IPJ Ibadan Planning Journal
Dec. 2025,
Vol.11, No. 2, 1-10

Ibadan Planning Journal

journal homepage: http://journals.ui.edu.ng/index.php/ipj/issue/view/7

# Level of Awareness and Practice of Sustainable Project Management among Quantity Surveyors in Ibadan, Oyo State, Nigeria

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**Abstract**

*The construction industry has a substantial influence on environmental sustainability, social well-being, and economic development. With the rapid urbanisation of cities like Ibadan, the capital of Oyo State, Nigeria, there is a growing urgency for the implementation of sustainable construction practices. Sustainable project management entails the incorporation of environmental, social, and economic factors throughout all stages of construction projects in order to mitigate adverse effects and maximise long-term advantages. The purpose of this paper is to explore the level of Awareness and Practice of Sustainable Project Management among Quantity Surveyors in Ibadan, Oyo State. The study adopted a quantitative approach by distributing a questionnaire to 171 professional quantity surveyors in the state. However, a total of 62 were retrieved, equating to 36% of the total administered questionnaire. The study adopted descriptive statistics using the Mean Item Score (MIS) to rank the variables. The study concluded that majority of the respondents in the study scope are aware of the concept of sustainable project management. This finding highlights a gap in local or region-specific sustainability certifications and points to a reliance on international standards. Furthermore, the study identifies "High initial investment costs" as the most significant barrier to the adoption of sustainable practices, echoing similar findings in global studies. It was recommended that public awareness campaigns be conducted to emphasise the enduring advantages of sustainable construction, including its financial and environmental benefits.*

**Keywords**
Awareness, practice, sustainability, project management, construction

**Article History**
Received 22 Feb. 2025
Accepted Aug. 2025
Published online Dec 31, 2025

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**Declaration of Conflicting Interests**
The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## 1. Introduction

Recently, world leaders have demonstrated a strong determination to preserve their immediate surroundings (Olanipekun, 2015). This commitment is reflected in their adoption of the 17 Sustainable Development Goals (SDGs) as part of the 2030 Agenda for Sustainable Development (Bello *et al*., 2024). Their commitment is underscored by the emergence of Sustainable Development (SD), which is a critical priority on the global agenda, as exemplified by the United Nations' Sustainable Development Goals (UN-SDGs) (Clement *et al.*, 2023). These goals highlight the critical need to balance economic growth, social inclusion, and environmental protection in all walks of life (Sachs *et al*., 2019). However, within this framework, SDG 9 – Industry, Innovation, and Infrastructure (Kynčlová *et al*., 2020), has a primary association with the concept of project management (Fei *et al.,* 2021). Moreover, this goal focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization, and encouraging innovation (Lekan *et al*., 2021). Hence, this reinforces the need for a sustainable project management approach within the built environment.

According to Olander and Martine (2015), Sustainable Project Management (SPM) is the practice of managing projects in such a way that they meet current needs while not jeopardising future generations' ability to meet their own needs. It incorporates sustainability principles into all stages of project management, from planning and execution to monitoring and closure, with an emphasis on balancing economic, social, and environmental considerations (Agarwal & Kalmár, 2015; Stanitsas *et al*., 2021). Hence, making it a must-adopt model for construction practitioners, particularly the quantity surveyors, who are integral to the planning, execution, and monitoring of construction projects.

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However, despite the global push for sustainability, there is a significant gap in knowledge regarding the actual implementation of sustainable project management practices by quantity surveyors, particularly in developing countries such as Nigeria (Olawumi & Chan, 2019). This is because there have been few studies conducted to understand the specific challenges and opportunities faced by these professionals when adopting sustainable practices (Journeault *et al*., 2021). For example, in Nigeria, a country grappling with rapid urbanisation and environmental challenges, the city of Ibadan in Oyo State serves as a unique microcosm for researching the incorporation of sustainable practices into project management. Ibadan, one of West Africa's largest cities, is also undergoing significant infrastructure development, with a population of over 3.5 million and an area of 3,080 square kilometres (Jelili *et al*., 2023). This growth raises serious sustainability concerns, such as resource depletion, environmental degradation, and socioeconomic disparities. The purpose of this study is to investigate the level of awareness and practice of sustainable project management among quantity surveyors in Ibadan. It aims to determine the extent to which these professionals adhere to global sustainability principles and how local contextual factors influence their practices.

