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Despite challenges such as financial constraints and the rigorous selection process, we are committed to upholding the highest publishing standards. The increasing number of high-quality submissions encourages us to remain dedicated to our mission. To maintain the journal's format and readability. Papers that meet our standards but are not included in the current issue are queued for future publication based on their submission date.

We extend our sincere appreciation to all authors, reviewers, and editorial board members for their valuable contributions. We look forward to engaging with you in future editions of **IJSSMER** and continuing to advance knowledge in Social Science, Management, and Economics.

With warm regards,

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SPECIAL LIBRARY REQUIREMENTS OF EMPLOYED STUDENTS IN HIGHER EDUCATION: A STUDY OF UNDERGRADUATES AND POSTGRADUATES AT THE INSTITUTE OF HUMAN RESOURCE ADVANCEMENT

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ABSTRACT

Various employee education programmes have been introduced worldwide to provide higher educational opportunities for employed individuals. The Institute of Human Resource Advancement, affiliated with the University of Colombo, was established in 1975 to facilitate higher education opportunities for employed people in Sri Lanka. This study examines how students at IHRA utilise the library, compares patterns of library use between undergraduate and postgraduate students, and explores whether employed students have specific user needs. This study was conducted using a descriptive research design. Data were collected primarily through a structured questionnaire. Significant gaps were identified between students' high awareness and relatively low utilisation of library services, as well as between their high levels of satisfaction with the online catalogue and digital resources and the comparatively low use of these services. Students also recognised several structural and resource-related challenges, including insufficient availability of materials, limited space, and difficulties with time and location. Based on these findings, the study proposes strategies to improve library use among employed students, including enhancing remote access to electronic resources, introducing structured library instruction sessions, adopting more targeted and interactive communication strategies, and regularly reviewing and updating library collections. Collaboration between the library, academics, and institute administration is essential to identify the specific challenges faced by employed students and to develop learner-centred services that support the academic success of both undergraduate and postgraduate students.

Keywords: library use, employed students, undergraduates, postgraduates, higher education

1. INTRODUCTION

People who are engaged in higher studies while employed are an important segment of the process of human resource development. Persons in employment seek to improve their skills and better their career prospects through engaging in higher studies at university level related to their employment. This growing tendency among employed persons has caused an increase in adult students receiving university education.

There have been various employee education programmes in the world. The government formed in 1970 in Sri Lanka took action to launch a workers' education movement and to enrol workers with university education (Perera, 1999). In 1975, the Institute of Workers' Education (IWE) attached to the University of Colombo was established. The name of IWE was changed into Institute of Human Resource Advancement (IHRA) in 2006. Its main degree programme is the

Bachelor of Labour Management (BLM), and it caters for employed people with GCE O/L or A/L qualification and aged 22 or above. The postgraduate courses at IHRA were started in 2007.

The library facilities of IHRA have been available since 1975 and were initially located at the College House premises. In 2002, the library was relocated to the premises of the Faculty of Education at the University of Colombo, and in 2018 it was moved to the IHRA building. At present, the library is situated within a limited space in the main IHRA building. In 2020, the library introduced an online catalogue and developed a digital collection to improve access to information resources. However, library statistics after 2018 indicated a continuous decline in library usage. Consequently, the researcher, serving as the librarian, initiated this study to investigate the reasons for the decrease in library use and to identify the specific library needs of undergraduate and postgraduate students at IHRA.

The main purpose of this study is to identify the special requirements of the employed students engaged in higher studies as library users. This study examines how students at IHRA utilize the library, compares patterns of library use between undergraduate and postgraduate students, and explores whether employed students have specific user needs. Based on these findings, the study also proposes strategies to improve library use among employed students.

2. REVIEW OF LITERATURE

According to Sullivan-Windle (1993), the students found the university library to be a good place to study, a place to find information and a place to receive service. Teoh and Tan (2011) found that frequent users were enthusiastic about using the library both online and in its physical form.

Many surveys have identified borrowing materials, studying, photocopying, using for reference services, and socializing are the main activities of university students done in libraries. Whitmire (2001) identified using the catalogue, searching for periodical full text, searching the internet, borrowing and reserving books, asking for inter-library loans, taking photocopies, referencing, using government documents, studying, using the computer lab and socialising as the general library activities of undergraduates. The most used library service of the undergraduates of Mississippi State University (Grimes & Charles, 2000) was the photocopy facility. Their other library activities were studying, using the online catalogue and internet, and using the reference services. Socialising was also a main activity that the undergraduates engaged in library premises, though it is not related to studying. Similarly, undergraduate students at the University of North Carolina at Chapel Hill used the library for a variety of academic and non-academic purposes, including borrowing books and other materials, checking email, conducting research, engaging in individual and group study, printing and photocopying, using computer laboratories, reading newspapers, resting, using restroom facilities, and spending leisure time (Wolf, 2005).

The Senior Librarians in Sri Lankan universities have noticed for some time that the library usage of undergraduates for academic purposes is diminishing (Karannagoda, 2015). The researcher similarly observed that most students who visited the E-Resource Centre of the University of Colombo, Main Library spent their time sending personal emails, engaging in video chatting, and watching films and videos which are not directly related to their academic activities. A pilot study conducted with undergraduates of the Faculty of Management and Finance, University of Colombo, Sri Lanka revealed that only photocopying and scanning demonstrated a significant positive relationship with the academic performance of the undergraduates (Karannagoda, 2019).

When the undergraduates at the University of North Carolina were asked whether the library is important to the University, 99% of them responded positively (Wolf, 2005). Undergraduates at a public university in Malaysia also extended their positive attitude towards the library (Teoh &Tan, 2011).

Research has indicated that some users held negative attitudes toward libraries and library staff. Although both undergraduate and graduate students expected libraries to provide effective services, they have expressed frustration with the catalogue system, the technology used, and interactions with staff (Sullivan-Windle, 1993). While the students acknowledged the advantages of the online catalogue compared with the traditional card catalogue, they complained that it sometimes provided misleading information. For example, the catalogue might indicate that a particular item is available when, in reality, it is not. Students often made considerable efforts to understand the technology and gradually became familiar with it. However, some reported that staff made them feel guilty for not understanding the technology initially. In addition, the library was understaffed, making it difficult for students to receive assistance when needed. Book trolleys were frequently left full, which made it difficult for students to locate materials on the shelves. Although this situation occurred in the 1990s, similar conditions in any library environment may discourage users from making full use of library services.

In general, most studies on university students' library use have emphasised the importance of library instruction. While conducting a survey to identify the determinants of library use among university students at a public university in Malaysia, the researchers came to know that the majority had attended the course in library induction previously (Teoh & Tan, 2011). Therefore, they used the library more frequently and effectively than the students who have not followed the course. This strongly suggested that when the students became more familiar with the library sources, they became more comfortable and knowledgeable in choosing the sources and using the library more frequently.

According to Grimes and Charters (2000), Mississippi State University did not offer formal library instruction programmes. However, first-year students were required to complete a unit within their English Composition courses that included basic library skills. In addition, the library conducted seminars and classes on the use of bibliographic tools available on campus. The study found that students who had received library instruction spent less time inside the library because they were able to use library resources more efficiently. Nevertheless, the authors suggested that formal library instruction programmes would further enhance the effective utilisation of library materials.

Similarly, undergraduates at the University of North Carolina at Chapel Hill were exposed to bibliographic instruction sessions through their English Composition classes. However, when asked whether they would like to attend brief workshops to improve their library skills, the majority responded negatively (Wolf, 2005). Furthermore, although librarians were prepared to assist students in locating information resources, students tended to seek help from lecturers before approaching librarians (Vinyard, Morales, & Helton, 2024).

Employed students have benefits such as financial stability, enhanced time management skills and communication skills (Curtis & Shani, 2002). On the other hand, excessive working hours can result in reduced academic engagement and lower academic performance (Dundes & Marx, 2006). Many studies have shown that employed students use the library less than non-working students. According to Grimes & Charters (2000), the students who were engaged in full-time jobs, as well as the students live off campus, spent less time in the library. According to Whitmire (2001), the employed students who worked off-campus were less involved in academic library activities. However, Teoh and Tan pointed out that being employed did not affect their library use significantly (2011).

Postgraduate students generally have research and library skills to a certain extent. However, some may have experienced a gap between their undergraduate studies and postgraduate education, which may influence their familiarity with current research tools and library resources.

A survey was conducted among MBA students at Arizona State University to collect information about their self-evaluation of research skills, their expected use of library services and resources, and the types of data or information they considered most important for their studies (Edens & Malecki, 2020). The findings indicated that these three factors varied depending on how long the students had been away from higher education. This result can assist librarians and academic staff in designing study programs and developing library services that better support students' needs.

In another study, librarians interviewed 15 MBA students at a private university to understand their information-seeking behaviour (Vinyard, Morales, & Helton, 2024). The findings revealed that Google was the primary research tool used by the students, while their research skills differed according to prior work experience and research expertise. The study emphasised the need for increased library instruction and greater promotion of specialised business databases.

Similarly, a survey involving 32 graduate students at National Taiwan University investigated how graduate students used Google Scholar (Wu & Chen, 2014). Participants represented the disciplines of humanities, social sciences, and science and technology. The study found that students, particularly those in science and technology fields, preferred using Google Scholar over library databases. However, they also acknowledged that library databases were essential for retrieving scholarly articles. Some students reported difficulties in using Google Scholar effectively, leading the researchers to recommend that future library instruction programmes address this issue.

Reviewing studies conducted between 1997 and 2012, Catalano (2013) found that graduate students, like other information searchers, often begin their research on the internet, seek assistance from lecturers before approaching others, and use library resources differently depending on their academic discipline.

3. MATERIALS AND METHODS

This study was conducted using a descriptive research design. The study population consisted of undergraduate and postgraduate students at IHRA. A random sampling method was employed, with approximately 50% of undergraduate students and 40% of postgraduate students selected to participate. Data were collected primarily through a structured questionnaire. In addition, secondary data sources—including annual reports, meeting minutes, brochures, and the official IHRA website—were consulted to support the analysis.

4. RESULTS

The majority of undergraduates (87%) and graduates (79%) were aged between 25 and 45 years, and the female population was higher than the male population of both groups (57%).

Since the workplaces of 89% of undergraduates are located within 20km of the university, attending lectures and using library facilities on weekdays is likely to be convenient for them. Though the postgraduate lectures are conducted on weekends, the fact that 54% of postgraduate students work within 20 km of the university may be advantageous for their academic activities. However, only 20% of both groups reported having obtained short-term study leave.

Although awareness of the IHRA library was high among undergraduates (97%), less than half (45%) reported using it. A similar pattern was observed among postgraduates, with 79% indicating awareness but only 41% reporting actual use. Awareness of remote access to library materials differed between the two groups. While 75% of undergraduates reported being aware of remote access, only 52% of postgraduates indicated the same. Most students reported reading library emails, including 93% of undergraduates and 85% of postgraduates.

Although 73% of undergraduates reported being satisfied with the online library catalogue, only 45% indicated that they used it. Similarly, 77% of postgraduates expressed satisfaction with the online catalogue, yet only 50% reported using it. The majority of undergraduates (75%) and postgraduates (59%) reported that the library's digital resources—such as past papers, project reports, theses, and e-journals—were easy to access and navigate. However, only 53% of undergraduates and 48% of postgraduates indicated that they used these resources. Most undergraduates (82%) and postgraduates (89%) perceived the guidance videos on the library web page as useful. In addition, 83% of undergraduates and 93% of postgraduates indicated that the online library catalogue and digital resources improved their overall library experience.

The main library activities of undergraduates were reading books (45%), borrowing books (35%), and studying notes (18%). Postgraduates primarily used the library for borrowing books (32%), reading books (29%), referring to other materials (19%) and studying notes (11%).

The main difficulties reported by both undergraduates and postgraduates in using the library included lack of time due to employment and family commitments, the distance between the library and lecture halls, insufficient availability of required materials, and limited space. The special requirements identified by undergraduates and postgraduates included extending library opening hours beyond 4:30 p.m. on weekdays and providing daytime access on weekends, as well as offering guidance on how to search for journal articles and books online for assignments and research.

A relatively small proportion of undergraduates (10%) and postgraduates (13%) reported spending more than 5 hours per week on reading. By comparison, higher percentages-14% of undergraduates and 19% of postgraduates-reported spending more than 5 hours per week on leisure activities such as listening to the radio, watching television, and using social media.

A majority of undergraduates (70%) disagreed with the statement "Without using a library, I can complete my degree," whereas most postgraduates indicated agreement. A majority of undergraduates (64%) and postgraduates (60%) agreed with the statement, "Without the IHRA library, I cannot complete my assignments." Most undergraduates and postgraduates agreed that their lecturers encourage them to read relevant materials and make use of the library.

5. DISCUSSION

This study examined the library use patterns and special requirements of employed undergraduates and postgraduates at IHRA. The findings reveal some important insights into how employed students engage with library services, highlighting gaps between awareness and usage, as well as institutional and personal barriers that influence their behaviour.

One of the most significant findings is the consistent gap between high awareness and relatively low utilisation of library services. Although the majority of students were aware of the library and its resources, less than half reported actively using them. This pattern was also noticeable in the use of the online library catalogue and digital resources, where high levels of satisfaction and perceived usefulness did not align with actual usage. This suggests that awareness alone is insufficient to ensure engagement, and that other factors such as time constraints or lack of habitual use may play a more significant role in shaping user behaviour.

Time constraints emerged as a critical barrier affecting library use among employed students. The majority of participants reported balancing employment and family responsibilities, while only a small proportion had access to study leave. In addition, relatively few students reported spending extended time on reading, compared to slightly higher engagement in leisure activities. These findings indicate that limited time availability significantly restricts students' ability to engage with library resources, even when they recognise their value.

Interestingly, physical accessibility does not appear to be a major limiting factor in this context. A considerable proportion of students reported working within close proximity to the university, suggesting that geographical distance alone does not hinder library use. However, students did identify the distance between the library and lecture halls as a challenge, indicating that convenience within the campus environment may still influence usage patterns. Overall, these findings imply that accessibility must be considered not only in terms of location but also in relation to time efficiency and ease of integration into students' daily routines.

Another notable finding relates to students' engagement with library communication. Although a high proportion of students reported reading emails sent by the library, institutional records indicate low response or follow-up behaviour. Enhancing the effectiveness of communication strategies—such as making them more interactive, targeted, or action-oriented—may therefore improve user engagement.

Students also identified several structural and resource-related challenges, including insufficient availability of materials, limited space, and difficulties related to time and location. In addition, the researcher observed that a considerable portion of the library collection was generally outdated. Although students reported that their lecturers encourage them to read relevant materials and use the library, library records indicate that lecturers rarely recommend new materials for acquisition. Furthermore, while students expressed a need for extended library opening hours during evenings and weekends, library statistics suggest that usage during these periods remains relatively low. These findings imply that factors influencing library use may extend beyond accessibility alone and may also involve user motivation, study habits, and perceptions regarding the relevance of library services.

In response, they expressed a need for more flexible and supportive library services, as well as guidance in accessing online academic resources. These findings emphasise the importance of aligning library services with the specific needs of employed students, who require flexibility and skill development to effectively utilise available resources.

The study also highlights important differences between undergraduates and postgraduates. Undergraduates demonstrated higher awareness of the library and remote access to library materials, while postgraduates showed slightly different usage patterns. This difference in awareness may be associated with variations in user education opportunities provided to the two groups. According to library records, undergraduates receive a library orientation session at the beginning of their degree programme, whereas postgraduates are not provided with a formal orientation. Although the library offers both groups opportunities to participate in individual or group guidance sessions, these services appear to be underutilised. Furthermore, the academic programmes do not formally integrate library instruction sessions into the curriculum. These factors may contribute to differences in familiarity with available library resources and services. Moreover, attitudes toward the necessity of the library varied between the two groups, with a notable proportion of postgraduates indicating that they could complete their degree without using the library. At the same time, a majority in both groups acknowledged that the library is essential for completing assignments. This apparent contradiction suggests that while students recognise the functional importance of the library for specific academic tasks, they may not fully appreciate its broader role in supporting learning and research.

In conclusion, this study demonstrates that while awareness and perceived usefulness of library services are relatively high among employed students, actual usage remains limited due to a combination of time constraints, behavioural factors, and service-related challenges. Addressing these issues through flexible access, targeted user education, and improved communication strategies may enhance library engagement and better support the academic success of both undergraduates and postgraduates.

This study has several limitations. First, it was conducted only at the Institute of Human Resource Advancement. Therefore, the findings may not be generalizable to students at other higher education institutions in Sri Lanka or elsewhere, particularly those with different student populations, library facilities, or modes of study. Second, the study relied primarily on self-reported data, which may be subject to recall errors and response bias. Finally, the use of a questionnaire limited the depth of understanding of students' motivations, academic performance and experiences, which could be explored through qualitative methods in future studies.

6. RECOMMENDATIONS

Based on the findings of this study, several recommendations can be made to improve library services and enhance engagement among employed undergraduate and postgraduate students at IHRA.

First, the library should strengthen flexible access to resources and services in order to accommodate the time constraints experienced by employed students. Although students expressed a preference for extended opening hours during evenings and weekends, usage statistics suggest that physical access alone may not significantly increase library use. Therefore, greater emphasis should be placed on improving remote access to electronic resources, online reference services, and digital support systems that can be accessed conveniently outside normal working hours.

Second, the library should enhance user education programmes to improve students' ability and confidence in using available resources. The findings indicate differences in awareness levels between undergraduate and postgraduate students, possibly due to the absence of a formal orientation programme for postgraduates. Introducing structured library orientation sessions for postgraduate students and integrating information literacy instruction into academic programmes may improve familiarity with library services and encourage more effective use of resources.

Third, the library should adopt more targeted and interactive communication strategies. Although many students reported reading library emails, follow-up engagement remained low. Communication methods that are concise, personalised, and action-oriented may improve student responsiveness and participation in library activities and services. The use of multiple communication platforms, including learning management systems and social media, may also increase visibility and accessibility of library information.

Fourth, the library should regularly review and update its collection to ensure that resources remain current and relevant to academic programmes. The study identified concerns regarding the availability and currency of materials, while institutional practices indicate limited recommendations for new acquisitions from academic staff. Stronger collaboration between the library and lecturers in collection development may therefore improve the quality and relevance of library resources.

Finally, the institution should recognise the specific challenges faced by employed students and incorporate greater flexibility into academic and library support services. Collaboration between the library, academics and institute administration is essential to develop learner-centred services that support the academic success of both undergraduate and postgraduate students.

Further research may explore the relationship between students' study habits, motivation, and library use in greater depth, as well as examine the effectiveness of specific interventions designed to improve engagement with library services.

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THE IMPACT OF HUMAN RESOURCE DEVELOPMENT STRATEGY ON IMPROVING THE PERFORMANCE OF EMPLOYEES OF THE MINISTRY OF LABOR IN THE SULTANATE OF OMAN

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ABSTRACT

This study aimed to assess the impact of human resource development (HRD) strategies on improving the job performance of employees at Oman's Ministry of Labor across four core dimensions: planning, rewards and incentives, training, and performance appraisal. A descriptive–analytical methodology was adopted, employing a questionnaire and semi-structured interviews as data-collection tools. The final questionnaire comprised 40 items distributed across the study dimensions and was administered to a simple random sample of 152 employees, of whom 151 valid responses were retained for statistical analysis using SPSS.

The findings indicate positive, statistically significant associations between all HRD dimensions and job performance; planning, training, rewards and incentives, and performance appraisal were each linked to tangible gains in efficiency and work quality. The analyses also showed no significant performance differences attributable to gender or years of experience, while significant differences emerged by educational qualification in favor of diploma holders-suggesting the effectiveness of targeted training and development pathways aligned with subgroup needs.

The study recommends adopting an integrated performance-management system that cascades institutional objectives into measurable, individual-level indicators; linking high performance to fair and transparent incentives; designing advanced training programmers grounded in periodic needs analyses with explicit return-on-investment measurement; aligning all HRD practices with the ministry's strategic objectives; and cultivating a technology-supported environment that encourages self-directed learning.

