

Effects of Project Management Factors on Building Performance in Nigeria

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Abstract: Building performance has a strong integration within building users. This is because, they are the people who measure the level of performance that lead to customer satisfaction and increase the building occupancy rate. A quality, comfort, healthy and safe building will definitely attract the building users and this will influence the supply and demand of building stock. In addition, building performance is also related to business environment for organizations to achieve their objectives, productivity and increase their profit margin annually by focusing on the internal and external customer perceptions. Building performance has a strong integration within building users. This is because, they are the people who measure the level of performance that lead to customer satisfaction and increase the building occupancy rate. A quality, comfort, healthy and safe building will definitely attract the building users and this will influence the supply and demand of building stock. In addition, building performance is also related to business environment for organizations to achieve their objectives, productivity and increase their profit margin annually by focusing on the internal and external customer perceptions.

Building performance has a strong bond within end users of building because they are people that can give proper performance measurement that project the level of customer satisfaction, hence, enhance the occupancy rate of the building. A healthy, comfort and quality cum safe building will usually entice end users thereby create a significant impact on the demand and supply of building. The paper examined the influence of project management factors (Project Manager and Team Members' Competency and project related factors), and mediating effect of ethical standard practice on building performance in Nigeria. The study is descriptive research that employing the survey method. Hence, the use of close ended questionnaire survey was distributed electronically. A total number of 375 questionnaires were selected using the stratified random sampling technique which include; Builders, Surveyors, Civil engineers and Town planners within Lagos state of Nigeria. Data collected were analyzed using both descriptive and inferential statistical techniques. The study found that project manager and team members' competency significantly influence building performance, along with project-related factors. Ethical standards also mediate the relationship between competency and building performance. However, ethical standards do not have significant mediating effects on the relationship between project management factors and building performance. It was therefore recommended that Organizations should prioritize improving competency through training and focus on project-related factors while emphasizing ethical standard practices in the construction industry.

Keywords: Building performance, project management factors, ethical standards, competency.

I. INTRODUCTION

A building is described as an asset that grants a safe and secure environment when it is in a properly maintained shape and results in continuous enhancement throughout its life cycle by the construction industry. The construction sector plays a vital role in enhancing the quality of life by providing structures and infrastructure (Ishaq et al., 2019). Moreover, it serves as a significant source of revenue generation locally and internationally, contributing to economic growth and fostering

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development (Abdullahi & Bala, 2018; Sánchez, Peláez, & Alís, 2017). In addition, construction industry contributes immensely to GDP of countries and sources of employment. Specifically, building construction all over the world constitutes one of the most treasured assets of humankind. It provides accommodation for diverse purposes to mankind (Guo, *et al.*, 2019; Ali, Shahir and Bin, 2014).

For instance, the construction industry, along with its professional services and supply chain, plays a significant role in the United Kingdom (UK) economy, contributing 7% to the annual GDP and providing employment for approximately three million individuals, which accounts for about 5% of the total workforce (Van Heerden, Musonda & Okoro, 2018). In Hong Kong, it contributes 5.6% to the GDP and constitutes 9.2% of the total labor force (Guo, *et al.*, 2019). Globally, the construction industry employs around 111 million people, making it the largest employer in the industry worldwide (Construction Health & Safety Group, 2018). Similarly, in Nigeria, according to National Bureau of Statistics, the construction sector contributes 10.16% to nominal GDP in the fourth quarter of 2002, which is higher than the 9.99% it contributed a year earlier and higher than the 9.50% contributed to the third quarter of 2022.

Moreover, construction industries play a crucial role in contributing to capital formation in countries (Guo, *et al.*, 2019; Van Heerden, Musonda & Okoro, 2018). For instance, in Nigeria, the construction industry accounts for nearly 70% of the nation's fixed capital formation (Bello & Saka, 2017). Ali, Shahir, and Bin (2014) emphasize that the construction industry holds significance for sustainable and socio-economic development in both developed and developing nations. It serves as a provider of essential infrastructure like roads, railways, hospitals, schools, offices, and housing, while also generating employment opportunities for unemployed or underemployed youth (Bello & Saka, 2017; Babalola, Ibem & Ezema, 2018). Despite this, the performance of construction industries remains subpar in many developing nations, particularly evident in the performance of building projects in Nigeria.