## 2. Literature Review

### 2.1 Sustainable Project Management

Sustainable project management has emerged as a critical approach to balancing economic development, environmental stewardship, and social responsibility during project execution (Silvius & Schipper, 2014). It includes principles and practices that aim to ensure projects contribute positively to current needs without compromising future generations' ability to meet their own needs (Silvius & Schipper, 2014).) Sustainable project management incorporates sustainability principles into the project planning, implementation, and evaluation phases (Orieno *et al*., 2024). It focuses on economic efficiency, environmental preservation, and social equity throughout the project's lifecycle (Silvius & Schipper, 2014)). According to Ekemezie (2024), the key principles include minimising resource consumption, lowering environmental impact, promoting social inclusion, and ensuring economic viability. Hence, sustainable project management frameworks frequently rely on international standards like the ISO 14000 series and the Global Reporting Initiative (GRI), which provide guidelines for incorporating sustainability into organisational practices (Marcelino-Sádaba *et al*., 2015). In Nigeria, construction is a major sector, and the role stakeholders play is fundamental to the realisation of sustainable development (Leo-Olagbaye, 2024)

#### 2.2.1 Contemporary Trends and Approaches

Silvius & Schipper (2014) posited that there is an increasing global awareness of the significance of sustainable project management in tackling environmental issues and fulfilling societal demands. This is because organisations in different industries are implementing sustainable practices to improve their competitive edge and comply with regulations (Silvius & Schipper, 2014). Hence, case studies from various countries offer concrete illustrations of the implementation of sustainable project management practices (Silvius & Schipper, 2014). The emergence of eco-cities in Europe, such as Vauban in Germany and Hammarby Sjöstad in Sweden (Primoz *et al*., 2020), serves as a prime example of how sustainability is being incorporated into the process of urban planning and development. These projects give priority to energy efficiency, the use of renewable energy, and sustainable trans-portation. They establish standards for sustainable urban development on a global scale. Moreover, the Bullitt Centre in Seattle exemplifies how commercial buildings in North America can attain net-zero energy status through inventive design and sustainable technologies (Owah & Mkuhlana.,2021). Similarly, in Asia, sustainable water management projects address water scarcity while encouraging sustainable agricultural practices (Gany *et al.,* 2019). However, in developing countries such as Africa and Asia, sustainable project management practices are being tailored to meet local challenges and opportunities. For example, implementing solar energy projects in rural Africa not only generates renewable energy but also promotes local economic development and quality of life.

### 2.2 Role of Quantity Surveyors in Promoting SPM

The construction industry plays a crucial role in promoting sustainable development, considering its substantial environmental, economic, and social effects (Ghufran *et al.*, 2022). Quantity surveyors,

being essential professionals in this field, have a distinct advantage in advocating for sustainable project management (SPM) (Ruparathna & Hewage, 2015). Due to their proficiency in cost management, contract administration, and project evaluation, they play a crucial role in incorporating sustainability principles into construction projects (Ghufran *et al*., 2022). Quantity surveyors are essential in ensuring the achievement of sustainability goals by effectively managing resources, reducing waste, and promoting collaboration among stakeholders (Alwan *et al.,* 2017). Furthermore, their participation in project planning, budgeting, procurement, and execution empowers them to impact sustainable practices at various stages of a project (Phillips *et al*., 2003). Quantity surveyors have the responsibility of overseeing financial planning and cost control, both of which are crucial for ensuring economic sustainability. Their services encompass precise cost estimation, thorough feasibility analysis, and diligent adherence to budgetary constraints for project completion (Ghufran *et al*., 2022). Moreover, through the integration of Life Cycle costing (LCC) and Whole Life Cycle Assessment (WLCA) techniques, quantity surveyors can assess the economic advantages and drawbacks of sustainable design choices and materials over the long term (Jowah & Mkuhlana, 2021). This evaluation encourages investments in energy-efficient and environmentally friendly solutions. Quantity surveyors exert their influence on the choice of sustainable materials, suppliers, and subcontractors by integrating sustainability criteria into tender documents and contracts (Ruparathna & Hewage, 2015). Therefore, they guarantee that procurement processes comply with sustainability standards, such as procuring from certified suppliers and giving priority to materials with lower embodied energy. This approach not only promotes environmental sustainability but also improves the social responsibility of construction projects. Furthermore, the incorporation of sustainability into risk management processes is essential for SPM, as it is a fundamental responsibility of quantity surveyors (Ershadi *et al*., 2021a). Quantity surveyors assess and minimise risks associated with environmental impact, regulatory compliance, and social acceptability (Ding, 2008). Therefore, through the implementation of sustainability risk assessments, they guarantee that projects adhere to environmental regulations, evade penalties, and uphold a favourable reputation. Thus, adopting this proactive approach aids in effectively handling potential sustainability-related problems and strengthens the ability of construction projects to withstand challenges. According to Olawumi and Ayegun (2016), Quantity surveyors are involved in evaluating project performance against sustainability criteria. They use sustainability indicators and key performance indicators (KPIs) to assess the environmental, economic, and social impacts of projects. Moreover, post-occupancy evaluations conducted by quantity surveyors provide valuable feedback on the effectiveness of sustainable practices, informing future projects and continuous improvement (Roberts & Edwards, 2022). This role in performance measurement underscores their contribution to promoting accountability and transparency in sustainable project management.

