



**ENHANCING PROJECT MANAGEMENT SOFTWARE ADOPTION IN CONSTRUCTION:  
IDENTIFYING AND ANALYZING KEY FACTORS**

**Adeyemi, Nurudeen. O. and Joseph Makinde K.**

Department of project Management, Federal University of Technology, Minna

\*Corresponding authors' email: [hadeyemi24@gmail.com](mailto:hadeyemi24@gmail.com), [jpsyk@futminna.edu.ng](mailto:jpsyk@futminna.edu.ng)

**Abstract**

The adoption of project management software (PMS) in construction firms is crucial for improving project delivery. This study identifies and analyzes key factors enhancing PMS adoption in Nigerian construction firms. Through a mixed-methods approach, data were collected through structured questionnaires administered to 142 professionals across 290 registered construction firms in Jos metropolis. Descriptive statistics and mean item score (MIS) rankings were employed for analysis. The findings reveal the important factors that enhance the use of Project Management Software were “Training and capacity building of staff” (MIS = 3.42); “Availability of skilled project managers (HRF)” (MIS = 3.31); and “Software affordability (Financial)” (MIS = 3.11). The least number of respondents somewhat agree that the most important factors that enhance the use of Project Management Software were “User motivation (HRF)” (MIS = 2.94); “Compatibility of software with existing systems” (MIS = 2.94); “Regular software updates and maintenance” (MIS = 2.75); and “Maintenance costs (Financial)” (MIS = 2.65). On the average, the respondents agree that all the identified factors that enhance the use of Project Management Software were important (MIS = 3.02). The research provides insights for practitioners and policymakers to boost PMS utilization, enhancing project outcomes. It recommends targeted capacity-building, subsidised software acquisition, and integration of digital project management into policies and professional training to enhance competitiveness and project delivery outcomes.

**Keywords:** Factors, Project Management, Software and Construction.

**Introduction**

Construction firms play a vital role as the principal executors of building and civil engineering works that transform national development plans into physical assets. These firms vary widely in size and scope, encompassing small and medium-sized enterprises as well as large corporations managing complex multi-billion-naira projects across urban and rural landscapes. Their responsibilities typically span project planning, procurement, design, execution, and maintenance, all of which must meet increasingly stringent quality, cost, and time requirements to satisfy both public and private sector clients (Osei-Asare *et al.*, 2021; Eze and Chukwuma, 2023). The construction industry's shift towards digitalization has made project management software (PMS) a vital tool for enhancing project delivery (Arayici *et al.*, 2011).

However, as construction projects in Nigeria grow in complexity and scale, the limitations of traditional project management approaches which is often characterised by manual processes and fragmented coordination have become more evident. These limitations frequently manifest as cost overruns, schedule delays, poor quality control and miscommunication among stakeholders. To address these inefficiencies and remain competitive in a rapidly evolving market, many construction firms are turning to modern project management software to strengthen their operational capabilities and project delivery outcomes (Ahmed and Musa, 2022). Project management software such as Primavera, MS Project and even versatile tools like Microsoft Excel have become indispensable for contemporary construction firms striving to optimise their processes. These tools provide comprehensive functionalities that support scheduling, resource allocation, cost estimation, budgeting, risk management, and progress monitoring (Umeh and Akintola, 2023). Despite PMS benefits, adoption rates remain low in Nigerian construction firms. This study identifies and analyzes key factors driving PMS adoption, addressing this gap.

### **Problem Statement**

The construction industry in Nigeria remains a vital driver of economic growth and infrastructure development, yet its operational efficiency continues to lag behind global standards due to the persistent reliance on traditional project management methods. While the global construction landscape has embraced digitalisation to tackle inefficiencies and enhance project delivery, many Nigerian construction firms still struggle to fully integrate modern project management software into their core activities. This slow transition hampers their capacity to deliver projects on time, within budget, and to the expected quality standards, thereby undermining their competitiveness in an increasingly demanding market.

Although previous studies (Oladapo, 2006) have recognised the transformative potential of digital tools in the areas of planning, design, procurement and project execution, there remains a notable gap in empirical research specifically focusing on the effects of project management software on the performance of construction firms in Nigeria. Moreover, there is limited understanding of the barriers that hinder full-scale adoption, including financial, technical and human capacity constraints, as well as the varying perceptions among contractors, consultants and project managers regarding the benefits and challenges of these tools. Addressing these gaps is crucial for informing policy, practice and training interventions that can position Nigerian construction firms to meet global standards. Therefore, this study identifies and analyse the factors that enhance the adoption and use of project management software in construction firms.