Simply put, building performance pertains to the comprehensive effectiveness, efficiency, and excellence of a constructed edifice in fulfilling its intended functions and goals. It involves multiple facets, such as energy usage, environmental influence, occupant well-being, operational capability, and durability. On one hand, it focuses on the functioning capacity of the building and its effectiveness towards building users (Presier and Schramm, 2005). On the other hand, building performance can be explained to mean the ability of the building to meet the desired requirements and fulfill functions throughout its lifespan (Khalil *et al.*, 2016). A building that efficiently performs well by using resources effectively, reducing operational expenses, maintaining a healthful and conducive indoor environment, and remaining adaptable to evolving construction requirements throughout its existence is crucial in the construction industry.

Poor building performance often leads to building failure and collapse, a recurring problem not only in developing countries but also globally (Akinjare, *et al.*, 2021). This concerning trend of building collapses has become a major source of worry for professionals, stakeholders, and governments within the construction industry worldwide. Lagos state, Nigeria for instance, has earned the reputation of being the 'world's junk-yard' of collapsed buildings due to the frequent incidents of building collapse (Oloyede, Omoogun, & Akinjare, 2010; Kuta & Nyaanga, 2014; Oseghale, Ikpo & Ajayi, 2015; Egunjobi, & Adebayo, 2016). Despite having a substantial number of millionaires, a significant portion of the population, around 66 percent, is forced to live in slums (Akinjare, *et al.*, 2021). Despite being Nigeria's commercial hub, the city's infrastructure condition is lamentable, and ironically, it has earned the nickname of the "mega-city of slums" (World Population Review, 2017). As urbanization and industrialization in most of Nigeria's cities continue to rise, this issue exacerbates, resulting in various damages, financial losses, and loss of lives (**See Table I**).

Table I: Some of the Testified Cases of Collapsed Buildings in Nigeria (2014 - 2019)

S/N	Type of Building Structures and Location of Building	Dates of Collapse	Suspected Causes	Remarks (Lost Lives)
1	2-Storey Building, Ologuneru, Ido LGA of Ibadan City	May 3rd 2014	Not Reported	1 Dead
2	A Hostel Building Under Construction, Akure, Ondo State	9th May 2014	No Geotechnical Report Use of Quacks	2 Dead
3	Uncompleted Church Building, Agudama-Epie, near Yenagoa	19th May 2014	Heavy Downpour	20 Injured

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4	An Uncompleted Four Storey Building, Onitsha, Anambra State	2nd June 2014	Structural Failure	4 Dead
5	2-Storey Barrack Building, Pedro Police Station, Somolu Lagos	30th June 2014	Not Reported	Not reported
6	School Building Complex, Ejigbo, Osun State	10th July 2014	Not Reported	2 People Injured
7	3 Storey Building, Bucknor Estate, Jakande-Isheri, Ejigbo - Isolo Lagos	30th July 2014	Structural Failure	Nil
8	One Storey Building, Osogbo, Osun State	19 th August 2014	Heavy Downpour	One Injured
9	Collapse of a Warehouse at Synagogue Church, Lagos	12th Sept. 2014	Demolition Process	4 Dead
10	Abu Naimi School Building Collapse, Bukuru, Jos	September 2014	Structural Defect Illegal Conversion	10 Pupil
11	Liberty Power Bible Church Building Collapse, Benin	30th Sept., 2014	Structural Defect & Use of Substandard Material	Nil
12	3-Storey Residential Building, Ebute Meta, Lagos	15th July 2015	Structural Defects	4 Rescued
13	3-Storey Residential Building, Swamp Street Odunfa Lagos	21 st Oct., 2015	Structural Defects	4 Rescued
14	5-Storey Building Under Construction, Lekki, Lagos	9th March 2016	Heavy Rainfall and Foundation Failure	34 Dead
15	2-Storey Building, Mile 12, Lagos	19th March 2016	Structural Defects	1 Dead, 1 Injured
16	3-Storey Building, Maletе, Kwara state	2016	Not Reported	-
17	Residential Building, Lagos Island	27 th August, 2017	Heavy Downpour and Vibration	8 Dead
18	4-Storey Building, Zulu Gambari Road, Ilorin	18th August	Not Reported	3 Injured
19	An Abandoned Building, Old Age, Abuja	18th August 2018	Illegal Conversion	2 Dead, 3 Injured
20	7- Storey Building Under Construction, Port-Harcourt	19th Nov., 2018	Not Reported	15 Dead, 31 Rescued
21	3-Storey Building, Lagos	3rd Feb., 2019	Not reported	2 Dead, 1 Injured
22	4-Storey Building Ita-faaji, Lagos Island	13th March 2019	Non-Compliance to Authority Warnings, Old Age	20 Dead, 45 Injured
23	3- Storey Building Under Construction, Sogoye, Ibadan	15th March 2019	Concrete was not allowed to Cure Before Construction.	Not reported