### 2.3 Awareness and Challenges of SPM among Quantity Surveyors

Quantity surveyors must be cognizant of SPM to ensure its successful implementation. Nevertheless, research suggests that quantity surveyors exhibit varying levels of comprehension and application of SPM, despite the increasing recognition of sustainability in the construction sector. A study conducted by Ershadi *et al*., (2021a) found that while Malaysian quantity surveyors recognised the significance of sustainable construction, a significant number of them lacked a thorough understanding of SPM practices and tools. In Nigeria, Ershadi *et al*., (2021a) discovered that quantity surveyors were knowledgeable about sustainability concepts. However, they encountered challenges in implementing these concepts due to inadequate training and resources. The incorporation of sustainability into educational curricula and professional development programmes has been identified as an important factor in raising awareness. Furthermore, institutions that offer construction-related courses are increasingly incorporating sustainability modules to provide future professionals with the necessary skills and knowledge. However, professional organisations and industry associations also play an important role in raising awareness through ongoing professional development (CPD) programmes, workshops, and seminars.

#### 2.3.1 Challenges in Implementing Sustainable Project Management

Despite increasing awareness, quantity surveyors face numerous challenges when implementing SPM. These obstacles can be classified into organisational, technical, financial, and regulatory barriers (Ershadi *et al.*, 2021b).

##### 2.3.1.1 Organisational Culture

Organisational culture and resistance to change are significant barriers to SPM adoption (Ershadi *et al*., 2021b). Many construction companies prioritise short-term financial gains over long-term sustainability benefits, resulting in a lack of dedication to sustainable practices (Saka & Chan, 2020). The traditional project management approach, which frequently focuses on cost, time, and quality, may not be consistent with the broader goals of sustainability, making it difficult for quantity surveyors to advocate for SPM within their organisations.

##### 2.3.1.2 Technical Barriers

The technical complexity of integrating sustainability into project management processes is another challenge (Akadiri *et al*., 2012). Quantity surveyors may lack the technical expertise to evaluate and implement sustainable practices effectively (Saka & Chan, 2020). The absence of standardized methods and tools for measuring and assessing sustainability impacts further complicates the adoption of SPM. Furthermore, the rapid pace of technological advancements necessitates continuous learning and adaptation, which can be demanding for quantity surveyors.

##### 2.3.1.3 Financial Barriers

The perceived exorbitant expenses associated with sustainable construction practices serve as a major deterrent (Akadiri *et al*., 2012). Many clients and project stakeholders tend to prioritise cost-saving measures and view sustainability as an extra expense rather than recognising it as an investment with long-term advantages (Akadiri *et al.,* 2012; Kibert, 2016). This perception can impede the implementation of sustainable practices, as quantity surveyors face difficulties in rationalising the initial expenses linked to sustainable materials and technologies.

##### 2.3.1.4 Regulatory Barriers

The adoption of SPM can be either facilitated or hindered by regulatory frameworks and policies (Saka & Chan, 2020). However, Quantity surveyors face challenges due to the lack of consistent and unambiguous regulations about sustainability standards and requirements (Häkkinen & Belloni, 2011). This issue is worsened by the absence of strict enforcement mechanisms and incentives for sustainable practices. Hence, clear guidelines, incentives, and penalties are crucial for fostering SPM by providing necessary regulatory support.

