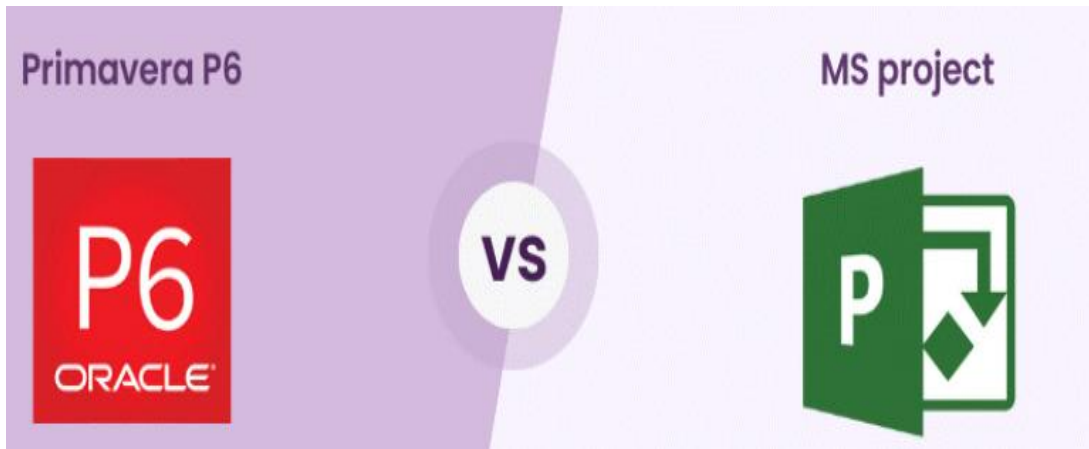


Figure 7: Compare between MS Project and Primavera program

In addition, Primavera offers six different job categories and features enhanced resource management features. On the other hand, MS Project doesn't support numerous users, doesn't allow relationships between activities to be limited, and doesn't provide the same degree of document conversion or risk management integration. Due to its sophisticated features and capabilities in resource management, risk integration, and document conversion, Primavera is frequently the go-to option for large-scale construction projects, even though MS Project might provide more seamless integration with other Microsoft products and might be easier to use for smaller projects. A detailed comparison of the SWOT of two prominent project management software solutions, Microsoft Project and Primavera, is presented in Table 3 to provide a comprehensive assessment.

Table 3: A comparison of the Primavera and Microsoft Project application

No.	Parameter	Primavera Software	MS-Project Software
1.	Calendar	Primavera software is only Solar Year calendar	MS-project software can be used any calendar such that Lunar Year (Hijiri calendars), Solar Year,etc
2.	Progress spotlight to easy control of activities	Supports Progress spotlight to highlight activities on table rows in a particular colour to control activity dates.	Instead of directly supporting this feature, it enables if create filters to achieve outcome.
3.	Allow activities number	larger allowable activities number but the activities must be unique ID.	less allowable activities number of activities when compared to other program.
4.	Group and Sort data	Primavera easy use grouping, sorting, from view tab.	MS-project lacks on-screen activity shuffling.
5.	Multiple users projects run at the same time	Multiple users can be work on a single project and run at the same time project.	Multiple users can't be work on a single project and run at the same time project.
6.	Create a blank custom field	Primavera lets you make a custom field that is blank. But it doesn't apply formulas to the fields. Users must therefore manually enter the formulas for each column in each field.	MS-Project makes it possible to create custom fields with complicated formulas and extra values, which minimizes the user's manual labor.
7.	Baseline	Supports unlimited baselines.	It has the capability to support up to 11 baselines.