Keywords: Human Resource Development strategies; planning; training; rewards and incentives; performance appraisal; job performance; Ministry of Labor; Oman.

1. INTRODUCTION

An organization that embraces in its vision the principle that the human resource is the asset most influential on the quality of performance—rather than a secondary organization- al appendage—measures its success by its capacity to attract competent talent, to develop their knowledge and skills, and to direct their professional behavior toward clear, measurable objectives, while building a work environment that facilitates organizational learning, the transfer of knowledge, and its conversion into stable daily practices. From this standpoint, human resource development is presented as an interconnected system rather than a set of scattered activities; within it interlock the cycles of competency-based planning and the diagnosis of competency gaps, job-centered training and its attendant applied follow-up, fair and transparent incentive policies, and performance appraisal grounded in constructive feedback that reinforces continuous improvement. This work focuses on the actual impact upon tangible indicators such as productivity, accuracy of completion, timeliness, and service quality, rather than confining itself to counting programs or training hours. It also examines where the strongest effects lie among the various dimensions and traces the possibility of variation according to occupational characteristics such as gender, qualification, and years of experience. The methodological structure rests upon rigorous operational definitions that translate general concepts into precise measurement items, thereby permitting a descriptive and inferential analysis capable of testing the strength, direction, and significance of the relationships. This introductory section serves to consolidate the bridge between the theoretical background and the practical need within the institutional context under study, so that the following pages crystallize a well-defined research problem embodying the principal question, from which testable hypotheses emerge, completed by a controlled conceptual map that paves the way for a theoretical and applied framework that interprets the results and proposes implementable improvement pathways together with the measurement of impact, while ensuring consistency of terminology, clarity of responsibilities, and soundness of procedures. This organization contributes to strengthening institutional confidence and the sustainability of excellence.

The role of human resource management extends beyond the traditional procedural functions to the building of an effective organizational culture that converts learning into daily professional behavior and elevates the values of quality, cooperation, and accountability. When policies are designed to direct targeted behavior and are measured by observable outcomes, they are transformed into a lever of cultural change that coordinates efforts across units and narrows procedural gaps. Within this horizon, the importance of institutional culture becomes apparent as the incubator that renders planning more precise, training deeper in effect, incentives more purposeful, and appraisal more effective—consistent with the proposition that building a strong culture supports outstanding performance and nourishes continuous innovation (Al-Saadi, 2024). From a practical perspective, counting participants or training hours is not sufficient, because the decisive indicator is the reflection of these efforts upon performance: a reduction in service completion time, a decline in recurrent errors, an improvement in the accuracy of outputs, and a rise in the quality of communication with beneficiaries. This linkage between strategies and outcomes assists in rationalizing decisions, in prioritizing human-capital investment according to actual returns, and in distinguishing between initiatives that produce genuine value and others that are merely formal and of limited effect.

Since the governmental environment is characterized by a multiplicity of tasks, overlapping competencies, and strict governance systems, the alignment of strategies with process maps, value chains, and task sequences becomes a condition for maximizing impact and preventing duplication. Field follow-up and immediate feedback likewise reinforce the conversion of acquired knowledge into stable practices, and grant management a greater capacity to anticipate operational risks and address them early. Added to this is that clarity of roles reduces conflicts and accelerates procedural flow; that the standardization of terminology raises the quality of coordination among teams; that linking incentives to specific indicators reinforces desired behavior and limits deviations; that documenting lessons learned entrenches organizational learning over time; that making data available enhances transparency and guides evidence-based improvement; and that involving the relevant stakeholders in programmed design increases acceptance and reduces resistance to change.

1-1. Study Questions

Based on the proposed research problem, the following sub-questions were formulated:

1. What is the level of application of human resource development strategies and the measurement of job performance at the Ministry of Labor in the Sultanate of Oman?
2. Is there a statistically significant relationship at the 0.05 significance level between the strategy (planning, incentives and rewards, training, and performance appraisal) and the performance of the employees of the Ministry of Labor in the Sultanate of Oman?
3. Are there statistically significant differences at the 0.05 significance level in the level of job performance among employees attributable to each of: the gender variable, the qualification, and the experience?

1-2. Study Objectives

General Objective

To identify the deep and multifaceted impact of human resource development strategies on the development of the performance of the employees of the Ministry of Labor in the Sultanate of Oman, proceeding from the nature of the research problem, its questions, and its hypotheses.

Specific (Sub-) Objectives

1. To identify the level of application of human resource development strategies in their dimensions (competency-based planning, motivation and rewards, job-related training) within the Ministry of Labor.
2. To identify the performance level of the Ministry of Labor’s employees and to determine the positive and developmental aspects of their performance.
3. To examine the effect of the demographic/personal variables on the sample members' assessments of performance.
4. To analyze the impact of human resource development strategies on the performance of the Ministry of Labor’s employees.
5. To present applicable corrective/developmental recommendations and proposals.

1-3. Significance of Study

This study derives its significance from the centrality of the subject it addresses; it investigates human resource development strategies and their deep correlational relationship with the performance of the employees of the Ministry of Labor in the Sultanate of Oman. In an environment in which transformations accelerate and challenges grow, human resources are no longer merely an operational element, but have become the principal driver of innovation and sustainable growth. Hence the need advances for integrated strategies—training strategies to refine skills, planning strategies to ensure optimal staffing, and motivational strategies to raise morale—as direct levers for raising the level of institutional performance and achieving strategic aims. The impact of enhancing performance is not confined to the institution alone, but extends to the community that benefits from the quality and efficiency of services.

The significance of this study is further affirmed by the distinctiveness of the sample represented by the Ministry of Labor, as a pivotal service institution concerned with human resource development at the national level: it supervises the private training centers, designs specialized programs directed at the governmental and public sectors, and possesses the capacity to attract local and international expertise and competencies, in a manner that supports performance development and the improvement of service quality.

1-3-1. Theoretical (Cognitive) Significance

The theoretical significance lies in the study's anticipated cognitive contribution, through:

- Enriching the literature concerned with human resource development strategies and their direct and indirect effects on job performance, with a focus on the organizational context of the Ministry of Labor in the Sultanate of Oman.
- Providing accurate and reliable results that assist the relevant parties and decision makers and that form a knowledge base supporting informed decisions.
- Guiding researchers toward new research avenues through evidence-based recommendations, thereby opening horizons for more in-depth studies.
- Making available a research instrument that may be employed in subsequent studies and in comparisons between different organizational or geographical environments, in a manner that enhances understanding of the subject and broadens the scope of benefit derived from it.

1-3-2. Practical (Applied) Significance

The practical significance resides in the fact that the effectiveness and efficiency of the strategies applied within the Ministry are capable of:

- Improving and developing performance at the various levels, in a manner that serves the achievement of the strategic objectives and the approach toward Vision 2040, which is grounded in a sustainable economy and a knowledge society.
- Revealing the positive aspects that enhance productivity while, at the same time, confronting the challenges and obstacles that may impede the application of the strategies, and proposing practical means of overcoming them.
- Translating the analytical results into implementable recommendations that address the points of deficiency and reinforce the points of strength, thereby enabling the Ministry to achieve a continuous improvement in the performance of its employees.
- Supplying the administrative and educational field in the Sultanate of Oman with practical outputs founded upon real data and rigorous analysis, in a manner that helps officials and decision-makers to adopt policies that are more flexible and more responsive to the needs of human development, and that enhances institutional performance and excellence in service delivery.

2. HUMAN RESOURCE DEVELOPMENT STRATEGIES

Contemporary literature highlights that investment in the development of the human resource is a long-term investment, resting upon interconnected cycles that comprise evidence-based planning, systematic training, motivation and rewards, performance appraisal in its developmental functions, and career-path development and the retention of competencies—in a manner that ensures the accumulation of knowledge capital and the raising of the quality of services and products (Birkan, 2020; Rivai, 2019; Nasr al-Din & Faiza, 2015).

2-1. The Concept of Human Resource Development

Zenina and Zaddam (2020) defined it as “a training means that provides the human resource with the modern scientific methods, the advanced technical and behavioral techniques, and the reciprocal pathways for optimal performance in work and production”.

Jaber and Saif al-Din (2021) defined it as “the sound preparation of the human element in a manner consistent with the needs of society, on the basis that, by increasing a person's knowledge and ability, their exploitation of natural resources increases and develops, in addition to an increase in their capacities and efforts”.

Shumaysa and Ammari (2022) defined it as “that integrated process, objectively planned and founded upon correct information, aimed at creating a workforce commensurate with the work requirements within institutions—a workforce that is defined, that understands the conditions, rules, and methods of the required performance and its capabilities, that is capable of applying those rules and methods, and that is willing to perform the work using the capacities and skills it possesses”.

Saraa (2023), meanwhile, defined it as “the process carried out by the institution, relating to the development of its employees and the provision to them of professional skills and knowledge in order to achieve the highest degree of performance and efficiency”.

2-2. The Importance of Human Resource Development

Human resource development is regarded as a fundamental pillar for the success and continuity of any institution within the current competitive business environment, where its importance is clearly manifested at three interconnected and integrated levels: the level of the institution as a whole, the level of the individual employees within it, and, finally, the level of the work groups. In accordance with what was indicated by both Jaber and Saif al Din (2021) and Assaf (2023), this importance may be detailed as follows:

2-2-1. Importance at the Level of the Institution

Investment in human resource development yields abundant benefits to the institution, thereby enhancing its competitiveness and its flexibility. This importance is represented in the following:

- **Developing leadership and supervisory skills:** Development programs contribute to refining the managerial skills of managers, including the art of effective supervision, the capacity for inspiring leadership, and the manner of retaining the human element and developing it continuously. They also enhance their skills in building positive human relations, which is reflected positively upon the behavior of employees and their performance, and creates a motivating and productive work environment.
- **Stimulating comprehensive development within the institution:** The success of hu- man resource development initiatives in any department or unit within the institution is not confined in its effect to that part alone, but extends to become a strong incentive and motive for the application of similar development programs in the remaining parts of the institution. This creates a positive dynamic that drives toward continuous improvement and large-scale development.
- **Increasing effectiveness and competitiveness:** Human resource development leads directly to raising the efficiency and effectiveness of the overall performance of the institution. Through the development of the capabilities of employees, the institution becomes more able to adapt to the surrounding changes, to achieve sustainable growth, and to strengthen its competitive position in the market, which enables it to confront challenges and seize opportunities with greater effectiveness.

2-2-2. Importance at the Level of Employees

Employees themselves have a large share of the benefits of human resource development, as this development contributes to enhancing their job satisfaction and their personal and professional growth. Its importance to employees is represented in the following:

- **Providing a work environment that motivates productivity:** Human resource development programs ensure the provision of the appropriate organizational climate that motivates employees to exert their utmost capacities and to increase their productivity. This climate comprises support, appreciation, and the availability of opportunities for continuous learning and development.

- **Unleashing latent capabilities and self-realization:** Development programs work to discover and bring forth the latent driving force within employees toward growth, development, and self-realization. When an employee feels that they have the opportunity to develop their skills and abilities, they become more driven by, and more passionate about, their work.
- **Satisfying basic needs and seeking challenge:** The adoption of the concept of development within the institution contributes significantly to satisfying the basic needs of employees, such as the need for appreciation, achievement, and development. This satisfaction drives them to seek the tasks and work that challenge their abilities and fulfil their professional aspirations.
- **Benefiting from individual differences:** The application of the concept of human resource development reveals the individual differences in abilities and skills among employees. This revelation enables the institution to exploit these differences intelligently in the distribution of tasks and the adaptation of work methods in a manner suited to the strengths of each individual, which increases the efficiency of the completion of the overall tasks.
- Enhancing the bearing of responsibility: Human resource development programs assist in developing the capabilities of employees and in qualifying them to bear greater responsibilities. When an employee acquires new skills and advanced knowledge, their sense of confidence and competence increases, which renders them more prepared to assume leadership roles or tasks that require a higher level of responsibility.

2-2-3. Importance at the Level of Work Groups

The importance of human resource development is not confined to individuals or to the institution alone, but extends to encompass the enhancement of the effectiveness of work groups and their cooperation. Its importance at this level is represented in the following:

- **Enhancing cooperation and improving productive efficiency:** Human resource development contributes to building a spirit of cooperation and solidarity among the members of work groups. Through joint training and teamwork, individuals learn the manner of making the fullest use of the available resources, which leads to a substantial improvement in the overall productive efficiency of the team.
- **Increasing the capacity for problem-solving and decision-making:** Human resource development programs lead to an increase in the capacity of the members of the group to analyze complex problems collectively and to develop innovative and effective solutions to them. They also enhance their capacity to make sound decisions within a changing work environment, owing to the critical and analytical thinking skills that they acquire.

2-3. Human Resource Development at the Level of the Individual and the Institution

Human resource development is a dynamic process possessing two principal dimensions: one of them focuses on the individual themselves, and the other on the institution as a whole. Mohammed and Masoud (2017), Assaf (2023), and Trinh and Thuy (2020) have set out the detail of these levels as follows:

2-3-1. Human Resource Development at the Level of the Individual

Human resource development at the level of the individual is embodied in several vital aspects that aim to enhance the individual's personal and professional capabilities and competencies. These aspects comprise:

- **Acquiring specialized job-related information and knowledge:** Training and development contribute to providing the human resource with the specialized job-related information and knowledge that is closely connected to their tasks and to the methods of optimal and superior performance therein. This raises the level of their professionalism in the performance of their daily work.
- **Modifying behavior and developing performance methods:** Development pro- grammes work to modify ineffective behaviors and to develop the performance methods exhibited by the human resources, in a manner consistent with best practices and organizational standards.
- **Expanding knowledge, refining skills, and raising capabilities:** Through continuous encouragement to learn and to use the modern methods that keep pace with development, the knowledge of the human resources is expanded, their skills are refined, and their capabilities are raised in general, which enhances their efficiency and effective- ness.
- **Assisting in the sound planning of the professional future:** Human resource development provides employees with the necessary support in the sound planning of their professional future, whether over the short term or the long term, which assists them in defining their professional goals and in working toward achieving them.
- **Stimulating the intrinsic motives for work:** Development programs contribute to motivating the human resources and to providing the intrinsic motives for work, through supplying them with the skills and capabilities that assist them in carrying out their current tasks with distinction and that qualify them to advance and to assume positions of higher responsibility in the future.

2-3-2. Human Resource Development at the Level of the Institution

Human resource development is considered a distinctive feature of the ambitious organizations that are keen to keep pace with every change and development across all fields, and especially the technological ones. Without a developed human resource that is capable of absorbing change and adapting to it, the institution will not be able to achieve its objectives effectively. It rests upon the following:

- **Enhancing the efficiency and effectiveness of the organization's overall performance:** The improvement in the overall performance of the organization is attributable directly to the improvement of the performance of its human resources. The more the job-related skills and knowledge of the employees develop, the more this is reflected positively upon the productivity and effectiveness of the institution.
- **Improving and reinforcing work knowledge and skills at all levels:** Human resource development aims to raise the level of practical knowledge and skills across all levels of the institution, from senior management down to the executive employees, in order to ensure harmony and integration in performance.
- **Developing an advanced climate suited to growth and communications:** Development programs contribute to creating an advanced work environment that is motivating to personal and professional growth, and they support the effective channels of communication among all the employees within the institution, which enhances the spirit of the team and cooperation.

- **Reducing accidents and work injuries:** The acquisition by employees of experience and awareness through the development process leads to a substantial reduction in the rates of accidents and work injuries within the institution, which improves the work environment and the safety of the employees.
- **The institution's acquisition of a set of skills necessary for the future:** The process of human resource development represents a strategic investment that enables the institution to acquire a set of skills and capabilities that it requires not only in the present, but also in order to adapt to the challenges and requirements of the future.
- **A strategic investment process with enormous returns:** The process of investing in human resources is a strategic process that returns to the institution enormous and sustainable benefits over the long term, where these benefits are translated into an increase in productivity, an improvement in quality, an enhancement of competitive- ness, and the achievement of the strategic objectives.

2-4. The Concept of a Human Resource Development Strategy

Abdel-Wahab (2020) defined it as "the link connecting human resource management with the strategic aims and objectives, with the purpose of improving work performance and developing the organizational cultures that support innovation and knowledge; and it is a strategic partner alongside the other strategic objectives and plans" (p. 286).

From an international perspective, Tien et al. (2020) defined it as "the totality of the organizational learning activities undertaken over specified periods of time in order to bring about changes in the professional behavior of the workers" (p. 27).

Suksupa et al. (2020), meanwhile, defined it as "the planned pattern of the human resources (the workforce) and the functional aspect of the processes of deploying human resource management, together with the activities that aim to enable the institution to achieve the organizational aims and objectives, which comprise the activities that influence the behavior of the individual in their efforts to formulate and implement the strategic needs of the institution's strategy".

Human Resource Development Strategies

These strategies are not confined to a single function; rather, they constitute an integrated set of activities and processes designed to ensure the availability of the suitable competencies at the correct times and places, and to motivate them in order to realize their fullest potential. These ideas rest upon academic and practical insights addressed by researchers specialized in human resource management, such as Sukaik (2022), Ridat and Abu Ras (2020), Jalal (2019), Abdel-Aal (2018), Al-Khawalda (2017), and Abu Karsh (2016), all of whom affirmed the vital role of human resource management in building the capabilities of institutions and enhancing their competitiveness. The most prominent of these strategies may be detailed as follows:

1) The Human Resource Planning Strategy

Human resource planning is defined as a proactive and systematic process that aims to determine the future workforce needs of the institution, whether in terms of quantity (the number of employees) or quality (the required skills and qualifications). This process goes beyond mere numerical estimation, so as to comprise a precise analysis of the current reality of the institution and the formulation of informed assumptions regarding the future variables that may affect the work requirements. The fundamental objective is to ensure the availability of the necessary human competencies at the appropriate time and place, in order to carry out the designated tasks with efficiency and effectiveness. Effective human resource planning contributes to enabling the institution to prepare in advance to confront the changes in the demand for labor, which leads to an increase in productivity and an improvement in overall performance. It also ensures the optimal distribution of the available human capacities and their full utilization, in addition to providing a clear view of the costs associated with the workforce, which assists in rationalizing expenditure and improving financial efficiency.

2) The Selection and Appointment Strategy

The selection and appointment strategy is regarded as a decisive element in building a strong base of human resources for the institution; its objective is not confined to the mere filling of vacancies, but rather extends beyond this to the attraction of individuals possessing high competencies and suitable qualifications for the vacant positions at the designated time and in the required number. This strategy forms the fundamental pillar for the provision of the qualified workforce that is able to achieve the objectives of the institution. This process is characterized by continuity, as the need to attract talent is renewed with the growth of the institution, the retirement of employees, or the changes in the organizational structure. The paramount importance of this strategy stems from the fact that it affects directly all the other processes within the institution, for the quality of the new employees is reflected upon productivity, innovation, and the organizational environment in general (Abdullah, 2018).

3) The Training Strategy

Training represents one of the fundamental supports employed by modern management, not only in order to develop and enhance the capabilities of employees, but also in order to ensure the continuity of the institution in confronting the internal and external challenges that change continuously. It is not merely a supplementary activity, but rather a strategic investment that aims to provide individuals with the knowledge, skills, and capabilities necessary to improve their current and future performance. Training contributes to preparing the workforce to deal with technological changes, the shifts in market requirements, and the competitive challenges, in a manner that paves the way for the advancement and prosperity of the institution over the long term.

4) The Incentives and Promotions Strategy

The incentives and promotions strategy is regarded as one of the most important administrative tools that exert a profound effect upon the behaviors of employees, their attitudes, and their level of performance within the institution. It functions as external influences that surround the individual and affect them, directly or indirectly, through activating their intrinsic motives toward performing a particular behavior or exerting additional effort with the aim of satisfying their personal and professional needs and expectations. Incentives are not confined to the material aspect alone, but broaden so as to comprise moral and personal aspects that enhance the employee's sense of appreciation and belonging, which leads to an increase in loyalty and productivity. This strategy comprises four main types of incentives that the institution may use flexibly in order to achieve its objectives.