## **LITERATURE REVIEW**

### **Project Management Software**

Project Management Software (PMS) refers to computer-based tools designed to assist in the planning, organisation, allocation of resources, and execution of project tasks. These applications help project managers and teams effectively manage core project elements such as timelines, budgets, resources, documentation, and

*Adeyemi and Joseph, 2026*

communication (Lary, 2024). Depending on the functionality and sophistication of the software, project management systems may support a wide range of features including task scheduling, resource planning, cost estimation and control, performance tracking, communication facilitation, quality assurance, and documentation management. Modern project management software enables individuals or teams to collaboratively work towards a common project objective. It is suitable for a variety of users, from small start-ups managing a single project to large organisations handling multiple interconnected projects across departments. Key capabilities often include the assignment or re-assignment of tasks, tracking of timelines and deadlines, project milestone control, budget development, and risk management. Many PMS platforms also include tools for Gantt chart creation, Kanban boards, time tracking, and automated alerts to ensure project activities remain on course.

The software simplifies internal and external communication among project stakeholders by offering shared dashboards, real-time updates, and document storage systems. This ensures all members of a team are kept informed about current developments, pending tasks, or changes to project objectives. Additionally, it allows for schedule adjustments, risk assessments, financial planning, and resource reallocation when necessary (Ajibada, 2022). A robust PMS helps in identifying bottlenecks and enables informed decision-making throughout the project lifecycle. Project management software is also central to defining and managing Work Breakdown Structures (WBS), which involve breaking down a large project into smaller, more manageable tasks. These smaller tasks can then be assigned, tracked, and reviewed, ensuring that the overall project deliverables are met within the constraints of time, budget, and resources.

Projects are often constrained by several interrelated factors, such as scope, schedule, cost, quality, and communication. Therefore, PMS plays a critical role in coordinating these elements to achieve project success. In more complex environments, several projects may be grouped into a programme. In such cases, while individual project managers oversee each project, a programme manager coordinates the overall effort, ensuring alignment with strategic organisational goals. Functional managers may also be involved in overseeing specific technical tasks, highlighting the need for an integrated software platform that supports all roles involved (Lary, 2024).

### **Evolution of Project Management Tools**

The evolution of project management tools can be traced back to the early 20th century, with the need to organise large-scale industrial and military projects. One of the earliest developments was the Gantt Chart, created by Henry Gantt in the 1910s. This chart became widely recognised around 1920 and is considered one of the foundational tools in modern project scheduling and visualisation (PMBOK, 2021). In 1954, the term “project management” was officially introduced, largely credited to US Air Force General Bernard Adolph Schriever, who initiated its application for military and defence projects (John, 2021).

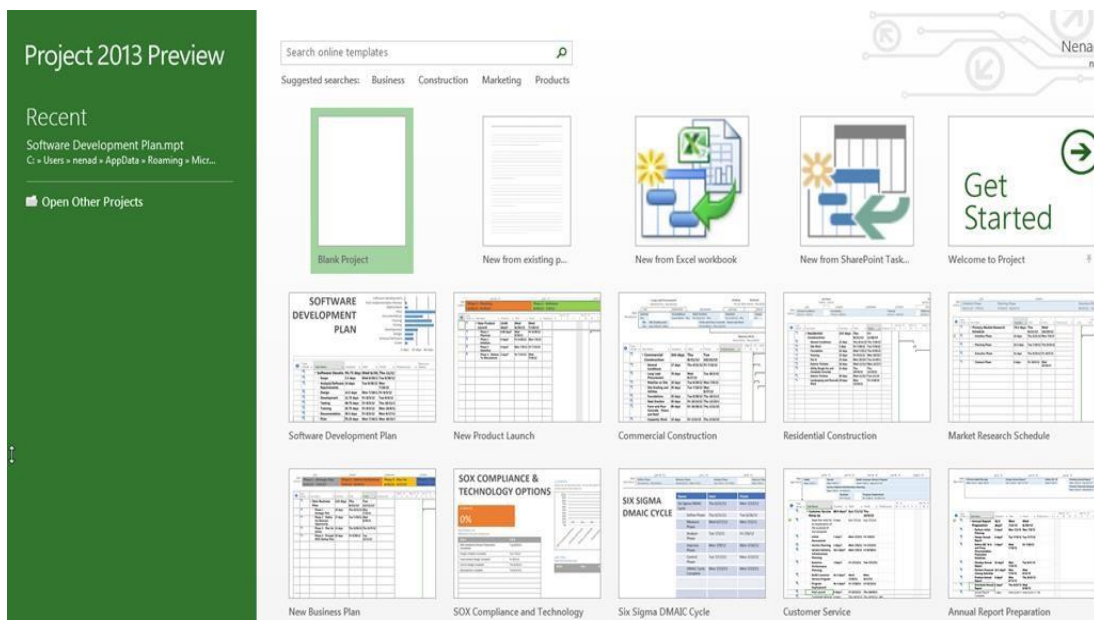
The post-war period saw significant progress. In 1956, the American Association of Cost Engineers (AACE) was established to promote project cost management and scheduling. Shortly after, in 1957, the Critical Path Method (CPM) was developed by Morgan R. Walker of DuPont and James E. Kelley Jr. of Remington Rand. This technique enabled project managers to calculate the minimum time needed to complete a project and identify critical tasks (Kerzner, 2017). In 1958, the Program Evaluation and Review Technique (PERT) was introduced by the U.S. Navy in collaboration with Lockheed to support the Polaris missile programme. PERT helped in estimating project duration using probabilistic time estimates (Meredith and Mantel, 2020). Further advances emerged in the 1960s with the introduction of the Work Breakdown Structure (WBS) by the U.S. Department of Defense in 1965. WBS allowed large projects to be divided into smaller, manageable components, enabling clearer scope definition and resource allocation (PMI, 2021).