Source: Adapted from: Babalola, 2015; Omenihu et al., 2016; Fagbenle & Oluwunmi, 2010; Odeyemi *et al.*, 2019

A cursory examination of these incidents in Table I suggests that many of the buildings were constructed without the considerations of construction standards and project management factors. In this regard, some studies have identified the roles of project management factors such as project managers versatility and management skills (Elzomor and Parrish, 2016; Dziekonski, 2017), team members competency (Ifediora, Egolum, & Emoh, 2019) on building performance. Venzel, Berenyi & Hriczo (2021) also emphasized on the importance of project related factors as key to ensuring efficient building performance. Adenuga (2012) noted owner-constructor syndrome in which property owners wants to purchase the building materials or dictate what to use, remains a major problem affecting building performance. Despite these studies, little efforts have been placed on an interactive influence of these factors considering the problem at hand. This study therefore seeks to bridge the research gap by providing a comprehensive evaluation on the effect of project management factors on building performance in Nigeria.

II. LITERATURE REVIEW

II.I Building Performance (BPM)

The building performance concept consist use notions and the influence on human performance, as performance is examined relative to how buildings and systems of building influence comfort, well- being of users of building and effectiveness of building. Building performance is the effective and efficient building functioning and its influence on the users, the natural environment, and urban environment. It is attained by means of building science, architectural design values and engineering, sustainability awareness and efficient energy use (Al-Dhaafri et al., 2016; Sorooshian et al., 2016). In traditional term, building performance has been utilized relative to quality of indoor air, fire safety, noise control and thermal efficiency. Each of these micro-level criteria is very important to instigate the comprehension on how adequate the building is meeting its functional requirements.

Pang (2020) opined that performance can be measured using different criteria or indicators such as financial and non-financial measure. Financially, it can be measured by looking at the profitability, cost, market shares and sales growth, return on asset, return on investment among others while non-financially, it can be measured by looking at time, quality of service, safety, customer satisfaction, employee satisfaction, competitiveness and innovation among others. Performance in construction Company can be measured by cost of production, time of delivery, quality of product and safety of staff (employees) (Al-Dhaafri *et al.*, 2016, Maslesa, et. al. 2018). However, to assess how well the building is behaving overall and in the long term, a more holistic approach is needed. This is where total building performance can play an important role (Abdullahi & Bala, 2018; Unegbu, Yawas & Dan-asabe, 2020). Although, most of the early studies have concentrated on measuring and assessing the performance of building products rather than the whole buildings, hence the need for total building performance.

Construction industries in Nigeria accounts for almost 70% of the nation's fixed capital formation, 3.88% GDP (Abdullahi & Bala, 2018), and employs approximately 8 million people, which represents approximately 25% of Nigeria's workforce and the largest employer of construction labor in Africa (Abdullahi & Bala, 2018). This clearly indicates the significance of the sector to the Nigerian economy (Unegbu, Yawas & Dan-asabe, 2020). Albert & Windapo (2019) posits that building construction performance in Nigeria is poor and completely lacking improvement. Nigerian building construction industry is characterized by evidence of poor performance due to high construction cost; delay in project delivery; poor quality works; incidences of collapsed buildings; health and safety challenges (Omopariola, Albert & Windapo, 2019; Abdullahi & Bala, 2018; Gambo, Said & Ismail, 2017)