5) The Performance Appraisal Strategy

Performance appraisal is defined as a systematic and organized process that aims to review and analyze the performance by the individual or the work teams of their tasks and job duties. This definition entails a comparison between the actual level of performance that individuals achieve and the performance required or expected of them, which is determined in advance on the basis of clear criteria. As Al-Jamal (2020) described it, it is “a system for reviewing and evaluating the performance of tasks by the individual or by the work teams; and it is a comparison between the real level of performance and the required and assumed performance." It is not merely a computational process, but rather a vital tool for feedback and continuous development.

3. JOB PERFORMANCE

3-1. The Concept of Employee Performance

Numerous researchers have addressed the definition of employee performance from differing angles, which reflects the comprehensiveness of the concept and the multiplicity of its dimensions. Radwan and Elsawy (2022) defined it as "the extent of the effectiveness of employees in performing their designated tasks and obligations in order to achieve the strategic objectives of the institution".

Ben Takouka and Al-Saoud (2022) defined it as "the degree of achievement and completion of the tasks that constitute the totality of the individual's job". It reflects the manner in which the individual fulfils or satisfies the requirements of their designated job.

Bashir and Bouallam (2022) defined it as "the final output, or the tangible result, that employees achieve during the process of performing their job duties. The performance of the duties is considered effective when it is carried out in accordance with predetermined specifications and standards, with the aim of achieving the objectives that the institution has set before it".

3-2. The Dimensions of Employee Performance

In order to achieve a comprehensive understanding and an accurate measurement of employee performance, a distinction may be made between three fundamental partial dimensions upon which this performance is evaluated. These dimensions represent principal indicators for determining the extent of the effectiveness of the employee in accomplishing their tasks and their contribution to the objectives of the organization. These dimensions may be elucidated, as indicated by both Ben Belkhir and Boulahia (2022), Ola and Sarqama (2018), Badrianto and Ekhsan (2020), and Sumantri et al. (2022), as follows:

1) **Quantity of Effort (Effort of Quantity):** This dimension refers to the amount of energy—whether physical, mental, or motor—that the employee expends in the performance of their work over a specified period of time. This quantity is used to measure the speed of the performance of the work or the volume of the production that the employee achieves within that period; for example, the number of units produced, the number of transactions completed, or the speed of the completion of the designated tasks. This dimension focuses upon the quantitative aspect of the outputs and the activity.
2) **Quality of Effort (Effort of Quality):** This dimension refers to the level of accuracy and quality by which the performance is distinguished, and the extent of the conformity of this effort to the predetermined specifications and standards. Quality is used to measure the degree of correspondence of the work accomplished with the required specifications, which gauges the extent of its freedom from errors and the degree of creativity and innovation within it; for example, the rate of the errors committed, the extent of the satisfaction of customers with the quality of the service, or the level of innovation in the solutions provided. This dimension focuses upon the qualitative aspect of the outputs.
3) **Pattern of Performance (Performance of Pattern):** This dimension refers to the manner or the method by which the effort is expended in the work, and it is used to measure the skill and competence in performance. In other words, it is the manner in which the work activities are carried out. On the basis of the pattern of performance, one may measure the orderliness and organization that the employee exercises in the performance of particular

tasks or activities, or even a combination of these tasks and activities—especially if the work is primarily physical and requires a certain motor coordination. One may also measure the method followed in order to arrive at a solution or decision for a particular problem, or the systematic approach that is followed in conducting a particular piece of research or study. This dimension reflects the procedural and tactical efficiency of the employee.

4. STUDY METHODOLOGY

The methodology of the study is one of the pillars upon which the work of the researcher rests; for it illuminates the path before them and assists them in regulating the endeavors of the study, its dimensions, its questions, and its hypotheses.

Abdel-Salam (2020) defined the scientific method as "a system of clear rules and procedures upon which the researcher relies in the course of arriving at results".

Accordingly, the scientific method is understood as the path that the researcher takes in order to study a phenomenon or a particular problem, with the aim of describing it and interpreting the relationships that affect it and are affected by it, with a view to predicting it in the future and controlling it.

After reviewing the previous studies related to the subject of the research, and based upon the problem of the study, the researcher will adopt the descriptive-analytical method, owing to the fact that it combines the theoretical literature with the analysis of data. This is realized through reliance upon the relevant Arabic and foreign books, references, and sources, and the relevant dissertations, followed by the analysis of the responses of the respondents to the items of the questionnaire using the Statistical Package for the Social Sciences (SPSS) program, in a manner consistent with the questions and hypotheses of the study, and that permits the examination of the relationships under investigation in a systematic and disciplined manner.

5. PRESENTATION AND DISCUSSION OF THE STUDY RESULTS

In order to measure the level of application of human resource development strategies and of job performance at the Ministry of Labor in the Sultanate of Oman, the arithmetic means and standard deviations were computed as follows:

Table (4/1): The Arithmetic Means and Standard Deviations of the Questionnaire Axes

Axis	Arithmetic Mean	Standard Deviation
Planning	3.82	0.71
Incentives and Rewards	2.80	0.95
Training	3.80	0.67
Performance Appraisal	3.70	0.82
Job Performance	4.05	0.53

It is evident from the results of Table (4/1) that there is interest on the part of the Ministry of Labor in the Sultanate of Oman with regard to human resource development strategies. Through the means appearing above, and based upon the measurement scale used to judge the degree of the items of the scale, all the axes came with means above the midpoint, which reflects the application of those axes within the study population, albeit to varying degrees. The job performance axis came with the highest mean (4.05), which is considered very high, in accordance with the Individual Performance System program that the Ministry of Labor applies, which is founded upon the evaluation of the performance objectives of the employee on a semi-annual basis (every six months), after which the performance rating for the financial year is calculated, in accordance with what was set out in the recommendations of Oman Vision 2040. The axes (planning, training, and performance appraisal) came with means of (3.82, 3.80, 3.70) respectively, and this is considered a high level of application within the Ministry of Labor, which demonstrates its interest in human resource development strategies; whereas the rewards axis came with a mean of (2.70), where it is considered to be of a medium level despite its direct connection with job performance, which alerts us to the necessity of regarding it in a different manner so that it may become on a par with the remaining axes.

5-1. Presentation of the Results of the Main Hypothesis

The Main Hypothesis: Each of the planning strategy, the rewards and incentives strategy, the training strategy, and the performance appraisal strategy—strategies that the Ministry of Labor in the Sultanate of Oman adopts as mechanisms for raising the knowledge, skills, and experience of its human resources—exerts a positive effect upon the development of the level of performance of the employees of the Ministry of Labor in the Sultanate of Oman.

Table (4/2): The Results of the Main Hypothesis

Dimensions of the Independent Variable	Dependent Variable	Sample Size	Correlation Coefficient (r)	Significance Level (Sig.)	Significance Degree	Degrees of Freedom (df)
Planning	Job Performance	151	0.626	0.001	0.05	149
Incentives and Rewards	Job Performance	151	0.577	0.001	0.05	149
Training	Job Performance	151	0.539	0.001	0.05	149
Performance Appraisal	Job Performance	151	0.531	0.001	0.05	149

The results presented in Table (4/2) indicate clearly the existence of positive and statistically strong significant correlational relationships between all the dimensions of human resource development (planning, incentives and rewards, training, and performance appraisal) and the level of job performance of the employees at the Ministry of Labor in the Sultanate of Oman, at the significance level of (0.05). This means that each one of these dimensions plays a vital and influential role in improving the performance and productivity of employees. The degrees of freedom (df) amount to 149 for each relationship, and this reinforces that positive effect upon performance.

As for planning and job performance: The correlation coefficient (r = 0.626) between planning and job performance reveals a very strong positive relationship. This confirms that effective human resource planning—which comprises the determination of the future needs for competencies and the development of career paths—contributes directly to raising the efficiency of job performance. When human resource plans are clear and well-defined, efforts are directed toward the strategic objectives, which is reflected positively upon the productivity of employees and their capacity to achieve the desired results. This accords with Oman Vision 2040, which focuses upon building a competent and effective administrative apparatus.

As for incentives and rewards and job performance: The correlation coefficient between incentives and rewards and job performance amounts to (r = 0.577), which indicates a strong positive relationship. This confirms that fair and stimulating reward and incentive systems constitute a fundamental driver for the enhancement of job performance. When employees feel appreciation and motivation through the financial and moral rewards, their commitment and their desire to exert further effort increase, which leads to an improvement in the levels of their performance and productivity. These results support the importance of designing innovative incentive systems that are commensurate with the strategic objectives of the governmental institutions.

As for training and job performance: The correlation coefficient (r = 0.539) between training and job performance reveals a statistically significant positive relationship. This indicates that continuous training and development programs play a pivotal role in refining the skills of employees and in providing them with the knowledge and experience necessary to perform their tasks with greater efficiency. Investment in training does not enhance individual capabilities alone, but also contributes to building an organizational culture founded upon continuous learning and adaptation to changes, which strengthens the overall performance of the institution.

As for performance appraisal and job performance: The correlation coefficient (r = 0.531) between performance appraisal and job performance illustrates a statistically significant positive relationship. This confirms that periodic and transparent performance appraisal processes, which provide constructive feedback, constitute an effective tool for identifying the points of strength and weakness of employees and for directing them toward continuous improvement. Fair and objective appraisal motivates employees to develop themselves and to achieve the designated objectives, which is reflected positively upon their performance and productivity.

In general, these results confirm that planning, incentives, training, and performance appraisal are not merely traditional administrative policies, but rather pivotal strategic tools that the governmental institutions in the Sultanate of Oman adopt within Vision 2040.

5-2. The First Hypothesis

“There is a statistically significant relationship at the significance level (0.05) between the planning strategy and the performance of the employees of the Ministry of Labor in the Sultanate of Oman.”

Table (4/3): The Results of the Regression Analysis for the Relationship between Planning and Job Performance

Variables	Regression Coefficient	t test	Degrees of Freedom (df)	Significance Level
Relationship between Planning and Job Performance	0.54	4.34	149	0.000
Correlation Coefficient (R) =	0.626			
Coefficient of Determination (R^2) =	0.391			
F =	18.84			
Sig. F =	0.001			

The results of Table (4/3) indicate the existence of a statistically significant positive relationship between planning and job performance, where the regression coefficient amounted to (β = 0.54), which indicates that the improvement in the level of planning leads directly to an improvement in job performance. The results also showed that the correlation coefficient amounted to (R = 0.626), which reflects the existence of a moderate-to-strong positive correlational relationship between the two variables. The results of the (F) test further demonstrated that the test value amounted to (18.84), which is a statistically significant value at the significance level (Sig = 0.001)—a level below (0.05)—which indicates the significance of the regression model as a whole and its validity in explaining the relationship between the two variables. Based upon these results, it may be concluded that planning constitutes an influential and fundamental factor in raising the level of job performance, and that the strengthening of planning practices within the organization contributes to a tangible degree to improving the efficiency of performance and to achieving the organizational objectives.

5-3. The Second Hypothesis

"There is a statistically significant relationship at the significance level (0.05) between the rewards and incentives strategy and the performance of the employees of the Ministry of Labor in the Sultanate of Oman".

Table (4/4): The Results of the Regression Analysis for the Relationship between Incentives and Rewards and Job Performance

Variables	Regression Coefficient	t test	Degrees of Freedom (df)	Significance Level

Relationship between Incentives and Rewards and Job Performance	0.63	5.32	149	0.000
Correlation Coefficient (R) =	0.577			
Coefficient of Determination (R^2) =	0.332			
F =	28.3024			
Sig. F =	0.001			

The results of the regression analysis indicate the existence of a strong positive relationship of very high statistical significance between incentives and rewards and job performance, and this relationship was confirmed by the “t” value, which amounted to 5.32, and a significance level of 0.000. The correlation coefficient also amounts to 0.577, which indicates the strength of the relationship, with the significance of the model as a whole confirmed by the “F” value, which amounted to 28.3024, and a significance level of 0.001. This means that incentives and rewards are an influential and reliable factor in determining the levels of job performance.

5-4. The Third Hypothesis

“There is a statistically significant relationship at the significance level 0.05 between the training strategy and the performance of the employees of the Ministry of Labor in the Sultanate of Oman.”

Table (4/5): The Results of the Regression Analysis for the Relationship between Training and Job Performance

Variables	**Regression Coefficient**	**t test**	**Degrees of Freedom (df)**	**Significance Level**
Relationship between Training and Job Performance	0.47	3.78	149	0.000
Correlation Coefficient (R) =	0.539			
Coefficient of Determination (R^2) =	0.290			
F =	14.28			
Sig. F =	0.001			

The results of the regression analysis in Table (4/5) indicate the existence of a strong positive relationship of very high statistical significance between training and job performance, and this relationship was confirmed by the "t" value, which amounted to 3.78, and a significance level of 0.000, which indicates that the relationship is genuine and not a matter of coincidence. This is what the "F" value, which amounted to 14.28, and a significance level of 0.001 confirm. This means that training is considered an influential and reliable factor in improving the levels of job performance.

5-5. The Fourth Hypothesis

"There is a statistically significant relationship at the significance level 0.05 between the performance appraisal strategy and the performance of the employees of the Ministry of Labor in the Sultanate of Oman".

Table (4/6): The Results of the Regression Analysis for the Relationship between Performance Appraisal and Job Performance

Variables	Regression Coefficient	t test	Degrees of Freedom (df)	Significance Level
Relationship between Performance Appraisal and Job Performance	0.45	4.43	147.3	0.000
Correlation Coefficient (R) =	0.609			
Coefficient of Determination (R^2) =	0.370			
F =	19.62			
Sig. F =	0.001			

The results of the regression analysis indicate the existence of a strong positive relationship of very high statistical significance between performance appraisal and job performance, where the regression coefficient, which amounted to 0.45, illustrates that an increase of one unit in performance appraisal leads to an increase of 0.45 of a unit in job performance; and this relationship was confirmed by the "t" value, which amounted to 4.43, and a significance level of 0.000. The correlation coefficient also amounts to 0.609, which indicates the strength of the relationship, with the significance of the model as a whole confirmed by the "F" value, which amounted to 19.62, and a significance level of 0.001. This means that performance appraisal is considered an influential and reliable factor in determining the levels of job performance.

5-6. The Fifth Hypothesis

"There are no statistically significant differences at the significance level (0.05) in the degree of performance of the employees of the Ministry of Labor in the Sultanate of Oman attributable to the organizational and personal variables (gender – academic qualification – experience)".

Table (4/7): The Results of the Fifth Hypothesis

Organizational and Personal Variables	Dependent Variable	Number of Individuals	F Value	Sig.	Degrees of Freedom (df)
Gender, Qualification, Experience	Job Performance	151	1.833	0.142	147.3

The results of the one-way analysis of variance (ANOVA), as illustrated in Table (4/7), indicate the absence of statistically significant differences in the degree of performance of the employees of the Ministry of Labor in the Sultanate of Oman attributable to the organizational and personal variables taken together collectively, where the value amounted to (Sig. = 0.142), which is greater than the adopted significance level (0.05); and the degrees of freedom (df) amount to (147.3). This means that the performance of the employees is not substantially affected by the difference in these demographic characteristics but rather remains homogeneous regardless of whether the employee is male or female, the level of their academic qualification (diploma, bachelor's, postgraduate studies), or the number of their years of experience in the work.

6. CONCLUSION

The results of the study—after an integrated descriptive and inferential analysis—reveal a coherent picture, the substance of which is the following:

- That job performance at the Ministry of Labor is associated to a higher degree with the quality of the institutional system than with the characteristics of individuals. Four principal levers emerged that operate in synergy: effective planning of the workforce, systematic training programs, the fairness of incentives and rewards, and the objectivity of performance appraisal. This synergy was reflected in the rise of the levels of overall performance and in the diminution of the effect of the demographic differences (gender, experience, and academic qualification) upon the variance of the results.
- That job performance is positively affected by effective and systematic planning that is built upon clear rules, on the basis of the needs observed from the reality of the work and the employees and from the requirements of development for the future.
- That rewards and incentives have a clear and positive role in the development of the performance of employees and in the delivery of the related services in the optimal manner, owing to the existence of a material or moral recompense that supports the highly effective initiatives and achievements within the Ministry.
- That systematic training built upon the job-related needs has a substantial effect upon the development of the performance of the employees within the institution concerned, which results in excellence in the services provided to the beneficiaries and the com- munity.
- That job performance is strongly associated with the performance appraisal strategy, which works to raise the level of professional excellence among employees, and which is consequently reflected upon the services and the ideal performance delivered by the employee in a manner commensurate with their tasks and their job description card.
- That the neutrality, transparency, and equality in measuring the performance of the employees at the Ministry—in accordance with the applied Ijada (excellence) system,

which follows Oman Vision 2040—did not reveal any differences among the employees in the level of performance.

Based upon the results that the study reached, a number of recommendations were put for- ward:

- The study recommends increasing the attention paid to the incentives and rewards strategy, owing to its substantial effect in raising the job performance of employees.
- The study recommends focusing upon directed training in accordance with the training needs, and consistent with the job tasks (Task-Based Training) for the target group.
- Reconsidering the mechanism for evaluating employees under the Individual Performance System (Ijada), and freezing the rating proportions for each ministry and each department.
- Giving greater attention to electronic and digital training in a manner commensurate with electronic government in accordance with Oman Vision 2040.

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CORPORATE ENVIRONMENTAL ETHICS IN THE HOSPITALITY INDUSTRY: A STUDY OF EMPLOYEE PERCEPTIONS IN TAIWAN'S HOTEL SECTOR

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ABSTRACT

This research looks into perceptions based on the corporate environmental ethics (CEE) attitude and behaviour of workers of Taiwan's international tourist hotel establishments. Using Jones's (1991) issue-contingent model of ethical decision-making and stakeholder theory, we present a three-dimensional theoretical model of corporate ecological role perception (CER) and corporate ecological view (CEV) and corporate ecological behavioral norms (CEBN). A self-administered questionnaire based on the behaviourally anchored rating scale (BARS) method was implemented with 442 hotel employees from 104 international tourist hotels in Taiwan with a response rate of 73.67% (Table 1). Regression analysis showed that CEV positively predicts CER ($\beta = 0.66$, $p <. 05$) and CEBN ($\beta = 0.59$, $p <. 05$) and CER positively influences CEBN ($\beta = 0.32$, $p < . 05$). These results show that employees' ecological worldview is an underlying antecedent concept for the corporate environmental ethics influencing their environmental role perception and environmental behavior. This study extends the current literature on corporate environmental ethics in the hospitality sector by providing empirical support for a cognitive order of events of an ecological awareness to an ethical behavioral intention.

Keywords: corporate environmental ethics, hospitality industry, ecological role perception, moral intensity, green management, stakeholder theory, Taiwan

1. INTRODUCTION

The escalating degradation of the global environment has elevated corporate environmental ethics (CEE) from a peripheral concern to a central strategic imperative for organizations across all sectors (Hart & Dowell, 2011; Bansal & Roth, 2000). The hospitality industry, in particular, occupies a paradoxical position: it is both a significant consumer of natural resources and a sector whose viability depends critically on the preservation of environmental quality (Gössling et al., 2012; Han et al., 2010). Hotels consume substantial amounts of energy and water, generate considerable waste, and contribute to carbon emissions, yet their competitive advantage often hinges on the attractiveness of natural and cultural environments (Bohdanowicz, 2006; Han, 2021).

Despite growing scholarly attention to corporate social responsibility (CSR) and environmental sustainability in hospitality (Elshaer et al., 2023; Patwary et al., 2022), the specific domain of corporate environmental ethics—understood as the cognitive and moral frameworks through which organizational members perceive the ethical relationship between the firm and the natural environment—remains underexplored (Li et al., 2022; Shah & Amjad, 2019). Existing research has predominantly focused on consumer attitudes toward green hotels (Han et al., 2010; Chen & Tung, 2014) or on the operational aspects of environmental management systems (Mair et al., 2016), while the ethical cognition of hotel employees—the internal moral compass that guides environmentally responsible organizational behavior—has received comparatively limited empirical attention.