### Types of Project Management softwares

Accordingly, project management softwares have different categories on how they are designed and built to work, below are the types of PM software:

#### Desktop

These are single user programs that are implemented to work on the specific characteristic that it's built upon. They can serve tasks for other purposes, and must be maintain or updated regularly. “*Microsoft Project*” is an example of such Software.



**Fig. 2.1: A preview of Microsoft project 2013, used in managing project schedule and plan Single User**

These softwares are design for the usage of a single user at a time, it can be for the purpose of tracking, editing or setting up a task. Sometimes Desktop softwares are regarded as single user as well.

## **Web Based**

As an alternative to desktop softwares, web-based applications were introduced to modernize the system. With these softwares users can access or manage work virtually on web or even share up to date data and information across different departments or even far away geographically.

## **Integrated**

There are some firms and companies that merge their project management applications with some other special purpose task of the company, example is a software designed for managing finance and at the same time issue invoices. Such are integrated softwares for project management (*David, 2018*).

## **Characteristics of Project Management Software**

Project management software (PMS) encompasses digital tools that support planning, coordination, execution, and monitoring of project activities. These applications are increasingly vital for improving team collaboration, streamlining workflow, and ensuring effective communication across stakeholders. According to Simone (2020), PMS enhances team productivity by facilitating shared access to a centralised digital workspace, improving coordination across departments and project functions.

## **Scheduling**

Scheduling is a core component of project management. As defined in the PMBOK Guide (7th edition), a schedule is a “timetable showing the forecast start and finish dates for activities or events within a project.” Modern project management software provides powerful scheduling capabilities, often utilising interactive Gantt charts to map out tasks, deadlines, and dependencies. Users can dynamically adjust timelines, reallocate resources, and automatically visualise the project's critical path, thus allowing real-time decision-making and early detection of delays.

## **Financial and Budget Management**

For medium and large-scale projects, budgeting becomes increasingly complex. As Karola (2017) notes, relying solely on spreadsheets like Excel for managing multi-faceted budgets is often inadequate. Robust project management systems offer built-in financial tracking features that allow managers to monitor expenses, control costs, forecast cash flows, and evaluate financial performance in real time. These tools help ensure accountability and prevent overspending by offering detailed reports and alerts when thresholds are exceeded.

## **Collaboration**

Effective collaboration is fundamental to project success, especially in environments with distributed teams or multiple stakeholders. Project management software simplifies team communication by providing shared platforms where members can assign tasks, update statuses, comment on activities, and upload documents. As

*Adeyemi and Joseph, 2026*

Vaetika (2022) explains, PMS fosters transparency and accountability by allowing all participants to access the same project data, reducing the need for constant follow-ups and lengthy email threads. Features such as shared calendars, chat systems, and file repositories further streamline communication and ensure that everyone remains aligned with project goals.