No.	Parameter	Primavera Software	MS-Project Software
8.	Issue and risk	issue and risk recording allowed	MS-Project lacks the feature of project issues and risk tracking.
9.	Create sub-activities	It enables the creation of sub-activities by segmenting the primary activity into distinct phases, each with its own start and end dates.	Doesn't offer the capability to create sub-activities.
10.	Activity relationship	Supports multiple activities relationship in which more than one type of relationship can be created between the activities.	lacks support for multiple activity relationships, permitting the establishment of only a single type of relationship between activities.
11.	Creating project website	supports the website creation feature. This project website enables the creation of a website using information that has been fed as input to the Primavera project management software, such as project issues, risks, resources, etc.	Doesn't provide any feature for create this.
12.	Comparisons multiple projects	allows for the creation, tracking, and viewing of many projects. It enables cost and unit computations, tracking, and comparisons between several projects or Work Breakdown Structures.	enables the establishment of many projects, but it does not provide other functions on the various projects, such as tracking costs, other calculations, and comparisons at the same time.
13.	Unique ID such as project ID, WBS ID, and Activity ID,etc	Primavera software is useful for projects utilizing activity ID systems and supports the unique ID feature.	Doesn't support the unique ID functionality, and the activity ID is based on where the activity is located.
14.	Sorting by different fields	Enables the sorting of activities by many fields, such as date, activity ID, etc.	Enables flexible activity control, allowing you to change each activity from its current location to the one you want it to appear.
15.	Expenses add	Permits the integration of various project costs, such as Material costs, Labor costs, Nonlabor cost (Equipment cost)...etc. to the different project costs.	Additional costs are not included.
16.	Columns to show details of planning	accommodates as many as 200 columns, including the option for custom columns.	supports up to 40 columns only.
17.	Work Breakdown Structure	It makes it possible to create a work breakdown structure (WBS) that can include activities.	Activities are designed to look or work similarly to WBS.

No.	Parameter	Primavera Software	MS-Project Software
18.	Project management-based software	Database-based software	File-based project management software.

6. Conclusions and Recommendations

This study aids in the programming of planning and scheduling for future scenarios and the implementation of civil construction projects. Both Primavera and MS Project offer user-friendly options for planning and scheduling within engineering project management. By utilizing engineering software, one can determine the costs associated with successive adjustments of individual tasks, allowing for well-informed management decisions. An example of this application can be seen in the solar pond project, this study employed a project schedule constrained by available resources, specifically adapted to the conditions of the site. Resource leveling was applied to assess limitations on resources. Using Microsoft Project for scheduling facilitates efficient management and offers a transparent timeline for the project. This paper conducts a SWOT analysis to deliver a comprehensive evaluation of two prominent project management software options—Microsoft Project and Primavera—widely utilized in Egypt and across the Arab region.

7. References

- [1] Kutlu, B., et al., Project management software selection using analytic hierarchy process method. *International Journal of Applied*, 2014. 4(6): p. 113-119.
- [2] Desmond, C., Project management tools-software tools. *IEEE Engineering Management Review*, 2017. 45(4): p. 24-25.
- [3] Gharaibeh, H., Evaluating Project Management Software Packages Using a Scoring Model—A Comparison between MS Project and Primavera. *Journal of Software Engineering and Applications*, 2014. 7(07): p. 541.
- [4] Gopal, B.S.R., et al. Planning, scheduling, & allocation of resources for short-span bridge using Primavera P6. in *E3S Web of Conferences*. 2023.
- [5] Nower, M., Projects Management Using Computer. 2022, Egypt: ElHany published.
- [6] Liberatore, M.J., B. Pollack-Johnson, and C.A. Smith, Project management in construction: Software use and research directions. *Journal of construction engineering and management*, 2001. 127(2): p. 101-107.
- [7] Anam, P., B.M. Rao, and S. Asadi, Computer-based analysis for design and schedule management for commercial buildings. *Urban Resilience and Sustainability*, 2023. 1(1): p. 37-47.
- [8] Behera, M.S.M. and R. Padhi, The Usefulness of Technologies for Resource Levelling In Projects with Resource Constraints. *Dogo Rangsang Research Journal*, 2021. 8(14): p. 1439-1446.
- [9] Ragavi, S. and D.R. Uma, Review of project management softwares-MS Project and Primavera. *International Research Journal of Engineering and Technology (IRJET)*, VI, 2016. 3(11): p. 1260-1263.
- [10] Wali, K.I. and S.A. Othman, Comparison and assessment of using Primavera and Microsoft project

in construction projects in Erbil City. ZANCO Journal of Pure and Applied Sciences, 2019. 31(s3): p. 285-291.