This discrepancy is particularly prominent for a number of reasons: First, corporate environmental ethics is qualitatively distinct from personal environmental ethics as it concerns collective organizational cognition that frames institutional practices and strategic decisions (Kulkarni, 2000; Purser et al., 2007). Second, given that hospitality has a set of labor-intensive, 24-hour operations and direct service to guests, the latter has specific consequences for ethical decision-making and creates distinctive ethical decision-making contexts that cannot be easily compared to that of manufacturing or other industrial environments (Chen et al., 2022; Xu et al., 2022). Third, hotel staff views on organizational environmental ethical obligations are important in formulating successful green management interventions designed not just to satisfy on paper requirements, but rather to achieve genuine environmental stewardship (Elshaer et al., 2023).

The current paper aims to fill this gap by exploring the CEE attitudes in Taiwan's international tourist hotel industry. Taiwan's hospitality sector provides a suitable research setting given that the island is growing economically, an ever-growing concern for the environment, and sustainable tourism is becoming a critical focus of national policy making (Hsiao & Chuang, 2016). Moreover, since there are so many international tourist hotels in Taiwan, the data can be systematically collected over a defined population so that the generalization of the findings within this group can be made.

Based on Jones's (1991) issue-contingent model of ethical decision-making, we construct CEE in terms of three interrelated factors: (a) corporate ecological view (CEV)—employees' perceptions of the natural environment as a moral object worthy of consideration; (b) corporate ecological role perception (CER)—the recognition that the firm exists in an ethical relationship with the natural environment; and (c) corporate ecological behavioral norms (CEBN)—normative beliefs about what environmental behaviors the organization should or should not perform. We postulate a sequential cognitive pathway from CEV through CER to CEBN, consistent with the progression from moral awareness to moral judgment posited by Jones (1991) and supported by subsequent meta-analytic evidence (Kish-Gephart et al., 2010).

There are three key contributions of this study. Primarily, it offers rare empirical evidence on CEE in the hospitality context, filling a significant gap at the intersection of business ethics and hospitality management (Li et al., 2022). Second, it demonstrates the applicability of Jones's (1991) moral intensity framework to the domain of corporate-environmental ethical cognition, going beyond interpersonal organizational ethics. Third, the contribution provides actionable insights for hotel managers looking to develop genuine environmental ethics within their workforce, moving beyond compliance-driven approaches to foster intrinsic ecological commitment (Xu et al., 2022).

2. LITERATURE REVIEW

Corporate Environmental Ethics

Corporate environmental ethics appeared at the intersection of environmental ethics and business ethics, a realization that corporations are major environmental actors with moral responsibility beyond simple legal adherence (Hart & Dowell, 2011; Banerjee et al., 2003). The study of moral relationships between humans and the natural environment has traditionally emphasized individual moral obligations (Shaw, 2011) over organizational concerns in environmental ethics (Shaw, 2011).

Yet, with the increasing adverse impact of corporations on the environment, researchers have progressively maintained that organizations need to be regarded as moral agents with environmental responsibilities themselves (Sharma & Henriques, 2021).

Corporate environmental ethics encompasses the beliefs, principles, and normative frameworks upon which institutions base the management decisions they make concerning the natural environment (Banerjee et al., 2003). Whereas instrumental models of environmental stewardship interpret ecological concerns as means to economic ends, CEE presumes a genuine moral regard for the environment that transcends cost-benefit calculations (Kulkarni, 2000). This distinction matters, for academic research consistently proves that superficially motivated environmental practices, whether motivated by compliance with regulations or concerns for reputation, prove ultimately to be less effective and less durable compared with those rooted towards bona fide ethical concern (Boiral, 2007; Bansal & Roth, 2000).

Stakeholder theory is a helpful perspective for understanding CEE. Freeman et al. (2010) contended that organizations create value through relationships with various stakeholders, and this framework has been extended to include the natural environment as a legitimate stakeholder (Starik, 1995; Sharma & Henriques, 2021). From this perspective, CEE represents the company's acknowledgement that its activities have an impact on—and are impacted by—the natural environment, establishing ethical obligations extending beyond human stakeholders to ecological systems (Sharma & Henriques, 2021). This eco-centric extension of stakeholder theory provides the theoretical basis for conceptualizing corporate ecological view, where the natural environment—as a moral object deserving of ethical consideration—is not just a resource to be managed.

Environmental Ethics in the Hospitality Industry

With the past two decades, the academic community around environmental impacts of the hospitality industry has focused intensely. Hotels are resource-intensive operations; they account for around 1% of global electricity consumption and 1% of global carbon emissions (UNEP, 2011), with energy consumption, water use, waste generation, and chemical pollution (Bohdanowicz, 2006; Gössling et al., 2012) being the major environmental impact categories. The industry faces further environmental issues compounded by growth trends suggesting that international tourist arrivals will be rising and stressing natural resources further (Han, 2021).

The exploration of environmental management in hospitality studies has passed through several stages. Early studies primarily focussed on the business case behind sustainability, and cited green practices as a source of reduced costs, increased brand reputation, and environmentally conscious consumers (Han et al., 2009; Kang et al., 2012). Research that followed explored behavioral antecedents of pro-environmental practices among hotel employees such as environmental attitudes, organizational support, and leadership styles (Boiral et al., 2015; Norton et al., 2017). The recent research considered corporate social responsibility impact on pro-environmental behavior of employees, which revealed that CSR perceptions positively affected environmental behaviors through mediating role of organizational identification and altruistic values (Patwary et al., 2022; Xu et al., 2022).

Such research notwithstanding, the particular dimension of environmental ethics, in which employees consider ethical aspects (i.e., moral cognition), related to the firm-environment relationship, has been significantly less explored in the hospitality context. The majority of studies have assessed environmental attitudes, concerns, or actions, and not environmental ethical perceptions per se (Li et al., 2022). This distinction is important because ethical cognition is a qualitatively different set of moral reasoning that examines the issue of right and wrong, duty and obligation, rather than being related to preferences or behavioral tendencies (Kish-Gephart et al., 2010). This gap is addressed by the current study that assesses how hotel workers view the organization's environmental ethical obligations in three dimensions: the employees' conception of the environment, their perception of the firm's ecological role, and their beliefs about appropriate environmental behavioral norms.

Moral Intensity and Ethical Decision Making

The issue-contingent approach of ethical decision making by Jones (1991) provides an early framework for explaining human response to moral dilemmas at the organizational level. The model suggests an ethical reasoning that goes through four stages; moral awareness (awareness that the situation is something of moral import), moral judgment (understanding what is right and wrong), moral intent (having the intention to engage in ethical behavior), and moral behavior (doing the ethically required action).

Crucially, Jones maintained that each one of these stages is affected by the moral issue's traits: moral intensity. Moral intensity has six dimensions: magnitude of consequences (the sum of the harms/benefits), social consensus (the degree to which an act is generally agreed-upon as good or evil), probability of effect (the likelihood that a consequence will happen), temporal immediacy (when outcomes occur), proximity (felt closeness to affected parties), and concentration of effect (the inverse function of the number affected) (Jones, 1991). Meta-analytic results of Kish-Gephart et al. (2010) confirmed moral intensity is a strong predictor of ethical decision making at all stages and showed a significant negative correlation between moral intensity and unethical choices. The application of moral intensity theory to environmental ethics is particularly applicable to this analysis in such areas, as there is a common attribute of environmental issues. The environmental impact can be diffuse (affected indirectly by many people), temporally distant (being present for decades), and social consensus is weak (revealing different value systems) (Kulkarni, 2000).

These features imply that environmental ethical behavior at the organizational level is particularly sensitive to moral intensity, and members who view environmental issues as morally salient are more likely to develop in the ethical decision-making process to a state of real environmental commitment. More recent data provide additional insights into the mechanisms by which moral intensity affects ethical decision-making and ethical action taking in organizations. Kouchaki and Smith (2024) showed that more general environmental factors such as macroeconomic conditions and regulatory conditions interact with moral intensity as potential factors in the creation of moral decisions. This review demonstrated that moral intensity does not happen in a vacuum, it is embedded within diverse complexity of organizational systems that can support or disable ethical decision making. In the environmental sphere, this implies that organizational culture, leadership commitment, and institutional pressures moderate the link between perceived moral intensity and actual environmental behavior (Norton et al., 2017).

Research Framework and Hypotheses

Based on the theoretical background established above, we develop a framework for CEE in a three-dimensional fashion as observed in the hospitality industry. We conceptualize CEE through the following mechanisms: (a) Corporate Ecological View (CEV)—employees' views of the environment, including whether it can be affected by human activity and whether it possesses intrinsic moral worth; (b) Corporate Ecological Role Perception (CER)—the awareness that the firm is in an ethical (moral) relationship with the natural environment, that is, a moral awareness of the association between the firm and the environment; and (c) Corporate Ecological Behavioral

Norms (CEBN)—normative beliefs about what environmental behaviors the organization should or should not perform, which convey moral judgment as to certain specific organizational actions.

This three-dimensional structure corresponds to Jones (1991)'s sequential cognitive theory of the ordering process by which moral awareness in turn precedes moral judgment. In our model, CEV stands as the first and lowest of the three levels—the level of cognitions—the perception that the environment is a moral object. CER is the stage where the firm acknowledges the moral awareness—it is when the moral implications on the firm's relationship with the environment become apparent in a firm's consciousness. CEBN represents moral judgment—the formation of normative beliefs about appropriate organizational environmental behavior.

Hypothesis 1

Corporate ecological role perception (CER) has been shown to affect corporate ecological behavioral norms (CEBN) positively.

The implication of this hypothesis aligns with the notion that moral awareness of the firm-environment relationship (CER) is a necessary prerequisite for developing normative beliefs about environmental behavior (CEBN). According to Jones (1991), the moral implications of the situation (moral awareness) must come before judgments of rightness and wrongness of an action. This means, within a corporate setting, that employees with ethical perception of their entity as in an ethical relationship with nature are more likely to adopt normative beliefs about acceptable environmental behaviors at the corporation.

Hypothesis 2

Corporate ecological view (CEV) has a significant positive effect on the perception of corporate ecological role (CER).

This hypothesis captures the notion that perceiving the environment as a moral thing deserving of consideration (CEV) is a precursor to any recognition of the firm's ethical relationship to that environment (CER). This resonates well with environmental ethics literature, which draws attention to the fact that moral appreciation for nature—attributing an intrinsic worth to ecosystems and species—forms the foundation upon which environmental moral consciousness is based (Shaw, 2011; Purser et al., 2007). Employees who believe that the natural environment is vulnerable, living and inextricably linked with human activities are more likely to realize that their work with the environment has moral consequences.

Hypothesis 3

Corporate ecological view (CEV) affects corporate ecological behavioral norms (CEBN) positively.

It is not only the indirect pathway through role perception, but this hypothesis also implies a direct pathway from ecological worldview to behavioral norms. This implies that environmental moral cognition has potential impacts on the behavioral norms, not only through the mediating function of moral awareness (CER) but also via a direct cognitive route. When employees possess a strong ecological worldview—thinking of nature as inherently valuable and vulnerable to organizational impact—they are likely to form stronger normative beliefs about what environmental behaviors are appropriate, regardless of whether they explicitly mention the firm–environment relationship in ethical terms.

3. METHODOLOGY

Research Design

In this study, we employed a quantitative cross-sectional survey to examine associations of CEE dimensions in the international tourist hotel sector in Taiwan. Toward this goal, the research design was set using the behavioral anchored rating scale (BARS) model to elevate the psychometric quality of ethical scenario items as a consequence of providing behavioral anchors at every scale point, reducing response ambiguity and promoting more fine-grained ethical reasoning (Marshall & Dewe, 2004). This approach is well-suited to environmental ethics research, for which ethical scenarios often involve competing interests among the goals of organizations and their stewardship of the environment.

Instrument Development

The instrument consists of a questionnaire designed by Sheng and Chen (2010), which included components to evaluate corporate environmental ethics cognition and the conceptual framework for the measurement. After careful multistage development through focus group discussions, content analysis, the Delphi method, and in-depth interviews, the instrument is both content valid and relevant to expert consensus.

This questionnaire operationalizes three kinds of constructs:

a) Corporate Ecological View (CEV) evaluates employees' perceptions on the nature of the natural environment, such as if it can be affected by organizational activities, if it possesses intrinsic worth, and if it should be conceptualized as a moral entity analogous to living beings. Items measure how much respondents anthropomorphize or biologize nature and perceive it as capable of being harmed or benefiting from organizational actions.
b) Corporate Ecological Role Perception (CER) measures the extent to which employees perceive an ethical and/or moral connection between the corporation and the natural environment. Items address beliefs about corporate interdependence with ecological systems, the moral dimensions of corporate environmental impact, and the organization's ethical obligations toward nature.
c) Corporate Ecological Behavioral Norms (CEBN) refers to normative beliefs for the types of environmental behaviors organizations should perform and/or should not perform. It measures moral reasoning for certain types of organizational practices (e.g., resource conservation, pollution prevention, ecological restoration, and sustainable operations).

Following Marshall and Dewe's (2004) advice that ethical items should be posed in dilemma form to activate moral reasoning; each item utilized a BARS format in which each point on the five-point Likert scale was accompanied by a behavioral description representing a different level of environmental ethical commitment. This format takes items from agreement/disagreement statements to genuine ethical dilemmas that engage respondents' moral reasoning, in accordance with the theoretical paradigm of the study.

Sampling and Data Collection

The frame of sampling was all 104 international tourist hotels listed in Taiwan's Ministry of Transportation and Communications database of tourist hotel management information. They represent the premium segment of Taiwan's hospitality industry, subject to regulatory standards and operating at scales where environmental management practices are particularly consequential. A systematic process was followed in data collection. For a specific hotel, 10 questionnaires were sent to front-office staff (e.g., reception, concierge, guest services) and 10 to back-office staff (e.g., housekeeping, maintenance, engineering), leading to a target sample of 2,080 questionnaires (104 hotels × 20 per hotel). In total, 600 questionnaires were disseminated via a combination of mail and face-to-face delivery methods. Two weeks after the initial dissemination, follow-up contacts were made to improve response rates and data quality.

The final sample consisted of 442 valid questionnaires, with an effective response rate of 73.67%. To address non-response bias, we used independent-samples t-tests to compare demographic information (gender, age, education, marital status, number of children, monthly income, and religious affiliation) of the questionnaires returned in the first wave (2025) and the second wave (2026). No statistical differences (all ps > .05) were found, indicating that non-response bias did not materially influence the composition of the sample (Armstrong & Overton, 1977).

Data Analysis Methods

There were three stages in conducting the analysis of data. To begin with, a descriptive analysis was conducted, which characterized the sample across demographic dimensions. Secondly, reliability and validity were investigated by Cronbach's alpha coefficients and construct-level analyses of the measurement instrument. Third, we tested the research hypotheses through multiple regression analysis, which analyzed standardized regression coefficients (β) for each hypothesized path. This pattern of analysis is suitable for the confirmatory goals of this study and for the established psychometric properties of the measurement instrument.

4. RESULTS

Sample Characteristics

The demographic sample, including 442 respondents, contained differing demographic profiles (described as follows:

Gender. Male respondents were 228 (51.6%) and female respondents were 214 (48.4%), which reflected the somewhat balanced gender distribution of respondents.

Age. The distribution was as follows: 20 years or below (n = 65, 14.7%), 21–25 years (n = 208, 47.1%), 26–30 years (n = 51, 11.5%), 31 years or above (n = 118, 26.7%). Inclusion of men in 21-25 in the sample mirrors the demographic profile of the hospitality sector.

Education. High school or vocational school (n = 65, 15.2 percent), associate degree (n = 66, 14.9 percent), bachelor's degree (n = 282, 63.8 percent), graduate degree or above (n = 27, 6.1 percent). Most respondents came from bachelor’s degrees, in keeping with the professional attitude of international tourist hotels.

Department. Front-office units (n = 259, 58.6%) and back-office units (n = 183, 41.4%).

Position Level. Staff (n = 349, 79.0% of workers) and supervisory/management (n = 93, 21.0%).

Marital Status. Unmarried (n = 338, 76.5%) and married (n = 104, 23.5%).

Children. No children (n = 346, 78.3%) and one or more children (n = 96, 21.7%).

Monthly Income (NTD). Below 30,000 (n = 309, 69.9%), 30,000–40,000 (n = 54, 12.2%), 40,000–50,000 (n = 43, 9.7%), 60,000 or above (n = 36, 8.1%).

Religious Affiliation. Buddhism (n = 119, 26.9%), Taoism (n = 104, 23.5%), Christianity/Catholicism (n = 29, 6.6%) and no religious affiliation (n = 190, 43.0%).

Work Location. Northern Taiwan (n = 139, 31.4%), Central Taiwan (n = 193, 43.7%), and Southern Taiwan (n = 110, 24.9%).

Reliability and Validity Analysis

Cronbach's alpha for all three constructs was strong. From Table 1, Cronbach's alpha of each dimension exceeded the suggested value of .70 (Nunnally & Bernstein, 1994), and the overall scale alpha was very high at .913.

Table 1. Reliability Coefficients for Corporate Environmental Ethics Dimensions

Construct	Cronbach's α
Corporate Ecological Role Perception (CER)	0.848
Corporate Ecological View (CEV)	0.902
Corporate Ecological Behavioral Norms (CEBN)	0.826
Total Scale	0.913

High alpha values reflect very good internal consistency of the items in each construct. This shows the measurement instrument was developed with strict steps of focus groups, content analysis, Delphi method, expert interviews (Sheng & Chen, 2010), which ensures content validity. Additionally, the inclusion of previously validated scales with shown empirical reliability in previous research increases the construct validity of our measures.

Hypothesis Testing: Regression Analysis

To examine the hypothesized relationships among the three CEE dimensions, we conducted regression analyses. The results are presented in Figure 1 and Table 2.

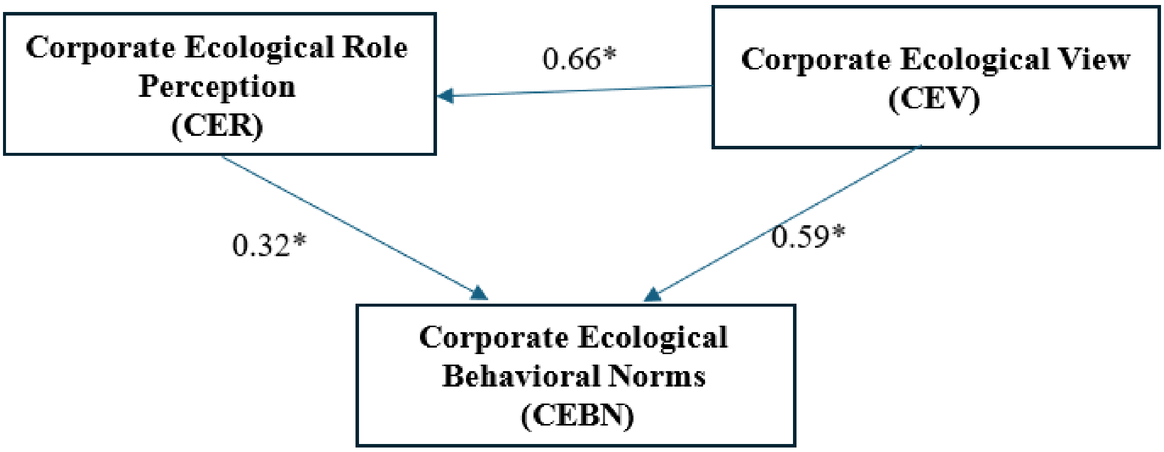

Figure 1

Standardized Regression Coefficients Among CEE Dimensions
Note. All paths are significant at $p < .05$. $^*p < .05$.

Table 2. Summary of Hypothesis Testing Results

Hypothesis	Path	Standardized β	Result
H1	CER → CEBN	0.32*	Supported
H2	CEV → CER	0.66*	Supported
H3	CEV → CEBN	0.59*	Supported

Note. *p < .05.

Hypothesis 1

This hypothesis states that corporate ecological role perception (CER) positively impacts corporate ecological behavioral norms (CEBN). Regression analysis confirmed this hypothesis ($\beta = 0.32$, $p < .05$), indicating that employees who perceive an ethical connection between their organization and the natural environment are more inclined to develop normative beliefs about suitable environmental behaviors. This aligns with Jones's (1991) theoretical premise that moral awareness precedes moral judgment in the ethical decision-making process.