*Fig. 2.2. A preview of Trello, a collaborative software for project management*

### **Risk Management**

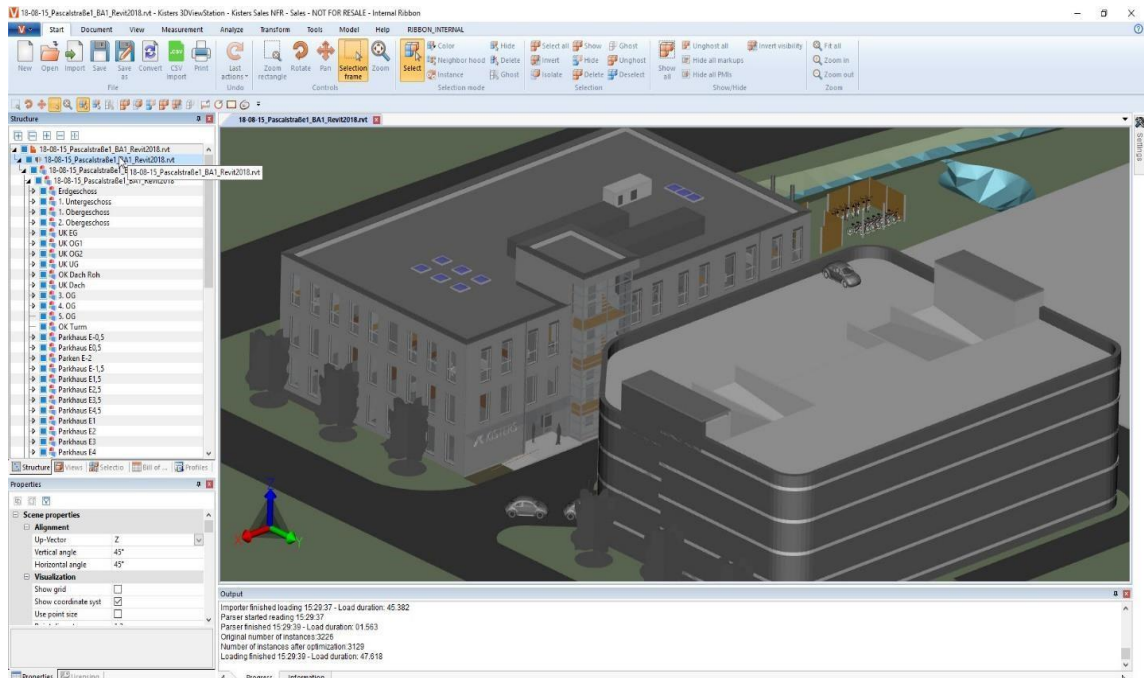
Risk management is an integral aspect of project execution, especially in complex projects such as those in construction or infrastructure. According to the Project Management Institute (PMI, 2020), a risk is “an uncertain event or condition that, if it occurs, has a positive or negative effect on a project objective.” In project environments, unforeseen disruptions ranging from cost overruns and labour shortages to environmental delays can significantly affect timelines and objectives. Modern project management software integrates risk analysis tools that help managers identify, assess, and monitor potential risks. These tools typically include risk registers, probability-impact matrices, and scenario modelling functionalities. Through early detection and proactive planning, managers can devise appropriate mitigation strategies, thereby improving project resilience and success rates.

### **Communication**

Communication is a foundational pillar for successful project delivery. Oladapo (2023) asserts that communication within project environments is an ongoing challenge, particularly when coordinating multiple stakeholders across departments. Project management software now includes built-in communication channels such as real-time messaging, shared dashboards, email integration, and activity feeds. These features minimise miscommunication and ensure that all stakeholders remain updated. Many platforms offer Software-as-a-Service (SaaS) solutions tailored specifically for communication efficiency in project contexts, fostering transparency and stakeholder engagement.

## Visual Representation

Traditional tools like bar charts or network diagrams, while useful, often fail to convey the spatial or dynamic dimensions of complex construction projects. Fisher *et al.* (2020) argue that modern visualisation tools enable project managers to rapidly generate accurate pictorial or 4D representations of planned workflows. Advanced project management software often integrates with Building Information Modelling (BIM) systems and 3D visualisation tools, enabling real-time project modelling. These tools not only improve clarity and stakeholder understanding but also enhance precision in resource planning and risk forecasting.