## 3. Methodology

This study employed a quantitative research approach, which was conducted using a questionnaire to determine the level of awareness and practice of sustainable project management among quantity surveyors in Ibadan, Oyo State. The study considered Oyo State due to the fact that it houses the third-largest city in Africa and first in West Africa (Roberts & Edwards, 2022). Furthermore, due to its land mass, the state is the home of many infrastructural developments which is evident in the allocation of a substantial portion of the state's budget, totalling about N74.3 billion or 17.1 per cent of the appropriation bill to infrastructure Akadiri *et al.,* (2012) in the recent budget presented to the House of Assembly (HoA). Quantitative research assists in generating objective data that can be communicated clearly using statistics and numbers. The questionnaire entails necessary variables in relation to the construct of the study, which was used to collect data from Quantity Surveyors within the study scope.

Participants of the study, who are Quantity Surveyors, were to complete the questionnaires by rating their level of agreement or disagreement with the variables in all the sections of the questionnaire using the five-point Likert scale provided in the survey. The identified target population for the main survey includes both government and private sector professionals who are quantity surveyors. However, in order to reach these professionals, the study used a purposive sampling approach. Purposive sampling, also known as judgmental or selective sampling (Rai & Thapa, 2015), is a non-probability sampling technique in which the researcher deliberately chooses specific participants, settings, or events that will provide the most relevant and rich data for the study (Rai & Thapa, 2015). This method relies on the researcher's judgement to select participants who will best contribute to the research objectives ( Rai & Thapa, 2015). However, according to the data available with the Nigerian Institute of Quantity Surveyors, Oyo State Chapter, there are a total of 171 professional quantity surveyors in the state. Hence, a

total of 171 copies of the questionnaire were administered. However, a total of 62 were retrieved, equating to 36% of the total administered questionnaire. This response was considered adequate for the study because it is more than the average of 30% response for studies within the built environment as postulated by Tebeje (2015). Descriptive statistics was used to analyse the collected data with the aid of Statistical Package for the Social Sciences (SPSS) version 26.

### 3.1 Study Findings

#### 3.1.1 Socio-economic Findings

Table 1 presents the socio-economic analysis of the respondents, providing valuable insights into their professional backgrounds and organisational affiliations. The table revealed that the most common area of expertise and professional practice among respondents was general Quantity Surveying (50.9%), followed by Construction Management (24.20%), indicating that these two areas dominate the respondents' professional landscape. Project managers account for 11.30% of the sample, while 14.50% fall into the "Others" category, which includes a variety of other roles that are not specified. Notably, there are no respondents who identify as Facility Managers, indicating a potential gap or lower interest in this specialisation among the sample.

Table 1 also revealed that the respondents' years of experience range widely, with the majority (29.00%) having more than 21 years of experience. This indicates a sizable proportion of seasoned professionals in the sample. The next largest group has 6 to 10 years of experience (25.80%), followed by those with 0 to 5 years (16.10%) and 16 to 20 years (16.10%). The smallest group is made up of those with 11 to 15 years of experience, which accounts for 12.90% of the sample. This distribution reflects a wide range of experience levels, with a significant concentration of highly experienced individuals.

**Table 1: Demographic Findings**

| Constructs | Variables | Percent | Mode |
|---|---|---|---|
| **Area of Expertise** | Quantity Surveyor | 50.00 | 31.00 |
| | Project Manager | 11.30 | 7.01 |
| | Construction Manager | 24.20 | 15.00 |
| | Facility Manager | 0.00 | 0.00 |
| | Others | 14.50 | 8.99 |
| | **Total** | **100.00** | **62.00** |
| **Type of Organisation** | Partnership | 32.30 | 20.03 |
| | Sole Ownership | 51.60 | 31.99 |
| | Consortium | 4.80 | 2.98 |
| | Government Organisation | 11.30 | 7.01 |
| | **Total** | **100.00** | **62.00** |
| **Years of Experience** | 0 - 5 years | 16.10 | 9.98 |
| | 6 - 10 years | 25.80 | 16.00 |
| | 11 - 15 years | 12.90 | 8.00 |
| | 16 - 20 years | 16.10 | 9.98 |
| | 21 years and above | 29.00 | 17.98 |
| | **Total** | **100.00** | **62.00** |
| **Strength of Firm** | 0 - 5 Number (Quantity Surveyors) | 61.30 | 38.01 |
| | 6 - 10 Number (Quantity Surveyors) | 29.00 | 17.98 |
| | 11 - above Number (Quantity Surveyors) | 9.70 | 6.01 |
| | **Total** | **100.00** | **62.00** |
| **Gender** | Female | 79.00 | 48.98 |
| | Male | 21.00 | 13.02 |
| | **Total** | **100.00** | **62.00** |
| **Reg. with QSRBN** | Yes | 51.60 | 31.99 |
| | No | 48.40 | 30.01 |
| | **Total** | **100.00** | **62.00** |
| **QSRBN Licence** | Yes | 51.60 | 31.99 |
| | No | 48.40 | 30.01 |
| | **Total** | **100.00** | **62.00** |
| **Educational Background** | HND | 37.10 | 23.00 |
| | BSc/BTech | 41.90 | 25.98 |
| | MSc/MTech | 16.10 | 9.98 |
| | PhD | 4.900 | 3.04 |
| | Others | 0.00 | 0.00 |
| | **Total** | **100.00** | **62.00** |