Some scholars ascribe the poor building performance to poor management of building construction project by professionals. Poor management factors that concern Nigerian building stakeholders in building construction could be attributed to ignorance and ineptitude of contractors who are responsible for the acquisition, design, outline, and development of building projects (Gambo, Said & Ismail, 2017; Omopariola, Albert & Windapo, 2019; Abdullahi & Bala, 2018). The lack of successful management of different resources such as the materials, staff, and other properties to ensure the stability of the building has been the common cause of poor buildings performance in Nigeria (Oloke, Ogunde & Joshua, 2017; Yusuf, *et. al.*, 2020). Hence, the aim of this study is to examine the effects of project management factors on building performance in Nigeria. Therefore, this study is important and timely as it can help in improving construction performance and limit building construction collapse and failures in Lagos state and Nigeria generally.

II.II Project Manager and Team Member's Competency (PMTMC)

Competence refers to the capability of performing designated roles up to the required standard. Various studies have highlighted the positive impact of project management personnel's competency, including Project Managers and Team Members, on project performance, with a particular focus on construction projects. Researchers and practitioners, as emphasized by Rezende and Blackwell (2019), recognize the importance of Project Manager and Team Members' Competency in enhancing project performance, evident from the increasing number of research publications on this subject. To enhance project performance, professional organizations like the Project Management Institute (PMI) and the Association for Project Management (APM) have developed frameworks for project management competencies, specifically tailored for construction projects.

Rezende and Blackwell (2019) have classified project managers' competency into categories such as cognitive skills, communication, knowledge and experience, emotional intelligence, professional attributes, contextual understanding, project management knowledge, management skills, and personal attributes. These various attributes collectively contribute

to improved project performance. Other researchers, including Owusu, Chan, Shan (2019), Mavi, Standing (2018), and Gunduz & Yahya (2018), have stressed that project manager competency includes elements such as experience, authority, technical capability, leadership skills, commitment, and adaptability to changes. Similarly, project team members' competency encompasses attributes such as experience, authority, technical capability, leadership skills, commitment, and adaptability to changes, all of which significantly influence project success.

Juras (2019) emphasizes the significance of sufficient knowledge, experience, methodological expertise, and leadership behavior for both project managers and project team members. The combination of these elements leads to improved individual, project, and organizational performance, particularly in the context of building construction. The dynamics among project team members play a vital role in enhancing performance in terms of cost, time, and operability. Drawing from their diverse skills and knowledge from various backgrounds, project team members effectively execute critical projects like building construction, ensuring project success.

Project Managers and Team Members play critical roles in various aspects of construction project management, such as planning, scheduling, and communication. Their effective collaboration, along with other essential stakeholders like clients, contractors, architects, and subcontractors, is essential for the successful execution of building projects. Ethical decision-making by project managers and the collective effort of all involved parties are crucial for achieving positive outcomes in construction projects (Bredillet, 2014; Dziekoński, 2017; Ahmed & Anantamula, 2017; Ifediora, Egolum, & Emoh, 2019; Omar & Fayek, 2016).

II.III Project Related Factors (PRF)

Previous research has shown that project performance can be enhanced by Project Related Factors (Hornstein, 2015; Truman & King, 2018). According to Olawumi and Chan (2019), these project-related factors encompass various elements such as planning effort, communication system, project complexity, project size, feedback capabilities, nature of the project, effective safety program implementation, control mechanisms, project type, sub-contractor work control, development of appropriate organizational structure, and overall managerial actions, all of which play a critical role in determining project performance.

Project managers utilize Project Related Factors within the knowledge areas of the project management body of knowledge, with five key factors identified: initiating, planning, executing, monitoring and control, and closing and handover system (Truman & King, 2018; Project Management Institute, 2013). Furthermore, Project Related Factors are crucial for achieving successful building performance. Hubbard (1990) emphasizes their significance for management success, as they enable project managers to plan and execute construction projects effectively, maximizing the likelihood of project success (Jaselskis & Ashley, 1991). Walker and Vines (2000) highlight the importance of adequate communication, effective monitoring and control processes, a well-structured organization, coordination effectiveness, and decision-making effectiveness for building performance. Other researchers who support the importance of project-related factors for building performance include Pocock et al. (1997, 1997), Kumaraswamy and Chan (1999), and Walker and Vines (2000).