**Fig. 2.3.** Revit is an example of tools used in making a proposed graphic design of construction project

## FACTORS INFLUENCING PROJECT MANAGEMENT SOFTWARE USAGE

### a. Internal Factors

- i. CEO's academic qualifications
- ii. Business conducted in the premise
- iii. Computer Literacy Level
- iv. Age of the firm
- v. Organizational size
- vi. Demands in the sector
- vii. Local or Foreign Ownership
- viii. Experience in the profession
- ix. Type of business organisation, Limited Liability or Partnership, or others

x. Experience in the Computer Literacy

**b. External Factors**

- i. Competition level
- ii. Competition influences
- iii. Technological Demands
- iv. Demands from clients
- v. Software and hardware availability and affordability
- vi. Current global trend in construction

As quoted above, the factors determining the adoption and use of project management software can be both external and internal to the company. Speaking of internal factors, among the internal factors are experience, age, and company's size, among other factors. Anyanwu *et al.*, (2022) reported that adoption of project management software is influence by cost and risk related to the traditional technique. It is added that it is the large companies with ability to discern the level of gain on a newly used and adopted technology. To install and purchase of new technologies in building in developing countries experiencing "perfect market asymmetry" is possible since financial resources are accessible to large firms which experience high profits. Required resources and skills are also available in companies opting for adoption of new techniques. Also, the benefits accrued from business production: economies of scale, are easily captured by large sized companies through learning curves and stimulates dispersal of adoption fixed costs by many units.

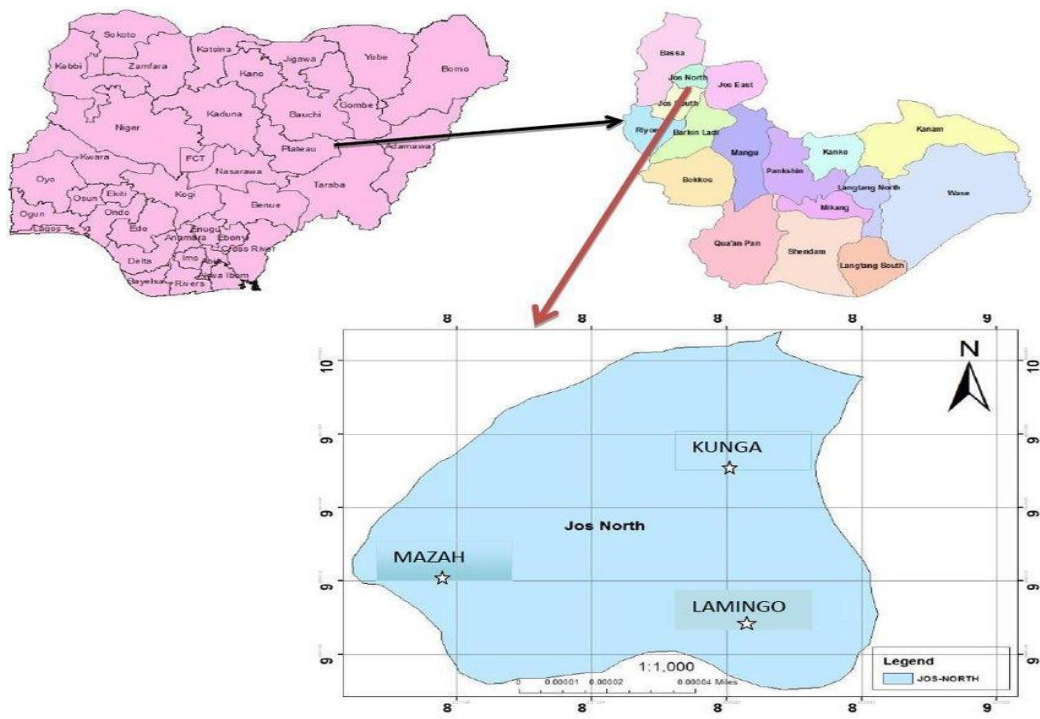
Theoretically, it is difficult to fully ascertain the link between new technological adoption and age of the firm. According to Hollenstein (2024), advantages and experiences of old firms are possibly overbalanced by the high costs. Battisti (2020) further opines that corporative firm possesses seldom lacks finances and resources compared to independent firms. Therefore, a corporate firm new technological adoption. Galliano and Roux (2023) adds that firms with many units prefer technological adoption specifically, required for effective internal reception of services, stimuli and information through multi-establishment network. It is certain that flexibility of decision-making decisions towards adoption is ineffective with these group-oriented networks (Ben Khalifa, 2016). Empirically, there exist unclear perceptions on the connection between project management software adoption and age of a firm. In Tunisia, positive correlation between firm age and adoption of project management software was reported (Ben Youssef, *et al.*, 2020).

Response to external factors to boost the performance in construction sector is one of the elements determining a firm's capacity while adopting and using new technology. Increased clients' demands to improve on production and quality is as a result of competitive surrounding and created awareness. It is therefore deduced that companies operating "under pressure" from clients will necessarily prefer

enforcement of high surviving power and performances, which is triggered by new technological adoption. Costs are therefore reduced with adoption, market demands met and changes in the market adapted to, this is term as competitive advantage (Ben Khalifa, 2016).