### 3.1.2 Level of Awareness of Sustainable Project Management

In order to encourage environmentally responsible and socially beneficial construction practices, it is imperative to evaluate the level of awareness of sustainable project management practices among professionals. The respondents' awareness levels are visually represented in Figure 1. The figure indicates that a substantial majority of the respondents, specifically 90.3%, possess an understanding of sustainable project management principles. In contrast, 3.2% of respondents lack awareness, while the remaining percentage expresses uncertainty regarding these practices. This data emphasises the widespread recognition of the significance of sustainable project management and identifies areas in which additional education and awareness initiatives may be necessary to bolster the industry-wide adoption of these practices.

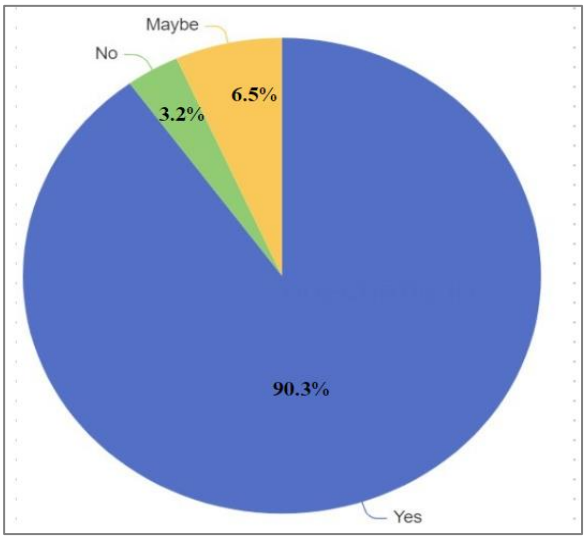


**Figure 1**: Level of Awareness of Sustainable Project Management

### 3.1.3 Green Product Certification

Green product certifications are intended to outline and confirm that a product meets a particular standard and offers an environmental benefit. Many product labels and certification programs certify products based on lifecycle parameters, making them multi-attribute programs. These parameters include energy use, recycled content, and air and water emissions from manufacturing, disposal, and use. However, in order to determine the level of awareness of the respondents on green product certifications, the study listed some popular certifications and sought their awareness on them. From their response. Table 2 shows that the GBI (Green Building Index) certification, which is primarily used in Malaysia, has the highest mean score of 4.32 and a standard deviation of 0.852, making it the highest-ranked certification. This suggests that GBI is widely recognised and preferred in its primary application area. Furthermore, the table revealed that LEED (Leadership in Energy and Environmental Design) certification, which is widely used in the United States and around the world, follows closely with a mean score of 4.21 and a standard deviation of 0.861. LEED's global presence reflects its comprehensive standards and widespread adoption of sustainable building practices. The USGBC (U.S. Green Building Council) certification, which is also focused on the United States, ranks third. This is consistent with LEED, as both certifications are managed by the USGBC, indicating a significant national and international impact. BREEM (Building Research Establishment Environmental Assessment Method), which is primarily used in the United Kingdom but is also recognised around the world, ranks fourth. BREEM's prominence in Europe and growing global presence contribute to its high ranking. The EDGE (Excellence in Design for Greater Efficiencies) certification, designed for emerging markets worldwide, ranks fifth with an average score of 3.88. EDGE's international reach reflects the organization's focus on resource efficiency in developing countries. The GSA (General Services Administration) certification, used in the United States, ranks sixth with an average score of 3.21. GSA's narrow focus on federal buildings may contribute to its lower score. Finally, CASBE (Comprehensive Assessment System for Built Environment Efficiency), which is widely used in Japan, ranks seventh with an average score of 3.41. CASBE's positioning is influenced by its regional focus and unique standards.