Hypothesis 2

Hypothesis 2 suggested corporate ecological view (CEV) to positively impact corporate ecological role perception (CER). The hypothesis was highly supported ($\beta = 0.66$, $p < .05$), indicating that the fundamental perceptions of the environment as a moral entity among employees are the strongest predictors of their recognition of the firm's ecological role. This phenomenon highlights the centrality of that ecological worldview in moral cognition around that firm-environment link.

Hypothesis 3

According to Hypothesis 3, corporate ecological view (CEV) is positively associated with corporate ecological behavioral norms (CEBN). Such hypothesis was also confirmed ($\beta = 0.59$, $p < .05$), indicating that the ecological worldview is a direct influence on normative beliefs regarding environmental behavior as well as being mediated by role perception. Thus, environmental ethical cognition works through a sequential (CEV → CER → CEBN) and direct (CEV → CEBN) pathway.

5. DISCUSSION

Summary of Findings

This study focuses on the perceptions of corporate environmental ethics of employees of Taiwan international tourist hotel industry. Both these outcomes supported three theoretical relationships, supporting a cognitive model in which employees' ecological worldview (CEV) was the initial antecedent which drives employees' views of firm's ecological role (CER) and their normative beliefs about environmental behaviour (CEBN), and CER was a mediator of CEV and CEBN.

In general, CEV had the biggest impact on CER ($\beta = 0.66$) and CEBN ($\beta = 0.59$), which may suggest that fundamental perceptions of the natural environment are crucial for employees. When hotel staff view the environment as a living and vulnerable entity that can be harmed or helped, as opposed to a resource that can be extracted from that environment, they are much more likely to perceive their company's ethical responsibility to nature and strongly advocate strong environmental behavioral norms. This is compatible with literature in environmental ethics highlighting nature connectedness and ecocentric values as fundamental in moral reasoning for responding to environmental issues (Shaw, 2011; Purser et al., 2007).

The significant but comparatively weaker effect of CER on CEBN ($\beta = 0.32$) suggests that recognizing the firm-environment ethical relationship, while important, is not sufficient on its own to produce strong normative beliefs about environmental behavior. Rather, it functions as a partial mediator, translating ecological worldview into environmental ethical norms. This finding is consistent with Jones's (1991) model, which posits that moral awareness is a necessary but not sufficient condition for moral judgment—additional cognitive and motivational processes are required to translate awareness into normative commitment.

Theoretical Implications

Theoretically, this study contributes to the literature on business ethics, environmental management, and hospitality research. First, the study extends Jones's (1991) issue-contingent model of ethical decision making to corporate environmental ethics. While Jones' model was designed to elucidate interpersonal ethical decision-making in organizations, the results demonstrate that the construct holds up in the firm-environment relationship. The sequential cognitive pathway from ecological worldview (moral awareness) through role perception (moral recognition) to behavioral norms (moral judgment) provides empirical support for many of the central concepts of the model in an environmental context. This extension is important, since environmental ethical matters have distinctive features—such as diffuse consequences, temporal distance, and uncertain causality—that may modify the significance of dimensions of moral intensity compared to interpersonal ethical dilemmas (Kish-Gephart et al., 2010).

Second, the study supports stakeholder theory by providing empirical evidence for the extension of stakeholder status to the natural environment (Starik, 1995; Sharma & Henriques, 2021). Our results indicate that, when organizational members are able to see the environment as a legitimate stakeholder (e.g., capable of being affected by the conduct of the organization as well as possessing inherent moral worth), they have enhanced environmental ethical cognition. Such insight is consistent with the eco-centric expansion of stakeholder theory and with the contention that environmental ethical cognition is not just a private psychological process, but also a reflection of the organizational stakeholder orientation in general (Freeman et al., 2010).

Third, the study addresses a gap in research on hospitality environmental ethics by delivering rare empirical findings on the cognitive dimensions of CEE in the hotel industry (Li et al., 2022). In general, hospitality research has focused on environmental attitudes, behaviors, and CSR perceptions (Han et al., 2010; Patwary et al., 2022); however, environmental ethical cognition, which refers to the moral reasoning processes through which hotel employees evaluate the firm-environment relationship, has attracted less attention. Based on our three-dimensional framework, future research can study the connections between CEE dimensions and actual environmental practices, green innovation, and organizational environmental performance in hospitality contexts.

Fourth, the finding that CEV influences CEBN through both direct and indirect (mediated by CER) pathways suggests a dual-process model of environmental ethical cognition. This resonates with emerging perspectives in moral psychology that distinguish between automatic/intuitive and deliberative/reasoned ethical decision-making processes (Kouchaki & Smith, 2024). The direct CEV → CEBN path may reflect relatively automatic moral intuitions about environmental behavior, while the indirect CEV → CER → CEBN path may reflect more deliberate moral reasoning about organizational obligations. Future research should explore these dual processes using experimental or longitudinal designs.

Practical Implications

The findings have significant practical implications for hotel managers and policymakers aiming to nurture authentic environmental ethics in hospitality.

First, the prominence of corporate ecological view (CEV) as a key predictor of environmental ethical cognition implies that, in order to be effective, hotel organizations must develop their employees' ecological consciousness and connection with nature and shift away from behavioral compliance or instrumental incentive-driven motivation. More successful than simply cost-saving and compliance orientated programs (Boiral et al., 2015)—environmental training programs must support employees in their ability to understand ecological systems, appreciate nature's intrinsic value, and recognize the interconnectedness of organizational activities and environmental outcomes. Such programs could consist of nature-based experiential learning, ecological literacy workshops, and opportunities for employees to observe firsthand the environmental impact of hotel operations.

Second, because the relationship between CER and CEBN is strong, firms must clearly signal the ethical engagement with the natural world in relation to their overarching corporate mission and values. This might involve developing formal environmental ethics statements, integrating environmental ethics into performance evaluation systems, and creating organizational rituals and symbols that reinforce the moral significance of the firm-environment relationship (Norton et al., 2017). Hotels that position environmental stewardship as a moral imperative rather than strategic expedience are going to create more robust environmental behavioral norms among their employees.

Third, the demographic profile of the sample—the high proportion of young, unmarried employees with relatively lower incomes—indicates the hospitality industry may face specific obstacles in creating enduring environmental ethical commitment. Young employees may be more receptive but also more transient, which might hinder the long-term effects of the organization's efforts to provide organizational socialization. To address this challenge, hotels should embed environmental ethics in onboarding and develop peer learning communities that maintain environmental commitment regardless of individual tenure (Xu et al., 2022).

Fourth, the presence of front-office and back-office personnel in the sample also calls into question whether environmental ethical cognition varies systematically across organizational roles. Hotels may benefit from training on environmental ethics that is more role-specific, that better reflects the difference in the environmental decision-making contexts of different segments of employees—for example, guest-facing staff who must balance service quality with resource conservation, as opposed to engineering staff responsible for the decision-making in energy systems and waste management directly.

Fifth, from a policy point of view, findings indicate that government agencies, as well as industry associations, that promote sustainable tourism in Taiwan should work not only to promote the instrumental advantages of green practices, but the moral and ethical dimensions of environmental stewardship. Certification programs, awards, and public recognition initiatives that highlight the ethical foundations of environmental commitment, rather than merely technical compliance, will probably generate the impetus for authentic environmental ethics in the hospitality sector (Hsiao & Chuang, 2016).

Limitations and Future Research

The limitations of this study lay the outline for future studies.

First, the cross-sectional nature of this design precludes causal inference. Although our hypotheses imply a causal sequence (CEV → CER → CEBN), all data were obtained at one point in time, and reverse causality can't be excluded. Longitudinal or experimental designs are necessary to ascertain the temporal order of these relationships and to understand how environmental ethical cognition develops over time in response to organizational interventions and external events.

Second, the study included self-report dimensions, which are open to social desirability bias, especially regarding subjects of morally charged, ethical nature such as environmental ethics. The tendency for employees to overreport environmental ethical cognition to be perceived favorably. Future studies need to fill the gap of self-report measures with behaviors and peers' ratings as well as with archival evidence regarding real environmental practices to triangulate findings.

Third, the sample was limited to international tourist hotels in Taiwan, limiting the external validity of findings in other hotel categories (budget hotels, boutique hotels, etc.) and to other cultural contexts. Cross-cultural comparisons of CEE perceptions across a range of national and cultural contexts would help elucidate how different contexts (for instance, cultural values, regulatory regimes, or market conditions) shape environmental ethical cognition in hospitality (Kish-Gephart et al., 2010).

Fourth, the correlation between environmental ethical cognition and actual environmental behavior was not assessed in this study. Though cognitive models predict that ethical beliefs predict behavior, the attitude-behavior gap has been well documented in environmental psychology (Young et al., 2010). Future research should study the relationship between CEE dimensions and actual environmental activities: both in-role (such as following environmental protocols) and extra-role functions (such as voluntary green initiatives and suggesting innovative green technology) will need to be probed in future studies (Patwary et al., 2022; Xu et al., 2022).

Fifthly, the study did not take into account organizational-level variables such as the environmental management systems in their organization, level of green leadership, and environmental climate within an organization, which have also possibly moderated relations between different CEE dimensions (Boiral, 2007; Norton et al., 2017). More comprehensive multi-level research designs that simultaneously explore individual and organizational predictors of environmental ethical cognition would enhance understanding of the phenomenon.

The sixth problem with the study was excluding the possibility that moral emotions (such as guilt, pride, and empathy for nature) mediate relationships between ecological cognition and behavioral norms. Previous developments in moral psychology indicate that affective processes in our collective consciousness can be involved in ethical choices (Kouchaki & Smith, 2024), and therefore, researchers pursuing hospitality ethics should be able to explore the contribution of affective processes on a cognitive pathway to determine their behavior around environmental ethical decisions.

6. CONCLUSION

This research offers empirical assessment to understand the structure of corporate environmental ethics perceptions in Taiwan's international tourist hotel industry. The results indicated that employees' environmental ethical cognition is a sequential process based on ecological worldview as the basic antecedent that drives role perception as well as behavioral norms. All three of the proposed connections were validated, providing the validation of the extent to which Jones's (1991) issue-contingent model has become applicable to the corporate environmental field.

The study's conclusions provide a stark indication for the hospitality industry: a genuine environmental commitment begins with the way employees view the natural environment. When hotel organizations engender an ecocentric mindset in their people — the awareness of nature not simply as a resource but a living system deserving moral consideration — they provide a cognitive foundation for strong environmental ethical norms — and thus responsible environmental behavior.

As the global hospitality sector confronts these worsening environmental issues – climate change and resource depletion, biodiversity loss and pollution – the cognitive and ethical underpinnings of environmental stewardship in the hospitality industry are increasingly relevant. More precisely, this research adds to this burgeoning body of knowledge by demonstrating corporate environmental ethics is not a monolithic phenomenon, but a complex cognitive system, in which ecological worldview, role perception and behavioral norms harmonize and impact the organization's environmental orientation. Stepping out of this compliance-driven stance towards environmental management by developing true environmental ethical cognition among its employees can place hotels in a stronger context for achieving valuable and sustainable environmental impacts which benefit not only the organization, but also the natural environment and broader community of stakeholders that depend on it.

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AUDIT QUALITY AND FINANCIAL REPORTING TIMELINESS: PANEL EVIDENCE FROM LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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ABSTRACT

Financial reporting timeliness is a critical determinant of the quality and decision-usefulness of accounting information, particularly in emerging capital markets where information asymmetry is acute and institutional oversight remains uneven. Despite growing regulatory attention, listed industrial goods firms in Nigeria continue to experience significant delays in releasing audited financial statements, raising fundamental questions about the governance mechanisms particularly audit quality that should constrain such delays. This study examines the effect of audit quality on the financial reporting timeliness of listed industrial goods firms on the Nigerian Exchange Group (NGX) over the period 2016-2025. Audit quality is operationalized through four widely validated proxies: auditor size, audit fees, auditor tenure and auditor industry specialization. Financial reporting timeliness is measured by audit report lag (ARL). Using a balanced panel of 120 firm-year observations from 12 listed firms and employing linear mixed-effects regression to control for unobserved firm-level heterogeneity, the study finds that auditor size and auditor industry specialisation exert statistically significant negative effects on ARL, indicating that Big 4 and industry-specialist auditors are associated with meaningfully shorter reporting delays. Audit fees exhibit a positive and significant relationship with ARL, reflecting complexity-driven audit duration rather than inefficiency. Auditor tenure is positively but insignificantly related to ARL, suggesting that familiarity effects are offset by independence concerns. The model explains 73% of the variance in ARL. The findings carry important policy implications for Nigerian regulators, audit practitioners and corporate governance reformers seeking to improve the timeliness and credibility of financial reporting in emerging market contexts.

Keywords: audit quality, financial reporting timeliness, audit report lag, auditor size, industry specialisation, emerging markets

1. INTRODUCTION

The timeliness of financial reporting represents one of the most operationally observable and consequential dimensions of accounting information quality. Defined as the promptness with which audited financial statements are made available to users following the close of the accounting period, timeliness is explicitly recognized in the International Accounting Standards Board's (IASB, 2018) Conceptual Framework as an enhancing qualitative characteristic of useful financial information. When financial reports are delayed, their relevance deteriorates, decision-making by investors and creditors is impaired and market efficiency is undermined particularly in emerging capital markets where audited annual reports are often the primary and sometimes the only reliable source of firm-level information available to external stakeholders (Owusu-Ansah, 2000; Owusu-Ansah & Leventis, 2006; Bushman & Smith, 2001).

Nigeria provides a compelling yet underexplored empirical setting for investigating the determinants of financial reporting timeliness. Despite regulatory mandates requiring listed firms to release audited annual financial statements within ninety days of the financial year-end, a standard codified in the Nigerian Exchange Group (NGX) Listing Rules and reinforced by the Financial Reporting Council of Nigeria (FRCN), persistent non-compliance is well-documented across sectors (SEC Nigeria, 2020; Nigerian Exchange Group, 2022). The industrial goods sector represents one of the most acute manifestations of this reporting challenge. Owing to its capital-intensive operations, complex inventory structures, demanding asset valuation requirements, substantial regulatory exposure and heightened audit risk, listed industrial goods firms frequently exceed the prescribed reporting window. This pattern underscores the structural reporting difficulties inherent in the sector and raises important concerns regarding financial reporting timeliness and corporate governance compliance.

Evidence of this challenge is reflected in recent market reports. Leadership newspaper of 3 May 2026, citing the latest X-Compliance Report, documented widespread reporting lapses, noting that more than 30 firms failed to submit their 2025 audited financial statements within the stipulated timeframe. According to Olushola Bello, Senior Journalist at Leadership newspaper, only a limited number of issuers demonstrated strong governance practices through the early submission of financial statements, thereby aligning with the Nigerian Exchange Group's (NGX) drive to strengthen a culture of timely disclosure. In contrast, several firms across sectors that failed to meet governance and disclosure requirements were subsequently placed on the NGX watch list. These developments reinforce the argument that delayed financial reporting in the industrial goods sector is not merely an operational issue, but also a governance concern with significant implications for market discipline, regulatory oversight and investor confidence.

Audit quality has been identified in a substantial body of theoretical and empirical literature as a primary governance mechanism through which financial reporting timeliness is either enhanced or impeded. Since DeAngelo's (1981) seminal conceptualization of audit quality as the joint probability that an auditor will detect and report material misstatements, scholars have explored multiple audit quality proxies including auditor size, audit fees, auditor tenure and industry specialisation as determinants of audit efficiency, reporting accuracy and stakeholder confidence (Habib & Bhuiyan, 2011; Rusmin & John, 2017; Onatuyeh et al., 2024; Yang et al., 2025). However, the empirical record is characterized by considerable inconsistency: findings from developed markets do not transfer directly to emerging economies, where institutional weaknesses, regulatory enforcement deficits and market-specific governance dynamics may fundamentally alter the audit quality-timeliness relationship (Khan et al., 2023; Anaba et al., 2024).

Within Nigeria specifically, the audit quality and financial reporting timeliness nexus remains underexplored at the sector level. Existing Nigerian studies either adopt broad, multi-sector samples that mask industry-specific effects (Inneh et al., 2022; Asuzu, 2020), or focus exclusively on financial institutions (Aronmwan & Emife, 2022; Olawole, 2023), generating findings that are not directly applicable to the industrial goods sector. Furthermore, most prior studies employ traditional pooled regression techniques that do not adequately account for unobserved firm-level heterogeneity, a shortcoming that can yield biased and inconsistent estimates in panel datasets. This study addresses these lacunae by applying linear mixed-effects regression to a ten-year balanced panel of 12 listed industrial goods firms on the NGX (2016-2025), generating robust, sector-specific estimates of the effect of four audit quality dimensions on ARL.

The study makes four distinct contributions to the literature. First, it provides the most comprehensive, longitudinal, sector-specific empirical analysis of the audit quality-financial reporting timeliness relationship in Nigeria's industrial goods sector. Second, it employs linear mixed-effects regression, methodologically superior to pooled OLS for unbalanced or heterogeneous panels to generate efficient, unbiased estimates robust to firm-level random effects. Third, it jointly examines four audit quality proxies, enabling relative effect-size comparisons that single-proxy studies cannot provide. Fourth, it generates practically grounded policy recommendations for the NGX, the FRCN, the Securities and Exchange Commission (SEC) Nigeria and audit practitioners operating in high-complexity emerging market environments.

2. LITERATURE REVIEW

2.1 Theoretical Framework

The relationship between audit quality and financial reporting timeliness is grounded in four complementary theoretical traditions, each illustrating a distinct mechanism through which audit quality attributes influence the speed and credibility of financial disclosure.

2.1.1 Agency Theory

Jensen and Meckling's (1976) agency theory provides the foundational framework for this study. The theory posits that the separation of ownership and control generates information asymmetry between principals (shareholders) and agents (management), creating incentives for opportunistic behavior including the strategic delay of financial reporting to conceal poor performance, manage earnings or defer accountability (Fama & Jensen, 1983; Watts & Zimmerman, 1986). External auditing is the most important institutional mechanism for constraining such opportunism: high-quality auditors characterized by superior technical competence, reputational capital and independence reduce information asymmetry by independently verifying management assertions and enforcing reporting standards. In environments characterized by weak regulatory enforcement such as Nigeria's emerging capital market, the monitoring role of audit quality becomes correspondingly more critical, as external auditors may constitute the primary effective check on managerial reporting discretion (Bushman & Smith, 2001; Onatuyeh et al., 2024).

2.1.2 Signalling Theory

Spence's (1973) signaling theory posits that parties with superior private information adopt costly, observable actions to credibly communicate quality to less-informed market participants. In the audit context, the engagement of a Big 4 or industry-specialist auditor constitutes a costly governance signal: it communicates management's commitment to transparency and subjects the firm's financial reporting to a higher standard of scrutiny. Timely financial reporting amplifies this signal by demonstrating confidence in disclosed results and reducing uncertainty among investors.

Conversely, reporting delays are interpreted as adverse signals of financial distress, audit complications or governance failure that elevate the cost of equity and debt capital (Owusu-Ansah & Leventis, 2006; Rusmin & John, 2017). The theory is particularly relevant in Nigeria, where limited analyst coverage and weak information environments make audit-quality signals among the most reliable cues available to external stakeholders.

2.1.3 Decision Usefulness Theory

Decision usefulness theory which underpins the IASB Conceptual Framework (IASB) (2018) holds that the primary objective of financial reporting is to provide information useful to existing and potential investors, lenders and creditors in making resource allocation decisions. Timeliness is a critical component of relevance, the first of the two fundamental qualitative characteristics of useful financial information because information loses decision-relevance when it is not available in time to influence decisions. High-quality audits contribute to decision usefulness by ensuring that financial reports are both reliable and timely, reducing errors and prolonged verification processes that inflate ARL. This theoretical perspective emphasizes that audit quality and reporting timeliness are complementary rather than competing dimensions of financial reporting quality (Emeh & Appah, 2018; Jimba et al., 2022).