**Methodology**

This study was conducted in Jos, the capital city of Plateau State in North-Central Nigeria. Jos was selected due to its historical significance, relatively temperate climate, and emerging role as a hub for infrastructural development and construction activities in the region. The city is noted for its strategic location, mineral wealth, and increasing urbanisation, which have contributed to the growth of both public and private construction initiatives. Jos lies on the Jos Plateau at an altitude of approximately 1,200 metres (3,937 feet) above sea level, giving it a unique and mild climate compared to other parts of Nigeria. This climate is favourable for construction activities, as it permits year-round work with minimal weather disruptions. The city spans across an area of about 1,780 square kilometres and shares boundaries with Bauchi, Kaduna, Nassarawa and Taraba States, making it easily accessible from different parts of Nigeria.



**Figure 1: Study area map (Source: Plateau State Ministry of Lands)**

Primary data were obtained from respondents' using structured questionnaires. The population for this study consists of 290 registered construction firms located in Jos, Plateau State. These firms were identified through a list obtained from the Corporate Affairs Commission (CAC) and field validation in 2025. The choice of Jos was informed by its growing construction industry, urban development dynamics, and concentration of small to medium-sized construction companies.

*Adeyemi and Joseph, 2026*

Due to logistical considerations and accessibility challenges, the study adopted a non-probability sampling technique using convenience sampling. This approach allowed the distribution of questionnaires to firms that were available and willing to participate during the data collection phase. Out of 168 questionnaires distributed only 142 were returned. Descriptive statistics provides numerical and graphic methods to summarize a collection of data in a different and clear manner. Tables were used in this research.

## RESULTS AND DISCUSSION

The profile of the respondents is presented in Table 1. It can be seen from Table 1 that most of the respondents were within the age bracket of 25 – 34 years, representing 42% of the total number of respondents. The other respondents were within the age brackets of 35 – 44 years (20% of the total number of respondents); 45 – 54 years (19% of the total number of respondents); 55 years and above (13% of the total number of respondents); and less than 25 years (6% of the total number of respondents). This shows that the respondents are experienced and old enough to provide reliable information needed for the study.

It was also shown in Table 1 that most of the respondents were males, representing 78% of the total number of respondents. On the other hand, the other respondents, who represent only 22% of respondents, were females. This implies that most of the respondents have enough and quality time to attend to the questionnaire administered during the field work of this study. In addition, the construction industry is a male dominated industry. Therefore, it is not surprising that most of the participants were from the male gender.

Based on the marital status of respondents, most of the respondents were married, representing 92% of the total number of respondents. The other respondents were those that were single (6% of the total number of respondents) and widowed (2% of the total number of respondents). The profile presented in Table 1 also indicates that the majority of the respondents were holders of HND/BSc, representing 42% of the total number of respondents. This is followed by respondents who were holders of MSc/MBA who represent 19% of the total number of respondents. The other respondents are holders of OND/NCE, PhD, and SSCE who represent 13%, 11% and 9% of the total number of respondents respectively. This shows that the respondents are educated enough to provide reliable information for this study.

It was also shown that the majority of the respondents are Contractors, representing 32% of the total number of respondents. This is followed by the respondents who are Project Managers, representing 25% of the population. The remaining respondents are Engineers (representing 16% of the population); Architects and Quantity Surveyors, representing 19%, 13% and 11% of the population respectively. The results presented in Table 4.1 also indicate that most of the professionals have less than one year experience, representing 35% of the population. This is followed by respondents who have 6 – 10 years' experience (representing 28% of the population). The other respondents have 1 – 5 years' experience (representing 15% of the population), 11 – 15 years and above 15 years' experience (representing 11% of the population respectively).