**Table 2: Green Product Certifications**

| Certifications | Mean | SD | Rank |
|---|---|---|---|
| GBI | 4.32 | 0.852 | 1 |
| LEED | 4.21 | 0.861 | 2 |
| USGBC | 4.01 | 0.804 | 3 |
| BREEM | 3.91 | 0.825 | 4 |
| EDGE | 3.88 | 0.850 | 5 |
| GSA | 3.21 | 0.854 | 6 |
| CASBE | 3.41 | 0.847 | 7 |

### 3.1.4 Barriers to Sustainable Project Management

The data provided in Table 3 highlights various obstacles to achieving sustainable project management, organised based on their mean scores and standard deviations. This discussion examines the aforementioned findings in relation to previous research, providing valuable insights into the difficulties encountered by the construction industry when adopting sustainable practices. The most significant obstacle is the "High initial investment costs" (Mean = 4.40, SD = 0.896). This discovery is consistent with the study conducted by Akadiri *et al.,* (2012), which suggests that the substantial initial expenses associated with sustainable construction act as a significant deterrent for numerous stakeholders. The low standard deviation indicates a high level of agreement regarding the impact of this issue. The second-highest obstacle, "Ignorance of life cycle cost" (Mean = 3.71, SD = 1.03), underscores a deficiency in comprehending the enduring financial advantages of sustainable construction. Research conducted by Akadiri *et al.,* (2012) highlights the importance of life cycle costing in assessing the actual worth of sustainable investments. However, this concept is frequently disregarded in project planning. The absence of building codes about sustainability, with a mean score of 3.65 and a standard deviation of 1.229, represents a notable obstacle. This emphasises the necessity for regulatory frameworks that promote and facilitate sustainable practices. Akadiri *et al.,* (2012) research corroborates this discovery, indicating that well-defined and enforceable building codes are crucial for fostering sustainability in the construction sector. The barriers ranked lower, such as "Long pay-back period" (Mean = 2.44, SD = 0.878) and "Uncertainty in cost savings" (Mean = 2.02, SD = 0.760), indicate concerns regarding the financial viability of sustainable projects. The barriers mentioned align with the conclusions of Akadiri *et al.,* (2012), who found that uncertainties in financial returns discourage investment in sustainable practices. Furthermore, obstacles such as the "Insufficiency of proficient experts" (Mean = 2.90, SD = 1.422) and the "Deficiency of education and expertise in sustainable design" (Mean = 3.13, SD = 1.361) underscore the shortage of skilled individuals in the field. The findings presented in Hwang and Tan's (2012) studies highlight the importance of enhancing training and education to provide professionals with the essential skills required for effective, sustainable project management.