II.IV Ethical Standard Practice (ESP)

Literature have shown link between ethical practices and project management (Helgadóttir, 2008; Bredillet, 2014). According to Helgadóttir (2008), ethics enable project manager to think logically and creatively which positively influence project management success. Thus, success of modern project managers and project management are influenced by ethics. Furthermore, foundation of project management success is anchor on integration of ethical awareness, logical thinking and creativity. Bredillet, (2014) stated that project managers employ organizational, professional and personal ethics for decision making in all facet of project management and organizational success. In addition, adherence to standard practice, rules and regulation by Project Manager and Team Members that enhance project management success are dimensions of ethical practices.

On the other hand, prior studies have shown that Ethical Practices has a positive impact on building performance (Vee & Skitmore, 2003; Abdul-Rahman, Wang and Yap, 2010; Dindi, 2016). Vee and Skitmore (2003) study ethics in Australian construction industry and posit that good ethical practices are an important goal in an organization and impact building construction performance positively. In the same vein, Abdul-Rahman, Wang and Yap (2010) study the impact of ethics on construction quality in developing country and affirmed that ethics influence construction quality. Moreover, Dindi (2016) study personal ethics in Kenyan construction industry and found that ethics influence building performance.

Consecutively, literature has shown that ethics positively influence project management success. Thus, ethical practices positively influence Project Manager and Team Members' Competency so also does it influence Project Related Factors. In the same vein, ethics positively influence building construction performance. This study sets to check the mediating effect of Ethical practices on the relationship between Project Manager and Team Members' Competency and Building performance and also check the effect of the mediating effect of Ethical practices on the relationship between Project Related Factors and Building performance. Therefore, this study believes that ethical practices can mediate the relationship between project management factors and building performance.

III. METHODOLOGY

III.1 Design

The study employs descriptive research design of survey type. This was considered appropriate to provide insights on the effect of project management factors on building performance.

III.II Population and Sampling Procedure

The study population is 8519 building professionals in Lagos state, Nigeria. A sample of 375 building professionals was selected using the stratified sampling technique. The sample was organized into strata which include professional category (builders, quantity surveyors, civil engineers and town planners) and gender (male and female). Thus, the sample include

III.III Instrument

A well-structured questionnaire which consists of items adapted from previous related studies was used. Building performance (BPM) was measured with sixteen (16) items adapted from Yang *et al.*, (2010), Sarhanv & Fox, (2013) and Nnaji (2015). Project Manager and Team Members' Competency (PMTMC) were measured with seven (7) items adapted from Saqib, Farooqui, & Lodi (2008); Kog & Loh (2012) Alias *et al.*, (2014) Project Management Institute (2004, 2013, & 2019). Project related factors (PRF) were measured with twelve (12) items adapted from Bari *et al.*, (2012), Oyewobi & Ogunsemi, (2010), Wanjau (2015), Chan, Scott & Chan (2004). Lastly, the Ethical Standard Practices (ESP) were measured with seven (7) items adapted from Vee and Skitmore (2003), International Ethics Standards (2016) (See **Table II**). The variables were measured on 5-point Likert type 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree)

Table II: Adapted constructs and items in Research Instrument

Constructs	Codes	No of items	Sources
Independent Variable			
Project Manager and Team Members' Competency	PMTMC	7	Saqib, Farooqui, & Lodi (2008); Kog & Loh (2012) Alias <i>et al.</i> , (2014) Project Management Institute (2004, 2013, & 2019)
Project related factors	PRF	12	Bari <i>et al.</i> , (2012), Oyewobi & Ogunsemi, (2010), Wanjau (2015), Chan, Scott & Chan (2004)
Mediating variable			
Ethical standard practice	ESP	7	Vee and Skitmore (2003), International Ethics Standards (2016)
Dependent Variable			
Building performance	BPM	16	Yang <i>et al.</i> , (2010), Sarhanv & Fox, (2013) and Nnaji (2015)

III.IV Hypotheses

- H₁. There is a significant effect of Project Manager and Team Member's Competency on Building Performance.
- H₂. There is a significant effect of Project Related Factors (PRF) on Building Performance (BPM).
- H₃. Ethical Practices significantly mediate the relationship between Project Manager and Team Member's Competency and Building Performance.
- H₄. Ethical Practices significantly mediate the relationship between Project Related Factors and Building Performance.