**Table 1: Analysis of Respondents' Profile**

<b>PROFILE</b>		<b>FREQUENCY</b>	<b>PERCENTAGE (%)</b>
<b>Age Bracket</b>	Below 25 Years	8	6
	25 - 34 Years	59	42
	35 - 44 Years	29	20
	45 - 54 Years	27	19
	55 Years and Above	19	13
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Gender</b>	Male	111	78
	Female	31	22
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Marital Status</b>	Married	130	92
	Single	9	6
	Widowed	3	2
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Educational Qualification</b>	SSCE	13	9
	OND/NCE	19	13
	HND/BSc	68	48
	MSc/MBA	27	19
	PhD	15	11
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Position in the Firm</b>	Project Manager	35	25
	Architect	19	13
	Contractor	46	32
	Engineer	27	19
	Quantity Surveyor	15	11
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Years of Experience in the Construction Industry</b>	Less than 1 Year	50	35
	1 - 5 Years	21	15
	6 - 10 Years	40	28
	11 - 15 Years	16	11
	Above 15 Years	15	11
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Ownership Structure of the Firm</b>	Sole Proprietorship	83	58
	Government-Owned	28	20
	Partnership	31	22
	<b>Total</b>	<b>142</b>	<b>100</b>
<b>Numbers of Contract</b>	Less than 10	4	3
	10 – 50	96	68
	51 - 100	32	23
	101 - 150	10	7
	<b>Total</b>	<b>142</b>	<b>100</b>

Source: Authors field work, 2025

The least number of are staff members of the Federal Ministry of Housing, representing 15% the total population. This indicates that the respondents were made up of a good mix of the relevant professionals with the requisite certification and qualification to enable them to be able to provide reliable information required for this study. This shows that the respondents have the requisite experience required to provide reliable data. It was also revealed from the results in Table 1 that the majority of the respondents operate in a sole-proprietorship

construction firm. This represents 58% of the total number of respondents. The other respondents work in a partnership and government-owned construction firms. This represents 22% and 20% of the total number of respondents. Finally, it was shown that the numbers of contracts for most of the respondent's range within 10 – 50. This was followed by the respondents whose numbers of contracts in the last cropping season range from 51 – 100 (representing 23% of the total number of respondents).

### Factors that Enhance the Use of Project Management Software

The results of the MIS ranking of respondents' perception on the factors that enhance the use of Project Management Software are presented in Table 2. Therefore, from the results presented in Table 4.4, it can be seen that the respondents agree that the most important factors that enhance the use of Project Management Software were "Training and capacity building of staff" (MIS = 3.42); "Availability of skilled project managers (HRF)" (MIS = 3.31); and "Software affordability (Financial)" (MIS = 3.11). The least number of respondents somewhat agree that the most important factors that enhance the use of Project Management Software were "User motivation (HRF)" (MIS = 2.94); "Compatibility of software with existing systems" (MIS = 2.94); "Regular software updates and maintenance" (MIS = 2.75); and "Maintenance costs (Financial)" (MIS = 2.65). On the average, the respondents agree that all the identified factors that enhance the use of Project Management Software were important (MIS = 3.02).

**Table 2: Factors that Enhance the Use of Project Management Software**

Code No.	Factors that Enhance the Use of Project Management Software	MIS	Rank	Decision
D6	Training and capacity building of staff	3.42	1st	Agree
D1	Availability of skilled project managers (HRF)	3.31	2nd	Agree
D5	Software affordability (Financial)	3.11	3rd	Agree
D2	User motivation (HRF)	2.94	4th	Somewhat Agree
D3	Compatibility of software with existing systems	2.94	4th	Somewhat Agree
D7	Regular software updates and maintenance	2.75	6th	Somewhat Agree
D4	Maintenance costs (Financial)	2.65	7th	Somewhat Agree
	<b>Average MIS</b>	<b>3.02</b>		<b>Agree</b>

The results of the MIS ranking of respondents' perception on the factors that enhance the use of Project Management Software are presented in Table 4.4. The highest ranked factor, with an MIS of 3.42, is "Training and capacity building of staff". This strong agreement shows the centrality of human capital development in the Adeyemi and Joseph, 2026

digital transformation of Nigeria's construction industry. Abubakar *et al.* (2022) emphasised that no matter how sophisticated a digital tool is, its value depends fundamentally on the competence of the workforce that deploys and operates it. The construction sector in Nigeria still grapples with a digital skills gap; many firms lack adequately trained personnel who can exploit advanced features of software such as Primavera or MS Project to their fullest potential. This finding therefore reinforces the argument that targeted training initiatives and continuous professional development programmes are prerequisites for ensuring that software investments translate into tangible project performance improvements.

Closely following this is the factor "Availability of skilled project managers (HRF)", with an MIS of 3.31. This result demonstrates that respondents recognise that beyond generic training, the presence of skilled, certified project managers with practical software expertise is equally essential. Skilled project managers are better positioned to integrate software tools into core project workflows, supervise data integrity, and ensure that the software's functions are fully aligned with project objectives. As Cooper and Schindler (2003) argue, technology adoption must be underpinned by strong leadership and technical proficiency at the managerial level. In contexts where project managers lack digital literacy, firms risk underutilising expensive software licenses, ultimately undermining expected productivity gains.