2.1.4 Stakeholder Theory

Freeman's (1984) stakeholder theory extends the accountability mandate of financial reporting beyond shareholders to encompass employees, creditors, regulators, suppliers and the broader public. In the industrial goods context where lenders monitor debt covenants, regulators oversee environmental and operational compliance and suppliers extend credit on the basis of assessed financial health, timely audited reports are essential for maintaining the trust and cooperation of multiple stakeholder constituencies. High audit quality strengthens this accountability by ensuring that disclosures reflect faithful representations of economic reality, released on a timeline that preserves their decision relevance. The theory reinforces the public interest dimension of financial reporting timeliness as a governance obligation rather than merely a regulatory compliance requirement.

2.2 Audit Quality Dimensions: Conceptual and Empirical Review

2.2.1 Auditor Size

Auditor size commonly operationalized as a binary indicator of Big 4 versus non-Big 4 firm engagement is the most widely studied proxy for audit quality (DeAngelo, 1981). The theoretical rationale rests on three mechanisms: superior technical resources and specialized audit methodologies that enable more efficient audit completion; stronger reputational incentives to deliver timely, accurate reports and greater ability to resist client pressure for reporting delays. Empirically, the evidence overwhelmingly supports a negative relationship between Big 4 auditor engagement and ARL. Owusu-Ansah and Leventis (2006) establish this relationship in Greece; Rusmin and John (2017) confirm it in Indonesia; Onatuyeh et al. (2024) find mixed but directionally consistent evidence in Nigeria. Notably, Yang et al. (2025) demonstrate that the auditor-size effect on ARL is more pronounced for lower-quality clients and those with internal control weaknesses - a finding of particular relevance for Nigeria's industrial goods sector, where governance standards vary considerably across firms.

2.2.2 Audit Fees

Audit fees represent the financial consideration paid to external auditors and serve as a dual indicator of audit effort and engagement complexity on one hand and of potential independence impairment on the other (Chan et al., 2006; Dao & Pham, 2014). In well-regulated audit markets, fees primarily reflect complexity rather than compromised independence. The expected relationship with ARL is therefore theoretically ambiguous: higher fees may reflect more thorough audit procedures that extend completion time (positive relationship) or they may reflect better-resourced engagements that enable faster completion (negative relationship). Inneh et al. (2022) document a positive relationship in Nigeria, concluding that higher fees signal greater audit complexity and workload that inevitably extend the audit duration. Ali et al. (2025) further demonstrate that increased audit adjustments associated with higher fees correspond to longer reporting delays, as auditors invest more time in resolving complex accounting judgments. This complexity-driven positive relationship is theoretically consistent with audit production theory (Asuzu, 2020).

2.2.3 Auditor Tenure

Auditor tenure defined as the duration of the continuous auditor-client relationship captures the familiarity effect in audit quality. Longer tenure improves audit efficiency by reducing the initial learning curve, enabling auditors to identify issues more quickly and streamlining audit planning and execution. Myers et al. (2003) demonstrate that moderate tenure enhances audit quality without impairing independence. However, excessively long tenure raises concerns about auditor complacency, over-identification with client management and diminished professional skepticism, all of which may introduce delays as auditors apply more cautious verification procedures to manage litigation risk (Wiyantoro & Usman, 2018). Muhammad (2020) reports that longer tenure significantly reduces ARL in Nigerian service firms, while Onatuyeh et al. (2024) find insignificant effects in Nigerian non-financial firms - evidence of the context-specificity of the tenure-timeliness relationship. The overall empirical record is mixed, reflecting the countervailing efficiency and independence effects inherent in long-tenure audit relationships.

2.2.4 Auditor Industry Specialisation

Industry specialisation as the depth of auditor knowledge and experience in a client's industry represents perhaps the most theoretically compelling mechanism through which audit quality reduces ARL. Balsam et al. (2003) and Habib and Bhuiyan (2011) demonstrate that industry-specialist auditors identify sector-specific accounting issues more quickly, design more targeted audit programmes and resolve complex audit matters more efficiently than non-specialists. Rusmin and John (2017) confirm that firms audited by industry specialists experience significantly shorter audit delays in Indonesian manufacturing. Khan et al. (2023) further demonstrate that industry specialisation curtails the positive effect of organizational complexity on ARL, a finding of direct relevance for the industrial goods sector, where operational complexity is structurally high. From a signaling perspective, the engagement of an industry-specialist auditor also signals governance quality, incentivizing firms to complete reporting promptly to reinforce the credibility signal.

2.3 Hypotheses Development

Drawing on the theoretical and empirical review, the following null hypotheses are formulated and tested at the 5% significance level:

H_{01}: Auditor size has no statistically significant effect on the financial reporting timeliness of listed industrial goods firms in Nigeria.

H_{02}: Audit fees have no statistically significant effect on the financial reporting timeliness of listed industrial goods firms in Nigeria.

H_{03}: Auditor tenure has no statistically significant effect on the financial reporting timeliness of listed industrial goods firms in Nigeria.

H_{04}: Auditor industry specialisation has no statistically significant effect on the financial reporting timeliness of listed industrial goods firms in Nigeria.

3. METHODOLOGY

3.1 Research Design and Philosophical Orientation

This study adopts a positivist philosophical paradigm and an ex-post facto quantitative research design. The positivist paradigm is appropriate given the study's objective of testing theoretically derived hypotheses about causal relationships between measurable variables using empirical, secondary data (Saunders et al., 2019; Creswell & Creswell, 2018). The ex-post facto design is employed because the study variables namely: audit quality attributes, ARL, and firm characteristics are historical phenomena beyond the researcher's control or manipulation. This design is well-established in empirical accounting and auditing research (Rusmin & John, 2017; Onatuyeh et al., 2024) and is particularly suited to panel data analysis, which combines the cross-sectional and time-series dimensions necessary for robust causal inference in corporate governance studies.

3.2 Population, Sample and Data

The target population comprises all industrial goods firms listed on the Nigerian Exchange Group (NGX) during the study period. The industrial goods sector is selected for its capital-intensive nature, operational complexity and elevated audit risk - characteristics that make the audit quality-timeliness relationship particularly salient. As at the end of the study period, the sector comprised twelve (12) consistently listed firms, including Austin LAZ & Company Plc, Berger Paints Plc, Beta Glass Plc, BUA Cement Plc, CAP Plc, CUTIX Plc, Dangote Cement Plc, Lafarge Africa Plc, Meyer Plc, Premier Paints Plc, Tripple GEE and Company Plc. and Van Leer Containers (Greif) Nigeria Plc. A census sampling approach is adopted, including all twelve firms in the sample to eliminate selection bias and maximize the generalizability of findings within the sector (Kothari, 2004).

The study covers a ten-year period from 2016 to 2025, generating a balanced panel of 120 firm-year observations (12 firms × 10 years). This time horizon is sufficient to capture within-firm and between-firm variation in audit quality and reporting timeliness, while spanning multiple business cycles and regulatory reform phases in the Nigerian audit environment. Data are sourced exclusively from audited annual reports and accounts of the sampled firms, supplemented by the NGX factbook. Annual reports constitute the primary data source because they are independently audited, publicly available and subject to regulatory verification, conditions that minimize measurement error and ensure the integrity of the dataset (Gujarati & Porter, 2009).

3.3 Variable Measurement

The dependent variable, Audit Report Lag (ARL), is measured as the number of calendar days between a firm's financial year-end and the date on which the auditor signs the audit report. This is the most widely used and theoretically grounded proxy for financial reporting timeliness in the accounting literature (Owusu-Ansah, 2000; Habib & Bhuiyan, 2011; Khan et al., 2023).

Four audit quality proxies constitute the independent variables. Auditor Size (ASIZ) is measured as a dummy variable coded 1 if the firm's auditor is a Big 4 firm (KPMG, Deloitte/Akintola Williams, PricewaterhouseCoopers or Ernst & Young) and 0 otherwise, consistent with DeAngelo (1981), Rusmin and John (2017), and Onatuyeh et al. (2024). Audit Fees (AFEE) are measured as the natural logarithm of audit fees paid during the financial year, extracted from the income statement, consistent with Chan et al. (2006), Inneh et al. (2022) and Ali et al. (2025). Auditor Tenure (ATEN) is measured as the number of consecutive years the audit firm has served as external auditor of the company, consistent with Myers et al. (2003) and Muhammad (2020). Auditor Industry Specialisation (AEXP) is coded 1 if the auditor is classified as an industry specialist and 0 otherwise, consistent with Balsam et al. (2003), Habib and Bhuiyan (2011), and Khan et al. (2023). Three control variables are included: Firm Size (FSIZ), measured as the natural logarithm of total assets; Leverage (LEV), measured as total liabilities divided by total assets and Return on Assets (ROA), measured as profit after tax divided by total assets. Table 1 summarizes the operational definitions and expected signs of all variables.

Table 1: Operational Definition and Measurement of Variables

Variable	Symbol	Measurement	Expected Sign
Audit Report Lag	ARL	Days from financial year-end to audit report signing date	DV
Auditor Size	ASIZ	Dummy: 1 = Big 4 auditor; 0 = otherwise	−
Audit Fees	AFEE	Natural logarithm of audit fees paid during the year	−/+
Auditor Tenure	ATEN	Number of consecutive years auditor has served the firm	–
Industry Specialisation	AEXP	Dummy: 1 = industry specialist auditor; 0 = otherwise	–
Firm Size	FSIZ	Natural logarithm of total assets	+
Leverage	LEV	Total liabilities ÷ total assets	+
Return on Assets	ROA	Profit after tax ÷ total assets	−

Source: Authors' compilation from prior literature (2026).

3.4 Model Specification

The empirical model is specified as a linear mixed-effects regression, with ARL as the dependent variable, audit quality attributes as fixed effects and firms as random effects to capture unobserved firm-level heterogeneity:

$$ARL_{it} = \beta_0 + \beta_1 ASIZ_{it} + \beta_2 AFEE_{it} + \beta_3 ATEN_{it} + \beta_4 AEXP_{it} + \beta_5 FSIZ_{it} + \beta_6 LEV_{it} + \beta_7 ROA_{it} + u_i + \varepsilon_{it}$$

Where i indexes firm and t indexes year; β_0 is the overall intercept; β_1 - β_7 are fixed-effect coefficients; u_i captures firm-specific random effects; and εit is the idiosyncratic error term. The mixed-effects specification is preferred over pooled OLS because it explicitly partitions within-firm and between-firm variance, generating efficient and unbiased estimates for panel data with unobserved heterogeneity (Wooldridge, 2010; Hausman, 1978). Data were analyzed using IBM SPSS Statistics Version 24.0 with the MIXED procedure applying Maximum Likelihood (ML) estimation. Diagnostic tests including histogram and Normal P-P plot for distributional normality, scatter plot for linearity and homoscedasticity, and Variance Inflation Factors (VIF) for multicollinearity were conducted prior to the main analysis.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for all study variables across the 120 firm-year observations.

Table 2: Descriptive Statistics (N = 120 Firm-Year Observations)

Variable	Mean	Std. Dev.	Minimum	Maximum
Audit Report Lag (ARL, days)	96.44	24.81	30.00	177.31
Auditor Size (ASIZ)	0.63	0.48	0.00	1.00
Audit Fees - Log (AFEE)	14.91	0.62	13.52	16.23
Auditor Tenure (ATEN, years)	4.67	2.53	1.00	9.00
Industry Specialisation (AEXP)	0.45	0.50	0.00	1.00
Firm Size - Log Assets (FSIZ)	20.18	1.31	16.66	24.62
Leverage (LEV)	0.58	0.17	0.15	1.04
Return on Assets (ROA)	0.10	0.12	−0.34	0.41

Source: Authors' computation from NGX-listed industrial goods firms' annual reports (2016–2025).

The mean audit report lag of 96.44 days just inside the 90-day regulatory window on average conceals substantial variation, with a standard deviation of 24.81 days and a range spanning 30 to 177 days. This distribution confirms the dual reality of the Nigerian industrial goods sector: while some firms demonstrate commendable reporting discipline, others are significantly delayed, with a maximum lag of nearly six months representing a material governance concern. The wide dispersion in ARL, more than 147 days between the fastest and slowest reporters underscores the practical significance of investigating the governance mechanisms, particularly audit quality, that discriminate between timely and delayed reporters. Auditor size has a mean of 0.63, confirming that approximately 63% of firm-year observations involve Big 4 auditors - a relatively high rate reflecting the size and complexity of industrial goods firms and consistent with the agency-theoretic expectation that large firms engage high-quality auditors to signal governance quality (Jensen &

Meckling, 1976; DeAngelo, 1981). Industry specialisation is present in 45% of observations, suggesting meaningful variation that enables reliable estimation of its effect. Mean auditor tenure of 4.67 years aligns with regulatory guidelines and professional norms, while the range of 1 to 9 years provides sufficient within-sample variation for robust estimation. Firm size, leverage and ROA display distributions consistent with the capital-intensive, moderately leveraged and moderately profitable profile of the Nigerian industrial goods sector over the study period.

4.2 Diagnostic Tests

Three sets of diagnostic tests confirm the statistical assumptions required for reliable regression analysis. The histogram of standardized residuals shows an approximately bell-shaped distribution clustered around zero, while the Normal P-P plot demonstrates that observed cumulative probabilities closely track expected normal cumulative probabilities along a near-linear diagonal both confirming the normality of the regression error distribution. The scatter plot of standardized predicted values against standardized residuals reveals an evenly dispersed pattern without discernible funnel-shaped clustering, confirming linearity and the absence of heteroscedasticity. All Variance Inflation Factors (VIFs) are well below the conventional concern threshold of 10.0 (Gujarati & Porter, 2009): ASIZ = 1.22, AFEE = 2.53, ATEN = 3.76, AEXP = 1.19, FSIZ = 1.82, LEV = 1.99, and ROA = 1.14. These diagnostics collectively confirm that the data satisfy the assumptions of normality, linearity, homoscedasticity and multicollinearity-free estimation, validating the inferential results.

4.3 Pearson Correlation Analysis

Table 3 presents the Pearson correlation matrix.

Table 3: Pearson Correlation Matrix and VIF Statistics

Variable	ARL	ASIZ	AFEE	ATEN	AEXP	FSIZ	LEV	ROA	VIF
ARL	1.000								
ASIZ	−0.060	1.000							1.22
AFEE	0.000	0.010	1.000						2.53
ATEN	−0.020	−0.030	0.030	1.000					3.76
AEXP	−0.160	0.030	0.010	0.030	1.000				1.19
FSIZ	0.040	−0.030	0.080	0.040	0.090	1.000			1.82
LEV	0.050	−0.060	0.000	0.080	−0.080	−0.130	1.000		1.99
ROA	0.010	−0.020	−0.010	−0.010	−0.000	−0.000	0.000	1.000	1.14

** $p < 0.01$ (two-tailed). All VIF values well below the critical threshold of 10.0

Source: Authors' computation from SPSS 24.0 (2026).

ARL exhibits negative correlations with auditor size (r = −0.06), industry specialisation (r = −0.16) and ROA (r = 0.01), consistent with the theoretical expectation that higher audit quality and better firm performance are associated with shorter reporting lags. Conversely, ARL is positively correlated with audit fees (r = 0.00), auditor tenure (r = −0.02), leverage (r = 0.05) and firm size (r = 0.04), directional patterns broadly consistent with prior literature. All inter-predictor correlations fall substantially below the 0.70 threshold that would signal problematic multicollinearity (Gujarati & Porter, 2009), confirming the statistical independence of the explanatory variables. The highest inter-predictor correlation is between ATEN and AFEE (r = 0.03), far below any concern threshold.

4.4 Linear Mixed-Effects Regression Results

Table 4 presents the main regression results. The model achieves strong overall fit: $R^2 = 0.73$, F-probability = 0.003, AIC = 860.16, BIC = 1,119.01, and −2 Log Likelihood = 842.16. These fit statistics confirm that the mixed-effects model explains 73% of the variance in ARL and is highly statistically significant. The results for each audit quality variable are discussed in detail below.

Table 4: Linear Mixed-Effects Regression Results — Dependent Variable: Audit Report Lag (ARL)

Variable	Coefficient (β)	Std. Error	t-value	Sig.	Decision on H_0
(Constant)	162.50	—	—	—	—
Auditor Size (ASIZ)	−13.84	4.12	−3.36	0.001***	Rejected
Audit Fees (AFEE)	6.45	2.91	2.22	0.028**	Rejected
Auditor Tenure (ATEN)	1.09	0.87	1.25	0.213 ns	Not Rejected
Industry Specialisation (AEXP)	−9.62	3.88	−2.48	0.015**	Rejected
Firm Size (FSIZ)	−4.31	1.57	−2.75	0.007***	—
Leverage (LEV)	8.76	3.44	2.55	0.012**	—
Return on Assets (ROA)	−2.13	1.98	−1.08	0.281 ns	—

*** $p < 0.01$; ** $p < 0.05$; ns = not significant. $R^2 = 0.73$; F-prob = 0.003; −2LL = 842.16; AIC = 860.16; BIC = 1,119.01.

Source: Authors' computation from SPSS Mixed Model Analysis (2026).

4.5 Discussion of Findings

4.5.1 Auditor Size and Audit Report Lag (H_{01})

Auditor size exerts a negative and highly significant effect on ARL (β = −13.84; t = −3.36; $p < 0.01$), leading to the rejection of H_{01}. This finding indicates that firms audited by Big 4 audit firms release their audited financial statements approximately 14 days earlier than comparable firms audited by non-Big 4 auditors, ceteris paribus. In a regulatory environment where the compliance threshold is 90 days, this effect is not merely statistically significant but practically meaningful; a 14-day reduction represents a 15% compression in the reportable window for a firm averaging 96 days.

The result is theoretically in consonance with agency theory's characterization of Big 4 auditors as superior monitoring mechanisms (Jensen & Meckling, 1976; Fama & Jensen, 1983): by deploying specialized audit teams, standardized methodologies and advanced audit technologies, Big 4 firms complete complex engagements more efficiently and resist managerial pressure for reporting delays. Signaling theory further reinforces this outcome in that the reputational capital of Big 4 firms creates strong incentives to deliver timely, accurate reports, as any association with delayed or qualified reports imposes disproportionate reputational costs (Spence, 1973; Owusu-Ansah & Leventis, 2006). Empirically, this finding is consistent with Rusmin and John (2017) in Indonesia, Habib and Bhuiyan (2011) in Bangladesh, and Asuzu (2020) in Nigeria, while extending evidence to the previously underexplored Nigerian industrial goods sector.

The practical implication is significant. In Nigeria's institutional environment characterized by enforcement deficits, information asymmetry and limited alternative monitoring mechanisms, the auditor-size effect on timeliness is likely to be more pronounced than in developed markets, because Big 4 auditors constitute one of the most reliable external governance checks on managerial reporting discretion (Bushman & Smith, 2001; Yang et al., 2025). The finding provides strong support for governance reforms that incentivize the engagement of large, reputable audit firms by listed industrial goods companies.

4.5.2 Audit Fees and Audit Report Lag (H_{02})

Audit fees exhibit a positive and statistically significant relationship with ARL ($\beta = 6.45$; $t = 2.22$; $p < 0.05$), leading to the rejection of H_{02}. This result indicates that higher audit fees are associated with longer audit reporting delays. This finding, while seemingly counterintuitive, is theoretically coherent and empirically consistent with the audit production theory framework. In the industrial goods sector, higher audit fees reflect genuine engagement complexity where large asset bases requiring extensive physical verification, complex inventory valuation under IFRS, significant capital expenditure with contested classification judgments and heightened regulatory compliance requirements all necessitate more extensive audit procedures, extended fieldwork and deeper professional judgment exercises that naturally increase completion time.

This interpretation aligns directly with Inneh et al. (2022) who find a positive fee-timeliness relationship in Nigerian listed non-financial firms and attribute it to the workload effect of complex, high-risk engagements. Ali et al. (2025) further demonstrate on Tehran Stock Exchange data that audit adjustments, a driver of higher fees correspond to longer reporting delays as auditors invest more time in resolving contested accounting estimates. Critically, this finding should not be interpreted as evidence of audit inefficiency in a market like Nigeria where audit quality concerns are pervasive, extended audit procedures associated with higher fees may actually represent an appropriate increase in audit rigor that enhances the reliability of the final report, even at the cost of additional reporting delay. Rohmah et al. (2024) highlight this quality-timeliness trade-off, noting that ARL weakens the positive relationship between audit fees and audit quality only when fees reflect complexity rather than independence impairment.