[11] Jagtap, P., et al., Optimization of Time and Cost of a Residential Building (G+ 24) Using Primavera P6. International Journal of Research in Engineering, Science and Management, 2023. 6(6): p. 1-8.

[12] Kanekar, U.V. and A.B. Landage, ACOMPLISH PLANNING AND SCEDULLING USE OF PRIMAVERA SOFTWARE FOR CONVENTIONAL AND PREFABRICATED BUILDING. INTERNATIONAL RESEARCH JOURNAL, 2023. 10(6): p. 142-150.

[13] Schatz, B. and I. Abdelshafi, Primavera gets agile: a successful transition to agile development. IEEE software, 2005. 22(3): p. 36-42.

[14] Zahedi, L., Enhancements to Methods for Planning and Scheduling Fabrication Projects Utilizing Multiskilled Labour Resources. 2023, University of Alberta.

[15] Zareei, S., Project scheduling for constructing biogas plant using critical path method. Renewable and Sustainable Energy Reviews, 2018. 81: p. 756-759.

[16] Zolfaghari, H. and M. Kord, Designing a Model for Preparing Reports on the Automatic Earned Value Management Progress by the Integration of Primavera P6, SQL Database, and Power BI: A Case Study of a Six-Storey Concrete Building in Mashhad, Iran. International Journal of Computer and Systems Engineering, 2023. 17(5): p. 308-317.

[17] Amerb, H. and Y.T.A. Hasanb, APPLICATION OF PRIMAVERA P6 SOFTWARE FOR SCHEDULING SINGLE CONSTRAINED RESOURCE IN SMALL GAS STATION PROJECT. Engineering Heritage Journal, 2022. 6(2): p. 65-72.

[18] Petroutsatou, K., A proposal of project management practices in public institutions through a comparative analyses of critical path method and critical chain. International Journal of Construction Management, 2022. 22(2): p. 242-251.

[19] Antony, J.C. and R. Shah, Analysis of Residential Building by Monitoring, Resource Allocation and Cost Optimization Using Construction Management Tool. International Journal of Research in Engineering, Science and Management, 2023. 6(1): p. 111-113.

[20] Margareta, I., I. Constantin, and J.F. Victor, Leveling a Simple Manufacturing Process Using Microsoft Project and Oracle Primavera. Ovidius University Annals, Economic Sciences Series, 2017. 17(2): p. 413-418.

[21] Mellentien, C. and N. Trautmann, Resource allocation with project management software. OR-Spektrum, 2001. 23: p. 383-394.

[22] Deshmukh, S., A.V. Sagale, and M.M. Bais, Study of scheduling in Microsoft Project software. International journal of scientific research & engineering trends, 2019. 5(2): p. 2395-2466.

[23] Harshavardhan, T., et al. Resource Allocation, Scheduling and Planning of a Multi Storeyed

Residential Building. in E3S Web of Conferences. 2023.

- [24] Nower, M., Mapping solar pond by GIS and analytic hierarchy process. 9, 1. International Journal of Engineering and Advanced Technology (IJE, 2020. 9(4): p. 049420.
- [25] Nower, M., A. Elashaal, and S. El-Serafy, Solar pond performance enhances nonconventional water resource availability. International Journal of Engineering and Advanced Technology, 2020. 9(4): p. 1043-1047.
- [26] Nower, M., A. Elashaal, and S. El-Serafy, Solar ponds as source of non-conventional energy case study in Fayoum, Egypt. International Journal of Scientific Engineering and Science, 2022. 6(2): p. 115-120.
- [27] Altahan, M.F. and M. Nower, AutoGIS processing for site selection for solar pond development as efficient water treatment plants in Egypt. Scientific Reports, 2023. 13(1): p. 17009.
- [28] Nower, M., A. Elashaal, and S. El-serafy, Factors Affecting the Performance of Geomembrane as an Enhancement Measure for Seepage Control in Solar Pond. International Journal of Scientific & Engineering Research, 2020. 11(12): p. 1168-1170.
- [29] Nower, M., M. Embaby, and A. Elashaal, Potential of solar pond as source of thermal energy to sustain the development in Mena Region. International Journal of Advanced Science and Engineering Research, 2021. 2(b2): p. 103-123.



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