III.V Method of Data Analysis

Data collected were analyzed using both descriptive and inferential statistical techniques. Frequency counts, mean, standard deviations are the descriptive research used while regression analysis was used to test the stated hypotheses.

IV. RESULTS

IV.I Descriptive Analysis

I. Descriptive Information on Project Manager and Team Member Competence

The result presented in Table III indicates that the mean value and the standard deviations shows a mild agreement among respondents to the variable of Building Performance (BPM) requires project managers and team members' competency, authority, adaptability to changes, leadership skills, monitoring and control mechanism, project planning effort and decision-making effectiveness.

Table III: Description result of PMTMC

S/N	Items	Min	Max	Mean	Std. Dev.
PMTMC 1	Building Performance requires project manager and team members' competency.	2.00	4.00	3.34	0.566
PMTMC 2	Building performance requires project manager and team members' authority.	3.00	4.00	3.45	0.498
PMTMC 3	Building Performance requires project manager and team members' leadership skills.	2.00	4.00	3.38	0.604
PMTMC 4	Building Performance requires project manager and team members' adaptability to change.	2.00	4.00	3.39	0.593
PMTMC 5	Building Performance requires project planning effort.	2.00	4.00	3.15	0.590
PMTMC 6	Building Performance requires monitoring and control mechanism effectiveness	3.00	4.00	3.16	0.369
PMTMC 7	Building Performance requires decision making effectiveness.	2.00	4.00	3.16	0.607

Survey, 2023

II. Descriptive analysis on Ethical Standard Practices (ESP)

The result reveals that the mediating variable of Ethical Standard Practices (ESP) as shown in Table IV, suggested moderate agreement based on the mean value and the standard variation among respondents for items listed in 1-2 and 4-7. While the mean value and standard deviation value for item 3 shows a neutral position of the respondents.

Table IV: Descriptive result for Ethical Standard Practices

S/N	Items	Min	Max	Mean	Std. Dev.
ESP 1	Standard practice is required of project manager and team members.	2.00	4.00	3.20	0.590
ESP 2	Standard practice emphasized on competency, efficiency and effectiveness of project manager and team members.	2.00	4.00	3.32	0.645
ESP 3	Standard practice emphasized on ethics than personal beliefs in building construction.	2.00	4.00	2.91	0.631
ESP 4	Standard practice emphasized on efficiency in cost of completing building project.	2.00	4.00	3.25	0.593
ESP 5	Standard practice emphasized on timely completion of building project.	2.00	4.00	3.12	0.543
ESP 6	Standard practice emphasized on building construction quality.	2.00	4.00	3.29	0.527
ESP 7	Standard practice reduces the rate of accident in building construction site.	2.00	4.00	3.43	0.561

Survey, 2023

III. Description of Project Related Factors (PRF)

The descriptive analysis result of the Project Related Factors (PRF) is shown in Table V and it showed the mean value and standard deviation value signifying moderate agreement among all the respondents to items 1-8 and 10-12. While the mean and deviation of item 9 signify neutral position by all respondent to building performance needs of incentives on every projects.

Table V: Descriptive result of Project Related Factors

S/N	Items	Min	Max	Mean	Std. Dev.
PRF 1	Building performance requires project initiation.	2.00	4.00	3.29	0.567
PRF 2	Building performance requires project planning effort.	2.00	4.00	3.15	0.590
PRF 3	Building performance requires communication system effectiveness.	3.00	4.00	3.35	0.479
PRF 4	Building performance requires monitoring and control mechanism effectiveness	3.00	4.00	3.16	0.369
PRF 5	Building performance requires coordination effectiveness.	2.00	4.00	3.28	0.655
PRF 6	Building performance requires decision making effectiveness.	2.00	4.00	3.16	0.607
PRF 7	Building performance requires effective quality assurance program.	2.00	4.00	3.29	0.664
PRF 8	Building performance requires formal dispute resolution process.	2.00	4.00	3.29	0.572
PRF 9	Building performance requires incentives on every successful building project	1.00	4.00	2.97	0.768
PRF 10	Building performance requires a good project delivery system (e.g. timeliness, quality, conventional design).	1.00	4.00	3.09	0.762
PRF 11	Building performance requires a good project bidding method.	2.00	4.00	3.43	0.603
PRF 12	Building performance requires a good project contract mechanism.	2.00	4.00	3.54	0.614

Survey, 2023

IV. Descriptive analysis on Building Performance

The result of the descriptive analysis of the building performance variable is shown in Table VI and it shows a minimum value of 1 and maximum value of 4 for every items highlight in the variable measurement. A mean value and standard deviation value suggested a moderate agreement among respondent to items on 4-16. But for items 1-3, there are neutral positions of the respondents.