4.5.3 Auditor Tenure and Audit Report Lag (H_{03})

Auditor tenure exhibits a positive but statistically insignificant relationship with ARL ($\beta = 1.09$; $t = 1.25$; $p = 0.213$) and H_{03} is accordingly not rejected. This finding indicates that the length of the auditor-client relationship does not exert a meaningful net influence on financial reporting timeliness among listed industrial goods firms in Nigeria. The result reflects the well-documented theoretical tension inherent in auditor tenure where efficiency gains from familiarity and reduced learning curves are offset by independence concerns and the potentially more cautious verification approach adopted by long-tenured auditors to manage litigation risk and regulatory scrutiny.

This outcome is consistent with Onatuyeh et al. (2024) who find insignificant tenure effects in Nigerian listed non-financial firms and with the broader empirical literature's characterization of the tenure-timeliness relationship as context-dependent and ambiguous. The countervailing efficiency and independence mechanisms appear to be approximately balanced in the Nigerian industrial goods context, generating a null net effect. From a policy standpoint, this finding suggests that mandatory auditor rotation policies increasingly emphasized by Nigerian regulatory bodies as a means of strengthening independence may not significantly affect reporting timeliness in either direction, allowing regulators to calibrate rotation requirements around independence and quality objectives without concern for adverse timeliness consequences.

4.5.4 Auditor Industry Specialisation and Audit Report Lag (H_{04})

Auditor industry specialisation records a negative and statistically significant effect on ARL ($\beta = -9.62$; $t = -2.48$; $p < 0.05$), leading to the rejection of H_{04}. This indicates that firms audited by industry-specialist auditors release their financial statements approximately 10 days earlier than those audited by non-specialists. In the context of Nigeria's 90-day reporting window, this represents a practically meaningful improvement in reporting timeliness.

The result is theoretically grounded in both signaling theory and audit expertise theory. Industry-specialist auditors possess sector-specific knowledge of accounting treatments unique to the industrial goods sector including revenue recognition for long-term construction contracts, impairment testing for large asset bases, environmental provision estimation and complex inventory valuation that enables them to design more targeted audit programmes, identify key risk areas more rapidly and resolve complex audit judgments more efficiently than generalist auditors (Balsam et al., 2003; Habib & Bhuiyan, 2011). This specialisation advantage is particularly pronounced in capital-intensive sectors where audit complexity is structurally elevated; consistent with Khan et al.'s (2023) demonstration that industry specialisation specifically curtails the positive effect of organizational complexity on ARL. Empirically, the finding corroborates Rusmin and John (2017) in Indonesian manufacturing and Ezat et al. (2021) in Saudi Arabia, extending the specialisation-timeliness relationship to Nigeria's industrial goods sector for the first time.

4.5.5 Control Variables

Among the control variables, firm size (FSIZ) exerts a negative and significant effect on ARL ($\beta = -4.31$; $p < 0.01$), consistent with resource-based theory: larger firms maintain more sophisticated accounting systems, dedicated finance teams and stronger internal controls that facilitate faster audit completion. Leverage (LEV) exerts a positive and significant effect ($\beta = 8.76$; $p < 0.05$), reflecting the heightened audit scrutiny associated with elevated financial risk including going concern assessments, debt covenant compliance verification and increased substantive testing of liability balances. Profitability (ROA) is negatively but insignificantly related to ARL ($\beta = -2.13$; $p = 0.281$) suggesting that performance differences do not materially affect reporting speed once audit quality and firm structural characteristics are controlled for; a finding that diverges from Yogi and Muhammad (2022) but is consistent with Inneh et al. (2022) in the Nigerian context.

5. CONCLUSION, RECOMMENDATIONS AND FUTURE RESEARCH

5.1 Summary and Conclusion

This study has examined the effect of audit quality operationalized through four proxies: auditor size, audit fees, auditor tenure and auditor industry specialization on the financial reporting timeliness of 12 listed industrial goods firms on the Nigerian Exchange Group over the ten-year period 2016-2025. Using a balanced panel of 120 firm-year observations and applying linear mixed-effects regression to control for unobserved firm-level heterogeneity, the study generates the following principal findings: (i) auditor size exerts a negative and significant effect on ARL, indicating that Big 4 auditors deliver substantially shorter reporting delays; (ii) audit fees are positively and significantly associated with ARL, reflecting complexity-driven audit duration; (iii) auditor tenure exerts a positive but insignificant effect, consistent with the countervailing efficiency and independence mechanisms inherent in long-tenure relationships; and (iv) auditor industry specialisation significantly reduces ARL, confirming that sector-specific audit expertise is a critical determinant of reporting timeliness in capital-intensive industries.

These findings make several contributions to the audit quality and financial reporting timeliness literature. Theoretically, they provide the most comprehensive joint empirical test of four audit quality dimensions in Nigeria's industrial goods sector, extending the scope of prior Nigerian studies beyond the financial services sector and demonstrating the sector-specificity of the audit quality–timeliness relationship. Methodologically, the application of linear mixed-effects regression addresses the unobserved heterogeneity limitation of prior pooled OLS studies, generating more reliable causal estimates. Practically, the findings provide an evidence base for governance reforms specifically targeted at the industrial goods sector's reporting timeliness challenge, with quantified effect sizes that enable cost-benefit calibration of regulatory interventions. The study's R^2 of 0.73 confirms that audit quality is a substantive, not merely incidental determinant of reporting timeliness in this market.

In the broader context of emerging market financial governance, the study demonstrates that institutional mechanisms particularly audit quality play a disproportionately important role in constraining reporting delays in environments where alternative monitoring mechanisms are weak. As Nigeria continues to deepen its capital market, attract foreign portfolio investment and align corporate governance standards with international best practice, improving financial reporting timeliness through audit quality enhancement represents one of the most practically tractable pathways to strengthening market confidence and informational efficiency.

5.2 Policy Recommendations

On the basis of the empirical findings, the following recommendations are addressed to key stakeholders in Nigeria's audit and financial reporting ecosystem:

Listed industrial goods firms should prioritize the engagement of Big 4 and industry-specialist auditors. The finding that auditor size reduces ARL by approximately 14 days and industry specialisation by approximately 10 days provides a quantified governance case for directing audit appointments toward firms with demonstrable industrial sector expertise. Boards and audit committees should include auditor specialisation credentials as an explicit criterion in audit tender evaluation frameworks, rather than defaulting to cost minimization. On their part, small and medium audit firms may consider strategic mergers to form larger, more resourceful entities with enhance capabilities, broader expertise and diversified professional competencies, thereby positioning themselves more effectively to compete with the established Big 4 audit firms.

Financial Reporting Council of Nigeria (FRCN) and Nigerian Exchange Group (NGX) should strengthen enforcement of the 90-day reporting deadline with graduated sanctions that reflect the systemic governance consequences of delayed disclosure. The finding that 177-day lags occur within the sample indicates that current penalties are insufficient deterrents. Disclosure-based enforcement requiring firms to publicly disclose the reasons for reporting delays in excess of 90 days would impose reputational costs that existing financial penalties do not, consistent with the signaling theory prediction that market-based sanctions are particularly effective in emerging capital markets with high information asymmetry.

Securities and Exchange Commission (SEC) should develop and publish a framework for audit quality assessment in the industrial goods sector, including minimum standards for industry-specific audit competence. The empirical finding that industry specialisation significantly reduces ARL provides a regulatory rationale for requiring audit engagement partners to demonstrate sector-relevant qualifications and experience as a condition of audit appointment for listed industrial goods firms. This recommendation is consistent with the International Auditing and Assurance Standards Board's (IAASB) guidance on audit quality indicators and the audit quality framework being developed by IFAC.

Audit firms should invest in industry-specific training, data analytics capabilities and digital audit tools targeted at the industrial goods sector's distinctive audit challenges including asset verification, inventory valuation and environmental provision assessment. The positive fee-ARL relationship suggests that audit complexity is a structural driver of delay in this sector; technology-enabled audit procedures that reduce manual verification time without compromising audit quality represent the most sustainable pathway to improving timeliness without sacrificing audit rigor.

Regarding auditor tenure, industrial goods firms should implement a structured auditor rotation policy consistent with existing NCCG 2018 guidance to prevent the complacency and independence risks associated with excessively long tenure, while preserving the efficiency benefits of moderate familiarity. The insignificance of the tenure effect on ARL suggests that rotation can be implemented primarily as an independence-strengthening measure without adverse consequences for reporting timeliness. Rotation periods of five to seven years for audit partners, with firm rotation at ten-year intervals, represent a balanced governance compromise consistent with international best practice.

5.3 Limitations and Directions for Future Research

This study is subject to limitations that should be acknowledged. First, the reliance on secondary data constrains the analysis to publicly disclosed information, which may not fully capture qualitative dimensions of audit quality including audit partner tenure, team composition or actual audit hours. Second, while the mixed-effects model controls for unobserved firm heterogeneity, potential endogeneity in the auditor-selection decision is not explicitly addressed; future studies should apply instrumental variable (IV) or two-stage estimation approaches to strengthen causal identification. Third, the study's single-sector, single-country focus limits the generalizability of findings beyond the Nigerian industrial goods context.

Future research should extend this study in four directions. First, cross-sectoral comparisons encompassing the financial services, consumer goods and oil and gas sectors would enable assessment of whether the audit quality-timeliness relationship is sector-invariant or fundamentally shaped by industry characteristics. Second, cross-country panel studies incorporating multiple Sub-Saharan African markets would support assessment of regional generalizability and enable identification of institutional moderators including regulatory quality, legal enforcement and capital market development that condition the effect of audit quality on reporting timeliness. Third, qualitative and mixed-methods research would provide deeper insights into the processes through which audit quality attributes translate into timeliness outcomes, complementing the quantitative causal estimates generated here. Fourth, future studies should examine the potential moderating role of audit committee characteristics including financial expertise, independence and meeting frequency on the audit quality-timeliness relationship, consistent with the emerging governance literature on audit committee effectiveness (Okoro et al., 2024; Anaba et al., 2024).

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INFRASTRUCTURE DEFICITS AS BARRIERS TO FDI ATTRACTION IN SIERRA LEONE: A STRATEGIC ANALYSIS

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ABSTRACT

Infrastructure is the physical grammar of an investment climate. Where roads, power, ports and networks function, capital can read the country; where they fail, even generous incentives struggle to persuade. This article examines how infrastructure deficits constrain foreign direct investment (FDI) inflows into Sierra Leone and asks what strategic, institutional and financing choices could convert those deficits into a source of competitive advantage. Drawing on an integrated theoretical framework that combines Dunning's eclectic paradigm, new institutional economics, growth pole theory, endogenous growth theory, transaction cost economics and Porter's diamond model, the study analyses secondary data from the World Bank, UNCTAD, the African Development Bank, the International Monetary Fund and Sierra Leonean government sources, supported by comparative case analysis of eight African economies. The evidence shows that deficits in electricity, transport, logistics and digital connectivity raise production and transaction costs, compress the set of viable investment projects towards enclave extractives, and depress investor confidence through unreliability rather than absence alone. Institutional fragmentation, weak project preparation capacity and constrained fiscal space compound the physical deficits. Comparative analysis of Rwanda, Ghana, Kenya, Senegal, Mauritius, Botswana, Morocco and Namibia indicates that credible sequencing, independent regulation and disciplined public-private partnership frameworks matter as much as capital expenditure. The article proposes a phased infrastructure investment roadmap centred on power sector recovery, gateway efficiency, corridor rehabilitation and digital backbone completion, financed through a blended architecture that respects debt sustainability limits. It contributes an integrated institutional and strategic account of infrastructure-constrained FDI in a small post-conflict economy and sets an agenda for firm-level empirical research.

Keywords: foreign direct investment, infrastructure, Sierra Leone, investment promotion, public-private partnerships, institutional economics, Africa

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List of Abbreviations.

Abbreviation	**Meaning**
AfDB	African Development Bank
AGL	Africa Global Logistics
AIDI	Africa Infrastructure Development Index
AUDA-NEPAD	African Union Development Agency (New Partnership for Africa's Development)
B-READY	Business Ready (World Bank benchmarking framework)
CLSG	Côte d'Ivoire, Liberia, Sierra Leone and Guinea power interconnector
ECOWAS	Economic Community of West African States
EDSA	Electricity Distribution and Supply Authority
EGTC	Electricity Generation and Transmission Company
EPZ	Export processing zone
EWRC	Electricity and Water Regulatory Commission
FDI	Foreign direct investment
GDP	Gross domestic product
GSMA	GSM Association
ICA	Infrastructure Consortium for Africa
ICT	Information and communication technology
IDA	International Development Association
IEA	International Energy Agency
IFC	International Finance Corporation
IMF	International Monetary Fund
IPP	Independent power producer
IRENA	International Renewable Energy Agency
ITU	International Telecommunication Union
LPI	Logistics Performance Index
MCC	Millennium Challenge Corporation
MNE	Multinational enterprise
MTNDP	Medium-Term National Development Plan
MW	Megawatt
NATCOM	National Telecommunications Commission
NIB	National Investment Board
NIE	New institutional economics
NPPA	National Public Procurement Authority
OECD	Organisation for Economic Co-operation and Development
OLI	Ownership, location and internalisation
PESTLE	Political, economic, social, technological, legal and environmental
PIDA	Programme for Infrastructure Development in Africa
PPP	Public-private partnership
SDG	Sustainable Development Goal
SEZ	Special economic zone
SGR	Standard gauge railway
SLIEPA	Sierra Leone Investment and Export Promotion Agency
SLIHS	Sierra Leone Integrated Household Survey
SLPA	Sierra Leone Ports Authority
SLRA	Sierra Leone Roads Authority

SWOT	Strengths, weaknesses, opportunities and threats
TEU	Twenty-foot equivalent unit
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
USD	United States dollar
WAPP	West African Power Pool

1. INTRODUCTION

Sierra Leone presents a puzzle familiar to students of African political economy. The country holds world-class mineral deposits, one of the finest natural harbours on the West African coast, abundant water resources, arable land and a young population, yet it attracts a thin and volatile stream of foreign direct investment concentrated in extractive enclaves (UNCTAD, 2023; International Monetary Fund [IMF], 2024). Annual FDI inflows have fluctuated between roughly 130 million and 950 million United States dollars since 2010, with the peak years driven almost entirely by iron ore projects that later collapsed with commodity prices and the Ebola epidemic of 2014 to 2016 (UNCTAD, 2017; World Bank, 2021a). The country's endowments have not translated into the diversified, employment-rich investment that national plans envisage (Government of Sierra Leone, 2019, 2024).

This article argues that infrastructure deficits sit at the centre of that puzzle. Electricity access reached only about a third of the population by the mid-2020s, among the lowest rates in the world, and supply to firms remains unreliable and expensive (World Bank, 2023a; International Energy Agency [IEA] et al., 2023). Less than a tenth of the classified road network is paved, and much of the feeder network becomes impassable in the rainy season (African Development Bank [AfDB], 2020; Sierra Leone Roads Authority [SLRA], 2021). The international airport at Lungi is separated from the capital by a wide estuary, an arrangement with few parallels among trading nations. Broadband penetration and digital public services lag regional peers despite the landing of the Africa Coast to Europe submarine cable in 2011 (International Telecommunication Union [ITU], 2023; GSMA, 2024). Each deficit alone would deter marginal investors. Together they define the country's investment climate.

The costs are not abstractions. A manufacturer in Wellington runs diesel generators through the outage hours and prices the fuel into goods that must then compete with imports landed through a faster port elsewhere. A cocoa exporter watches quality premiums evaporate in trucks stranded on a washed-out feeder road. A hotel investor tours the peninsula beaches, then calculates what the estuary crossing does to arrival numbers, and builds in Senegal instead. Multiplied across thousands of decisions, most of them never announced, these calculations are the mechanism by which infrastructure writes itself into the FDI statistics.

The relationship between infrastructure and FDI is one of the more robustly established regularities in the empirical literature. Cross-country and panel studies consistently find that infrastructure quality raises the probability of investment entry, the volume of inflows and the diversity of sectors attracted, particularly in developing regions where deficits are binding (Asiedu, 2002, 2006; Khadaroo & Seetanah, 2010; Kinda, 2010; Donaubauer et al., 2016; Blonigen, 2005). Infrastructure operates through several channels at once. It lowers production costs directly, reduces the transaction costs of moving goods, people and information, widens effective market size, and signals state capacity to investors who cannot observe governance directly (Calderón & Servén, 2010; Straub, 2011). For a small economy such as Sierra Leone, whose domestic market alone cannot justify most efficiency-seeking investment, the quality of connections to regional and global markets is decisive (World Bank, 2020; United Nations Economic Commission for Africa [UNECA], 2020; Limão & Venables, 2001).

Yet the Sierra Leonean case has received little systematic scholarly treatment. Existing work tends to examine single sectors, single projects or the aggregate investment climate without integrating physical, institutional and financing dimensions into one strategic analysis (Pushak & Foster, 2011; UNCTAD, 2010). Policy documents, including the Medium-Term National Development Plan 2024 to 2030 and its predecessor, diagnose the deficits candidly but stop short of the comparative and theoretical grounding a coherent strategy requires (Government of Sierra Leone, 2019, 2024). This article addresses that gap.

The study pursues ten research objectives. It examines the current state of national infrastructure across transport, energy, information and communication technology (ICT), water and industrial facilities. It analyses how those deficits shape FDI decisions and which sectors impose the greatest constraints. It assesses infrastructure quality against international indicators, examines investor perceptions, evaluates financing mechanisms, and compares Sierra Leone with selected African economies whose trajectories offer usable lessons. It analyses institutional coordination and public-private partnership (PPP) implementation, evaluates logistics performance, and develops strategic recommendations organised into short, medium and long-term horizons.

Three claims organise the argument. First, the binding constraint on FDI in Sierra Leone is not the absence of infrastructure but its unreliability and cost, which raise the risk premium investors attach to every project and push the composition of inflows towards sectors, chiefly mining, that can internalise their own infrastructure. Second, physical deficits are inseparable from institutional ones: fragmented mandates, weak project preparation, thin regulatory capacity and constrained fiscal space reproduce the deficits that deter investment. Third, the country's position is remediable. Comparative experience from Rwanda, Mauritius, Senegal and Morocco shows that small and initially poor economies can convert focused infrastructure programmes into durable investment advantages within a generation, provided sequencing is disciplined and institutions are credible (Behuria, 2018; Zafar, 2011; AfDB, 2023a).

The article proceeds as follows. Section 2 develops the integrated theoretical framework. Section 3 reviews the global, African and Sierra Leonean literature and identifies gaps. Section 4 sets out the methodology. Sections 5 to 7 present the infrastructure, FDI and institutional analyses. Section 8 offers comparative analysis against eight African economies. Section 9 examines financing mechanisms. Section 10 conducts the strategic analysis, including PESTLE, SWOT and Porter's five forces assessments, and evaluates the policy framework. Section 11 discusses the findings against theory and comparative evidence. Section 12 presents recommendations and a phased investment roadmap. Section 13 concludes with contributions and a future research agenda.

2. THEORETICAL FRAMEWORK

No single theory captures the relationship between infrastructure and FDI in a small post-conflict economy. The framework developed here integrates twelve complementary lenses, each contributing a distinct mechanism, and closes by showing how they combine into the conceptual model in Figure 1.

2.1 Dunning's Eclectic (OLI) Paradigm

Dunning's eclectic paradigm holds that firms invest abroad when they possess ownership advantages, when a location offers advantages worth internalising, and when internalisation beats licensing or trade (Dunning, 1988; Dunning & Lundan, 2008; Buckley & Casson, 1976). Infrastructure enters chiefly through the L pillar. Reliable power, functioning ports and dense networks are classic location advantages; their absence removes a country from the feasible set for most efficiency-seeking and market-seeking investment, leaving only resource-seeking projects whose location is fixed by geology (Dunning, 2000). Sierra Leone's FDI profile, dominated by mining, is precisely what the paradigm predicts for an economy whose location advantages are limited to immobile natural assets.