The third most significant factor, "Software affordability (Financial)", with an MIS of 3.11, reveals that economic reality confronting many construction firms in Nigeria, especially small and medium-sized enterprises (SMEs). The upfront and recurring costs of purchasing, licensing, and maintaining sophisticated software such as Primavera can be prohibitively high (Anyanwu *et al.*, 2022). Firms may therefore be deterred from adopting these tools unless they perceive clear value for money or have access to flexible pricing models. This finding suggests that affordability is not merely a cost consideration but a strategic issue that directly influences firms' willingness to invest in software tools. This aligns with Chidiebere and Nwosu's (2024) observation that financial barriers remain a persistent constraint to technological advancement in Nigeria's construction sector. The overall average MIS of 3.02 indicates that respondents generally agree that all the listed factors are important drivers of successful software usage, though their relative importance varies. This comprehensive perspective aligns with Babatunde *et al.* (2022), who argue that the successful integration of digital tools in construction hinges on a balanced combination of human, financial, and technical enablers.

## **CONCLUSION AND RECOMMENDATIONS**

The findings concluded that PMS tools particularly Microsoft Project, Primavera, and Microsoft Excel are now widely used by Nigerian construction firms, but with varying degrees of integration and sophistication. It can also be concluded that PMS adoption has a measurable positive effect on core aspects of project delivery, notably by improving reporting accuracy, cost estimation, quality monitoring and resource allocation, thereby supporting firms in achieving cost, time, and quality targets more reliably. This study identified key factors enhancing project management software (PMS) adoption in Nigerian construction firms, including top management support, Adeyemi and Joseph, 2026

training, and perceived ease of use. Addressing these factors can boost PMS utilization, improving project outcomes. It recommends that management should provide support and resources for PMS implementation and offer tailored training programs for construction professionals. Software developers should design user-friendly interfaces and provide ongoing support.

## References

- Ahmed, S., & Musa, A. H. (2022). Impact of Building Information Modeling (BIM) on construction efficiency in Nigeria. *Nigerian Construction Review*, 21(4), 112–127.
- Ajibade, O., & Samuel, O. T. (2023). Quality control in construction projects: The role of project management software tools. *Construction Management and Economics*, 41(5), 25-40.
- Anyanwu, J., Okeke, S., & Chukwuma, U. (2022). Collaboration between Nigerian construction firms and international technology providers: Benefits and challenges. *International Journal of Construction Engineering*, 29(2), 175-189.
- Arayici, Y., Coates, P., Koskela, L., Kagioglou, M., Usher, C., & O'Reilly, K. (2011). Technology management in construction: An implementation framework. *Technological Forecasting and Social Change*, 78(2), 229-238.
- Eze, M. O., & Chukwuma, C. (2023). The evolution of construction contracting firms in Nigeria: From traditional to digital approaches. *Nigerian Journal of Building and Civil Engineering*, 16(3), 211-223.
- Fisher, M., Aouad, G., & Lee, A. (2000). *4D modelling for construction planning and rapid decision making*. *Journal of Information Technology in Construction*, 5, 59–72.
- John, C. (2021). The evolution of construction contracting firms in Nigeria: From traditional to digital approaches. *Nigerian Journal of Building and Civil Engineering*, 16(3), 211-223.
- Lary, F. (2024). Emerging trends in construction technology: The role of drones, AI, and blockchain in Nigeria. *Journal of Technology in Construction*, 14(2), 89-102.
- Ogunbiyi, O., Goulding, J. S., & Oladiran, M. T. (2014). Exploring the influence of cultural differences on the adoption of building information modelling (BIM) in developing countries. *International Journal of 3-D Information Modeling*, 3(2), 1-16.
- Oladapo, A. (2023). project management software integration in construction: A Nigerian perspective. *Journal of Construction Management*, 20(1), 102-114.
- Oladapo, A. (2023). project management software integration in construction: A Nigerian perspective. *Journal of Construction Management*, 20(1), 102-114.
- Osei-Asare, J., Mensah, F. S., & Owusu-Acheampong, R. (2021). Understanding the role of construction firms in economic development in Africa. *Journal of African Development*, 24(4), 67-80.
- PMBOK. (2021). *A guide to the project management body of knowledge* (7th ed.). Project Management Institute.
- Project Management Institute (PMI). (2021). *A guide to the project management body of knowledge* (7th ed.).

Umeh, R., & Akintola, A. (2023). project management software tools and their impact on the performance of construction contracting firms in Nigeria. *Nigerian Journal of Construction Studies*, 8(2), 112-125.