Table VI: Description result of Building Performance (BPM)

S/N	Items	Min	Max	Mean	Std. Dev.
BPM 1	Project manager and team members emphasized on cost of completing building project to be equal to budgeted cost.	2.00	4.00	2.89	0.664
BPM 2	Project manager and team members emphasized on low cost of completing building construction projects.	1.00	4.00	2.88	0.682
BPM 3	Professional ethic practices emphasized on building project completion and budgeted cost to be equal.	1.00	4.00	2.73	0.690
BPM 4	Ethical practices emphasized on low cost of completing building construction projects.	1.00	4.00	3.37	0.793
BPM 5	Project manager and team members emphasized on building project completion and delivery at the plan/estimated time.	2.00	4.00	3.08	0.625
BPM 6	Project manager and team members emphasized on timely/early completion and delivery of building project.	2.00	4.00	3.27	0.561
BPM 7	Ethical practices emphasized on building project completion and delivery at the plan/estimated time.	2.00	4.00	3.35	0.678

BPM 8	Ethical practices emphasized on timely/early completion and delivery of building projects.	2.00	4.00	3.19	0.526
BPM 9	Project manager and team members emphasized on conformity of building project construction to plans and specifications.	2.00	4.00	3.02	0.376
BPM 10	Project manager and team members emphasized on conformity of building project to building code requirements and accepted standards of workmanship.	2.00	4.00	3.17	0.621
BPM 11	Ethical practices emphasized on conformity of building project construction to plans and specifications.	2.00	4.00	3.33	0.680
BPM 12	Ethical practices emphasized on conformity of building project to building code requirements and accepted standards of workmanship.	2.00	4.00	3.30	0.676
BPM 13	Project manager and team members emphasized on safety and health of workers in building construction site.	2.00	4.00	3.19	0.707
BPM 14	Project manager and team members emphasized on safety during building habitation.	2.00	4.00	3.22	0.625
BPM 15	Ethical practices emphasized on safety and health of workers in building construction sites.	3.00	4.00	3.50	0.501
BPM 16	Ethical practices emphasized on safety during building habitation	3.00	4.00	3.65	0.476

Survey, 2023

IV.II Hypotheses Testing

I. Hypothesis 1 and 2

In testing for hypotheses 1 and 2, the study evaluates the path coefficient of the relationships between the variables through bi-regression and multiple regression analysis. Table VII presents the results of the regression analysis. The result shows the direct relationship between Project Manager and Team Members’ Competency, project related factors and building performance. Specifically, the relationship between Project Manager and Team Members’ Competency and building performance shows a positive significance with ($\beta = 0.353, t = 9.555, p < 0.05$). Thus, result shows that PMTMC significantly influence building performance. Hence, H₁ is accepted. Also, the relationship between project related factor and building performance is shown to be positive significant ($\beta = 0.643, t = 19.740, p < 0.05$). Therefore, H₂ is accepted.

Table VII: Effect of Project Manager and Team member's competency and Project related factors on Building Performance.

Hypothesis	Relationship	Std. Beta	t-value	Decision
H1	PMTMC-----BP	0.353	9.555	Accepted
H2	PRF----- BP	0.643	19.740	Accepted

IV.III Hypothesis 3 and 4

The mediating role of ethical standard practice on the relationship between Project Manager and Team Members’ Competency, project related factors and building performance was proposed. Thus, the indirect effect of ethical standard practice is presented in Table VII. The result confirms a mediating effect of ethical standard practice on building performance. The findings show that ethical standard practice negatively mediate the effect of Project Manager and Team Members’ Competency on building performance ($\beta = -0.161, t = -3.357, p < 0.05$). However, the study found ethical standard practice does not have a mediating effect on the relationship between project related factors and building performance ($\beta = -0.099, t = -1.856, p > 0.05$).