**Table 3: Perception on Barriers of Sustainable Project Management**

| Code | Barriers | Mean | SD | Rank |
|---|---|---|---|---|
| B1 | High initial investment costs | 4.40 | 0.896 | 1 |
| B4 | Ignorance of life cycle cost | 3.71 | 1.03 | 2 |
| B5 | Lack of building codes on sustainability | 3.65 | 1.229 | 3 |
| B17 | Attitudes/awareness of clients | 3.52 | 1.434 | 4 |
| B6 | Lack of legislation | 3.4 | 1.247 | 5 |
| B16 | Culture of the construction industry | 3.39 | 1.383 | 6 |
| B25 | Lack of general awareness of the role of quantity surveyors in ensuring sustainability in the construction industry | 3.37 | 1.474 | 7 |
| B9 | Lack of demand for sustainable products | 3.32 | 1.328 | 8 |
| B22 | Higher Clients' Requirements through the increasing complexity of modern construction projects | 3.32 | 1.238 | 9 |
| B7 | Lack of environmentally sustainable materials and technologies | 3.29 | 1.272 | 10 |
| B15 | Lack of technical ability | 3.27 | 1.439 | 11 |
| B12 | Ignorance and misunderstanding about sustainability | 3.23 | 1.26 | 12 |
| B11 | Lack of awareness of the benefits of sustainable construction is involved | 3.23 | 1.298 | 13 |
| B24 | Lack of easily accessible guidance | 3.18 | 1.349 | 14 |
| B19 | Attitudes of subcontractors and suppliers | 3.16 | 1.416 | 15 |
| B26 | Lack of awareness of the dynamics and misunderstanding of Sustainability | 3.16 | 1.428 | 16 |
| B20 | Fear of higher investment costs | 3.15 | 1.469 | 17 |
| B10 | Lack of awareness among construction professionals | 3.15 | 1.291 | 18 |
| B21 | Insufficient ICT knowledge and skills in its use to facilitate work processes and search for information | 3.13 | 1.373 | 19 |
| B23 | Lack of awareness of benefits | 3.13 | 1.385 | 20 |
| B13 | Lack of education and knowledge in sustainable design | 3.13 | 1.361 | 21 |
| B8 | Lack of sustainable measurement tools | 3.02 | 1.361 | 22 |
| B18 | Attitude of main contractors | 3.02 | 1.408 | 23 |
| B14 | Lack of skilled professionals | 2.90 | 1.422 | 24 |
| B2 | Long pay-back period | 2.44 | 0.878 | 25 |
| B3 | Uncertainty in cost savings | 2.02 | 0.760 | 26 |

### 3.1.5 Perception on Strategies to Improve Awareness on Sustainable Project Management

The data in Table 4 highlights perception on various strategies for raising awareness of sustainable project management. These strategies were ranked according to mean scores and standard deviations, revealing the perceived importance and consensus among respondents. The strategy with the highest rank, "Seeking fair and equitable distribution of the social costs of construction" (Mean = 4.42, SD = 0.514), highlights the significance of social fairness in sustainable project management. This is consistent with the research conducted by Akadiri *et al.,* (2012), which emphasises the importance of fair allocation of resources and benefits in construction projects in

order to improve social sustainability. The small standard deviation suggests a high level of agreement among respondents regarding the significance of this issue. The concepts of "Improving the quality of human life, including poverty alleviation" (Mean = 4.33, SD = 0.510) and "Social Sustainability" (Mean = 4.33, SD = 0.571) are given high importance, indicating a widespread acknowledgement of the necessity to prioritise human well-being in sustainability endeavours.

**Table 4: Strategies to Improve Awareness on Sustainable Project Management**

| Awareness Variables | Mean | SD | Rank |
|---|---|---|---|
| Seeking fair and equitable distribution of the social costs of construction | 4.42 | 0.514 | 1 |
| Improving the quality of human life, including poverty alleviation | 4.33 | 0.510 | 2 |
| Social Sustainability | 4.33 | 0.571 | 3 |
| Infilling and revitalizing existing urban infrastructure with a focus on rebuilding mixed-use pedestrian neighbourhoods | 4.30 | 0.744 | 4 |
| Pursuing quality in creating and building the built environment | 4.29 | 0.617 | 5 |
| Using serviceability and maintainability to promote sustainability | 4.28 | 0.607 | 6 |
| Technical Sustainability | 4.26 | 0.541 | 7 |
| Choosing environmentally responsible suppliers and contractors | 4.24 | 0.969 | 8 |
| Adopting policies and practices that advance sustainability | 4.22 | 0.816 | 9 |
| Promoting employment creation and labour-intensive construction | 4.19 | 0.885 | 10 |
| Considering the financial affordability for intended beneficiaries | 3.98 | 0.605 | 11 |
| Engaging different stakeholders in the decision-making process for the equitable distribution of social benefits of construction | 3.97 | 0.579 | 12 |
| Economic Sustainability | 3.94 | 1.035 | 13 |
| Using renewable resources in preference to non-renewable resources | 3.93 | 0.626 | 14 |
| Considering the life cycle of materials | 3.85 | 0.662 | 15 |
| Creating a healthy and non-toxic environment | 3.64 | 0.630 | 16 |
| Biophysical Sustainability | 3.63 | 0.566 | 17 |
| Promoting interdisciplinary collaborations and multi-stakeholder partnerships | 3.55 | 0.626 | 18 |
| Establishing a voluntary commitment to continual improvement of performance in the built environment | 3.51 | 0.788 | 19 |
| Minimizing air, land and water pollution at global and local levels | 3.44 | 0.836 | 20 |
| Minimizing damage to sensitive landscape, including scenic, cultural, historical and architectural | 3.39 | 1.038 | 21 |
| Managing construction activities through setting targets, monitoring evaluation, feedback and self-regulation of progress | 3.17 | 0.791 | 22 |
| Utilizing a lifecycle framework | 2.96 | 0.946 | 23 |
| Complying with relevant sustainability legislation and regulations | 2.93 | 1.164 | 24 |
| Undertaking prior assessment of proposed activities | 2.64 | 1.159 | 25 |
| A Process -Oriented Principle | 2.61 | 1.413 | 26 |
| Maximizing resource reuse and recycling | 2.50 | 1.820 | 27 |
| Recognizing the necessity of comprising alternative courses of actions | 2.49 | 1.690 | 28 |
| Seeking synergies between the local environment and proposed development | 2.43 | 1.689 | 29 |