Table VII: Effect of Project Manager and Team member's competency and Project related factors on Building Performance.

Hypothesis	Relationship	Std. Beta	t-value	p-value	Decision
H3	PMTMC → ESP → BP	-0.161	-3.357	0.0027	Accepted
H4	PRF → ESP → BP	-0.099	-1.856	0.0744	Not Accepted

V. DISCUSSION

This study examined the effects of project management factors on building performance in Nigeria. Specifically, the study examined the effects of Project Manager and Team Members' Competency and project related factors on building performance. The study also considers the mediating effect of ethical standard practice. This study discovered a positive significant relationship between Project Manager and Team Members' Competency and Building Performance. This result is consistent with the findings of Rezende and Blackwell (2019) who reported that Project Manager and Team Members' Competency enhance Building Performance. According to them, the importance of Project Management and Team Members' Competency to Building Performance is verified by the increase in research publications on the subject matter. In addition, Vitalievich, et al. (2018) emphasized on the roles of project team members' competency in building performance. They posit that team members' creativity and professionalism regulate their performance and project as well. Therefore, project managers and team members' competency are essential to the success and performance of every building project.

Also, this study asserts a positive significant relationship between Project Related Factors and Building Performance. This result is supported by numerous studies and professional organizations which show that project related factors improve building performance (Truman & King, 2018; Hornstein, 2015). Truman & King (2018) posit that project related factors are employed to accomplish building project performance or objectives. Therefore, project related factors of initiating, planning, executing, monitoring and control, close and handover system etc. are essential to the success and performance of every building project.

On the mediating effect of ethical standard practice on the relationship between Project Manager and Team Members' Competency and building performance. This study documented an indirect significant mediating effect of ethical standards on the relationship between project manager and team's competence on building performance. Following the recommendation of IES (2016), services provided by practitioners, employees and assistants shall be based on their competency before they are qualified to provide building services. According to Shola (2002) poor building performance is a consequence of employing unqualified professionals and workforce. Therefore, following ethical standard practice will enhance the relationship between Project Manager and Team Member's Competency and Building Performance. However, this study found no significant relationship on the mediating effect of project related factors and building performance. The plausible reasons for this insignificant mediating effect of Ethical Standard Practices on the relationships between project related factors and building performance could be owned to the confirmation by Truman & King (2018), Hornstein (2015) and Ali (2010) who stated that the project related factors of initiating, planning, executing, monitoring and control, close and handover system etc. are adequately essential to the success and performance of every building project.

VI. CONCLUSION

The result of this study has provided empirical evidence on the direct and indirect relationship between project management factors and ethical practices on building performance in Lagos state of Nigeria and has tested the hypotheses to affirm the objectives of the study. These findings affirm that, project manager and team members' competency is significantly related with building performance. Also, project related factors are proved to have a significant positive influence on building performance. Subsequently, the study found a significant mediating effect of ethical standards on the relationship between project manager and team's competency and building performance. However, this study found no association between the mediating effect of ethical practice on the relationship between project related practices and building performance. Hence, it is therefore recommended that organizations involved in building projects in Nigeria and globally should focus on

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improving the competency of their project managers and team members. This can be achieved through training programs, workshops, and continuous professional development to ensure that the project team possesses the necessary skills and knowledge to deliver successful building projects. It is also essential for building professionals to pay close attention to project-related factors such as planning, executing, monitoring and handover systems. In addition, emphasis also needs to be placed on ethical standard practices in the construction industry.

This research has the potential to benefit professionals in building-related organizations as it supports their efforts to enhance building performance through adherence to standard practices. Consequently, stakeholders, including the government, building project professionals, and citizens, can gain valuable insights from this study on how to effectively employ competencies, ethical standard practices, and project-related factors to improve building performances. However, it is important to note that this study's limitation arises from its focus solely on building-related issues in Lagos state due to the ongoing Covid-19 pandemic, which prevented the inclusion of other states in the scope of the study. As a suggestion for future research, expanding the study to include other states of Nigeria would enable the collection of samples from building-related professionals residing in those areas.

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