These findings align with the research conducted by Akadiri *et al.,* (2012), which emphasise the crucial influence of social factors in attaining sustainable development. Furthermore, the technical aspects of sustainability, specifically "Using serviceability and maintainability to promote sustainability" (Mean = 4.28, SD = 0.607) and "Technical Sustainability" (Mean = 4.26, SD = 0.541), were also rated highly. These findings are consistent with the research conducted by Shen et al. (2007), which emphasises the importance of technical sustainability for the long-term success of a project. The relatively small standard deviations suggest a high level of consensus among respondents regarding the significance of these strategies. The strategy "Choosing environmentally responsible suppliers and contractors" (Mean = 4.24, SD = 0.969) emphasises the importance of supply chain management in promoting sustainability. This aligns with the findings of a study conducted by Shen et al. (2007), which shows that choosing suppliers who prioritise environmental responsibility can have a substantial effect in minimising the environmental footprint of construction projects. The strategies of "Complying with relevant sustainability legislation and regulations" (Mean = 2.93, SD = 1.164) and

"Maximising resource reuse and recycling" (Mean = 2.50, SD = 1.820) suggest that there may be a lack of awareness and implementation in these areas. Shen et al. (2007), support these findings, asserting that regulatory compliance and resource recycling are frequently disregarded in favour of more pressing project considerations. The strategy "Seeking synergies between the local environment and proposed development" received a low score of 2.43 (Mean) with a standard deviation of 1.689. This indicates that there is a need to place more importance on incorporating local environmental factors into project planning. Studies conducted by Shen et al. (2007) provide evidence in favour of establishing stronger linkages between local environmental contexts and development projects in order to improve sustainability outcomes.

## 4. Conclusion and Recommendations

The importance of sustainable project management in tackling the environmental, social, and economic issues brought about by contemporary construction practices is being increasingly acknowledged. The expertise of quantity surveyors in cost estimation, project management, and financial control plays a crucial role in promoting and implementing sustainable practices in the construction industry. However, while sustainability is increasingly prioritised, the level of awareness and implementation of sustainable project management among quantity surveyors varies greatly across different regions and contexts. Therefore, the explored level of Awareness and Practice of Sustainable Project Management Among Quantity Surveyors in Ibadan, Oyo State. The study revealed that majority of the respondents in the study scope are aware of the concept of sustainable project management. This finding highlights a gap in local or region-specific sustainability certifications and points to a reliance on international standards. Furthermore, the study identifies "High initial investment costs" as the most significant barrier to the adoption of sustainable practices, echoing similar findings in global studies. These findings suggest several recommendations to improve the awareness and implementation of sustainable project management among quantity surveyors in Ibadan:

1. Create Local Sustainability Standards: By developing green building certifications that are specifically designed for the local context and industry requirements, it is possible to encourage a higher level of relevance and acceptance of sustainable practices.
2. Financial incentives and support, such as tax breaks, subsidies, and grants, can be implemented to mitigate the substantial upfront costs that currently discourage the adoption of sustainable projects.
3. Enhanced Education and Training: Offering specialised education and training programmes that concentrate on sustainable construction principles and practices can enhance the knowledge and technical skills of quantity surveyors.
4. Public awareness campaigns can be conducted to emphasise the enduring advantages of sustainable construction, including its financial and environmental benefits. These campaigns have the potential to alter perceptions and stimulate a greater demand for green buildings.
5. Promoting collaboration among government, industry stakeholders, and academic institutions can cultivate a culture of sustainability and stimulate innovation in sustainable project management.

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