The paradigm also predicts the margin on which policy can act. Ownership advantages belong to firms and internalisation choices follow from market failures largely beyond a host state's reach, but location advantages are created, and the internalisation literature since Buckley and Casson (1976) treats infrastructure services as among the few location variables a government can move within a planning horizon. Empirically, the sensitivity of location choice to infrastructure was established early for efficiency-seeking manufacturing investment (Wheeler & Mody, 1992; Cheng & Kwan, 2000), which is exactly the class of investment Sierra Leone's plans seek and its infrastructure currently screens out.

2.2 New Institutional Economics

New institutional economics (NIE) insists that the rules of the game, formal and informal, determine economic performance (North, 1990; Williamson, 2000). Infrastructure is produced, regulated and maintained through institutions: procurement systems, utilities, regulators and contract enforcement. Where institutions are weak, infrastructure investment is delayed, overpriced or stranded, and the physical deficit becomes a symptom of an institutional one (Acemoglu & Robinson, 2012; Rodrik et al., 2004). NIE also explains why investors read infrastructure as a signal: a state that keeps the lights on demonstrates capabilities that no investment brochure can.

Rodrik et al. (2004) put the point at its strongest: institutions trump geography and openness in explaining income differences, and infrastructure sits on the causal path because institutions determine whether roads are maintained, utilities collect revenue and contracts survive elections. For a post-conflict state, the signalling channel carries extra weight. Investors discount official assurances heavily where state capacity is uncertain, but they cannot discount an operating grid or a functioning port; physical performance is the costliest and therefore the most credible signal available.

2.3 Transaction Cost Economics

Following Coase (1937) and Williamson (1985), transaction cost economics locates the costs of using markets in search, bargaining and enforcement. Poor infrastructure inflates every category. Unreliable roads raise inventory holdings and spoilage; power outages force firms into self-generation at multiples of grid tariffs; slow ports add days of demurrage and uncertainty that no tariff schedule records (Straub, 2011; World Bank, 2023b). Transaction cost reasoning also illuminates PPP design, since long-lived, asset-specific infrastructure contracts are acutely vulnerable to hold-up and renegotiation where credible commitment is absent (Guasch et al., 2014).

2.4 Growth Pole Theory

Perroux (1955) argued that growth appears at poles of concentrated activity and spreads through linkages. The modern application is the corridor, special economic zone (SEZ) and port-city complex, where co-located infrastructure creates agglomeration economies that isolated projects cannot (Zeng, 2015). For Sierra Leone, growth pole logic argues against spreading scarce capital thinly and for concentrating investment where mining, agriculture and the Freetown gateway intersect.

2.5 Endogenous Growth Theory

Endogenous growth models treat knowledge, human capital and public capital as engines of sustained growth rather than exogenous gifts (Romer, 1990; Lucas, 1988; Barro, 1990). Infrastructure is a form of public capital whose services enter private production functions; the seminal empirical demonstration is Aschauer (1989), refined for developing regions by Calderón and Servén (2010). The theory implies that infrastructure investment does not merely attract FDI but raises the return to every complementary investment, including the human capital that multinationals demand.

2.6 Infrastructure-Led Development Theory

A related body of work treats infrastructure as a deliberate development strategy rather than a passive input, drawing on East Asian experience where states built ahead of demand to shape comparative advantage (Ansar et al., 2016; Foster & Briceño-Garmendia, 2010). The approach carries risks of white elephants and debt distress, which the financing analysis in Section 9 takes seriously, but it explains why waiting for demand to justify infrastructure condemns latecomers to permanent disadvantage.

2.7 Public Goods Theory

Much infrastructure is non-rivalrous over ranges of use and difficult to price, generating under-provision by private markets (Samuelson, 1954; Ostrom, 1990). The theory clarifies the boundary question at the heart of PPP policy: which layers of infrastructure are genuinely public goods requiring state provision, and which are club or private goods, such as container terminals and telecommunications, where private capital and user charges can carry the load (Engel et al., 2014).

2.8 Network Economics

Infrastructure exhibits network externalities: the value of a road, a grid or a data network rises with the number of connected nodes (Katz & Shapiro, 1985; Economides, 1996). Network economics explains threshold effects observed in the empirical literature, where infrastructure only begins to attract FDI once connectivity crosses a critical mass, and it warns that fragmented, unconnected projects yield little (Donaubauer et al., 2016).

2.9 Competitive Advantage Theory and the Porter Diamond

Porter (1990) relocated competitiveness from natural endowments to created advantages. In the diamond model, factor conditions include infrastructure explicitly, and the other determinants, demand conditions, related industries and firm rivalry, all depend on it indirectly. The model reframes Sierra Leone's task: minerals are inherited, but logistics performance, power reliability and digital capability are created, and it is created factors that anchor investment once resources deplete (Porter, 1998).

2.10 Spatial Economics

The new economic geography formalises how transport costs, scale economies and factor mobility determine where activity locates (Krugman, 1991; Fujita et al., 1999). High internal transport costs fragment Sierra Leone into small, poorly integrated markets, keeping agricultural surplus regions disconnected from the port and suppressing the agglomeration that would attract manufacturing FDI. Spatial reasoning underpins the corridor prioritisation in Section 12.

2.11 Investment Climate Theory

The investment climate approach, associated with the World Bank's enterprise survey programme, treats FDI decisions as responses to the whole bundle of costs, risks and barriers facing firms (World Bank, 2005; Dollar et al., 2005). Its virtue is empirical discipline: it measures what firms actually report. Enterprise surveys for Sierra Leone repeatedly rank electricity, transport and access to finance among the top constraints, providing the demand-side evidence used in Section 5 (World Bank, 2017, 2023b).

2.12 Public Value and Governance Theory

Finally, governance and public value theory ask how public organisations create outcomes citizens and investors value, stressing legitimacy, operational capacity and authorising environments (Moore, 1995; Fukuyama, 2013). Investment promotion agencies and infrastructure authorities succeed not merely by existing but by sustaining coalitions that protect long-lived projects from political cycles, a condition examined in the institutional analysis of Section 7.

2.13 An Integrated Model

The twelve lenses combine into the conceptual framework shown in Figure 1. Infrastructure deficits, conditioned by institutions and financing constraints, operate through cost, risk, market access and agglomeration channels on investor decisions, which determine FDI volume and composition. FDI in infrastructure itself feeds back to ease the original deficit, creating the possibility of a virtuous circle that policy can either ignite or forfeit.

The lenses assign the framework's variables to owners. Firms control ownership and internalisation choices; markets set commodity prices and capital costs; but the state controls the location variables, the institutions that produce them and the sequencing among them. The framework is therefore not merely descriptive; it is a map of policy leverage, and the empirical sections that follow test whether Sierra Leone's observed FDI pattern matches the map's predictions before Section 12 uses the map to route the response.

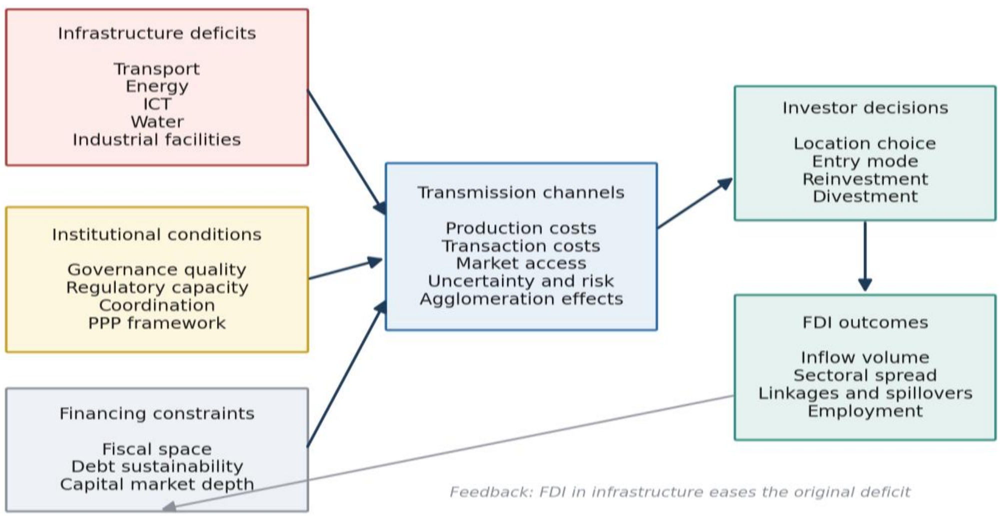

Figure 1. Conceptual framework linking infrastructure deficits, institutions and FDI outcomes. Source: Author's construction.

3. LITERATURE REVIEW

3.1 Global Literature

Infrastructure and economic growth. The macroeconomic literature converges on a positive, sizeable contribution of infrastructure to growth, with the strongest effects in capital-scarce economies. Aschauer (1989) opened the modern debate; Calderón and Servén (2010) estimated that infrastructure development explained a substantial share of growth differentials within Africa, echoing earlier findings by Ndulu (2006) and Ajakaiye and Ncube (2010); Ansar et al. (2016) supplied the caution, documenting cost overruns and stranded assets when project selection is politicised. Meta-analytic and survey work confirms heterogeneity by sector and quality of governance (Straub, 2011; Estache & Garsous, 2012). Timilsina et al. (2020) find output elasticities of public capital clustering around 0.1 to 0.2 for developing countries, largest for electricity and transport.

Infrastructure and competitiveness. The World Economic Forum's Global Competitiveness Index treats infrastructure as a basic pillar, and successive editions place most low-income African economies, Sierra Leone included, in the bottom decile (Schwab, 2019). The Logistics Performance Index similarly links trade competitiveness to gateway and corridor quality (Arvis et al., 2023), and the trade literature quantifies the channel: poor infrastructure accounts for a large share of Africa's transport cost disadvantage, each day of export delay acts as a tariff, and trade facilitation reform raises export performance measurably (Limão & Venables, 2001; Djankov et al., 2010; Portugal-Perez & Wilson, 2012). Firm-level evidence shows infrastructure inadequacy depressing total factor productivity and export participation across African manufacturing (Dethier et al., 2011; Escribano et al., 2010).

Infrastructure and FDI. The FDI-specific literature is now extensive. Early location studies established infrastructure among the strongest FDI determinants in developing countries (Wheeler & Mody, 1992; Cheng & Kwan, 2000), findings consolidated in Blonigen's (2005) survey. Asiedu (2002, 2006) established that infrastructure, alongside openness and institutions, drives FDI to Africa, and that natural resource dependence can crowd out diversified inflows. Khadaroo and Seetanah (2010) demonstrated transport infrastructure effects in African panels. Kinda (2010) used firm-level data to show that physical infrastructure problems reduce the probability of foreign ownership. Donaubauer et al. (2016) built comprehensive infrastructure indices and found robust FDI effects, strongest for telecommunications. Recent work extends the finding to digital infrastructure and greenfield project counts (UNCTAD, 2021, 2023).

Infrastructure financing. A parallel literature examines how the developing world can close a financing gap estimated for Africa at 68 to 108 billion dollars annually (AfDB, 2018). Gutman et al. (2015) mapped external flows; the Infrastructure Consortium for Africa tracks commitments annually (ICA, 2018); Engel et al. (2014) provide the economics of PPPs; the World Bank (2018) benchmarks PPP procurement frameworks across countries; Guasch et al. (2014) document renegotiation risks; and the blended finance literature assesses the leverage and pitfalls of concessional capital mobilising private funds (OECD, 2018, 2023). Sovereign debt research warns that infrastructure ambitions collide with post-pandemic debt distress across low-income countries (IMF, 2023a).

Digital, green and resilient infrastructure. Newer strands examine broadband as general-purpose infrastructure with measurable growth and inclusion effects (Hjort & Poulsen, 2019; World Bank, 2016), the greening of infrastructure portfolios under climate constraints (OECD, 2023; IEA, 2022, 2023; IRENA, 2023), and resilience economics showing that every dollar of resilient design saves multiples in avoided losses (Hallegatte et al., 2019). Governance scholarship ties the whole together: infrastructure outcomes track procurement integrity, regulatory independence and planning capability more closely than they track spending (Flyvbjerg, 2014; Collier et al., 2016).

3.2 African Literature

Country experiences supply the comparative raw material for Section 8; the literature is summarised here.

Rwanda rebuilt from conflict through deliberate state-led infrastructure and institutional investment, with the Rwanda Development Board integrating promotion, facilitation and aftercare in a single agency; electricity access rose from around 10 per cent in 2010 to more than half of households by the mid-2020s (Behuria, 2018; World Bank, 2023a). Behuria's (2018) careful reading warns against naive emulation: Rwandan performance rests on a centralised political settlement that disciplines agencies and tolerates long payback periods, conditions that must be built rather than assumed. The transferable elements are organisational, a single accountable promotion agency, published service standards and aftercare that treats existing investors as the best marketing channel, and these travel better than the political settlement does. **Ghana** shows both the promise of energy sector expansion and the fiscal peril of take-or-pay power contracts that produced large arrears (Eshun & Amoako-Tuffour, 2016; IMF, 2023b). After the crippling load-shedding of the mid-2010s, known locally as dumsor, Ghana contracted emergency capacity on terms that later converted excess capacity charges into a fiscal burden measured in points of GDP. The episode is directly relevant to Sierra Leone's Karpowership arrangement: emergency power is a bridge, and bridges that become permanent become debts. **Kenya** leveraged mobile connectivity and the standard gauge railway debate illustrates the tension between transformational ambition and debt sustainability (Wekesa et al., 2016; Wissenbach & Wang, 2017). **Ethiopia** pursued infrastructure-led industrialisation through industrial parks and hydropower, achieving manufacturing FDI growth but exposing foreign exchange and political risks (Oqubay, 2015; Zeng, 2015; UNCTAD, 2019). **Morocco** built Tanger Med into a top-twenty container port and an automotive export platform, the continent's clearest demonstration that created gateway advantages attract efficiency-seeking FDI (AfDB, 2023a; UNCTAD, 2024). The Moroccan sequence deserves attention: the port, the free zones, the motorway and rail connections and the vocational training institutes were planned as one product and delivered under an empowered special agency, after which Renault, Stellantis and their supplier networks arrived. Infrastructure created the location advantage; the eclectic paradigm did the rest. **Botswana** converted mineral rents into infrastructure and stability through credible institutions (Acemoglu et al., 2003). **Mauritius** graduated from sugar dependence to services through early export processing zones, air access and telecommunications reform (Zafar, 2011; Subramanian & Roy, 2003). **Senegal** combined a new airport, toll motorway and the Diamniadio pole with an improving PPP framework (AfDB, 2023a; World Bank, 2022a). Studies of **Côte d'Ivoire** and **Tanzania** reinforce the corridor and port efficiency themes (Arvis et al., 2023; UNECA, 2020).

Abidjan's post-2012 recovery combined port expansion with an aggressive national development plan that lifted Côte d'Ivoire to among West Africa's largest FDI recipients, while Tanzania's central corridor investments illustrate how port dwell time reductions propagate inland as lower prices and faster stock turns (Djankov et al., 2010). **Senegal's** experience since 2014 under the Plan Sénégal Émergent is perhaps the most instructive near-peer case: a new airport at Diass, the Dakar toll motorway, the Diamniadio urban pole and independent power procurement together shifted the country's investment narrative within a decade, without Rwandan-style political centralisation (World Bank, 2022a; AfDB, 2023a).

The lessons for Sierra Leone recur across cases: consolidate investment promotion institutionally; sequence power before industrial ambition; treat gateways as competitive products, not administrative territories; keep PPP fiscal commitments transparent; and protect long-lived projects from electoral cycles.

3.3 Sierra Leone Literature

Scholarship on Sierra Leone's infrastructure is thin, fragmented and dominated by grey literature. On **roads**, SLRA reports and AfDB appraisal documents describe a classified network of roughly 11,000 kilometres of which under ten per cent is paved, with maintenance financing chronically short (SLRA, 2021; AfDB, 2020). On **electricity,** studies document among the world's lowest access rates, heavy dependence on the seasonal Bumbuna hydropower plant, high system losses and costly emergency generation contracts (World Bank, 2021b; Ministry of Energy, 2021; Blimpo & Cosgrove-Davies, 2019). The **water** literature records low piped coverage and severe urban shortfalls in Freetown (World Bank, 2022b). Work on the **port** notes the paradox of an excellent natural harbour with historically modest throughput, partially remedied by the 2011 container terminal concession to Bolloré, later AGL (Sierra Leone Ports Authority [SLPA], 2021; World Bank, 2020). The **Lungi airport** question, whether to bridge the estuary, relocate the airport or improve ferry links, has generated consultancy studies but little peer-reviewed analysis (Ministry of Transport and Aviation, 2020). The colonial **railway** closed in the 1970s; the only operating line is the private Tonkolili to Pepel iron ore railway (Pushak & Foster, 2011; IMF, 2022). On **digital infrastructure**, ITU and GSMA data show internet use below a third of the population despite submarine cable access, with the national fibre backbone incomplete (ITU, 2023; GSMA, 2024; World Bank, 2016; Ministry of Communication, Technology and Innovation, 2021). Emerging work covers the special economic zone programme and investment climate reforms, including the creation of the National Investment Board in 2023 to consolidate the Sierra Leone Investment and Export Promotion Agency and the PPP unit (Government of Sierra Leone, 2023; UNCTAD, 2010; Pushak & Foster, 2011).

3.4 Gaps in the Literature

Four gaps stand out. First, no study integrates physical, institutional and financing analysis of Sierra Leone's infrastructure within a single FDI framework. Second, comparative positioning against African peers is rarely systematic. Third, firm-level evidence on how infrastructure enters investor decisions in Sierra Leone specifically is nearly absent outside enterprise survey tabulations. Fourth, the strategic literature offers lists of projects but little sequencing logic grounded in theory. This article addresses the first, second and fourth gaps directly and defines the third as the priority for future research.

A fifth, quieter gap concerns measurement. Sierra Leone's infrastructure statistics are scattered across agency reports with inconsistent definitions, no unified asset register and irregular condition surveys. Until the state can count its assets, it cannot maintain them, price them or pledge them; the statistical gap is itself an infrastructure gap, and closing it is a research contribution as much as an administrative one (Pushak & Foster, 2011).

The chronology of the national literature also matters. The most systematic assessment of Sierra Leone's infrastructure remains the continental diagnostic of 2011, produced when reconstruction was the frame and before the iron ore boom, Ebola, the pandemic and the current reform wave. A country cannot steer the 2020s on a 2011 map, and part of this article's purpose is to redraw it from the scattered sources now available.

4. METHODOLOGY

4.1 Research Philosophy and Approach

The study adopts a pragmatist philosophy. Pragmatism treats research questions, not methodological allegiance, as the arbiter of design, and it suits policy-oriented inquiry where the object is usable knowledge (Creswell & Creswell, 2018). The approach is abductive: the twelve theoretical lenses supply expectations, the evidence is examined against them, and the framework is refined where the Sierra Leonean case resists the theory.

4.2 Research Design and Mixed Methods Justification

The design is a convergent mixed methods study built on secondary sources. Quantitative analysis of infrastructure and FDI indicators establishes magnitudes and trends; qualitative documentary and comparative policy analysis explains mechanisms and institutional context. Neither strand suffices alone. Indicator movements without institutional context invite spurious inference, while institutional narrative without magnitudes invites anecdote. Convergence across strands, and across independent data producers, is the study's principal warrant for its claims (Yin, 2018).

The mixed design also matches the object of study. Infrastructure-FDI relationships are simultaneously quantitative, magnitudes of access, cost and flow, and institutional, matters of mandate, credibility and sequencing that no indicator captures. A purely econometric design applied to one small country would face fifteen usable annual observations interrupted by civil war reconstruction, an epidemic and a pandemic; a purely qualitative design would forfeit the discipline of comparative measurement. Combining documentary depth with indicator breadth is not methodological hedging but the only design proportionate to the question.

4.3 Data Sources

Quantitative data are drawn from the World Bank World Development Indicators and Enterprise Surveys, UNCTAD World Investment Reports and FDI statistics, the AfDB Africa Infrastructure Development Index, the World Bank Logistics Performance Index, IMF Article IV consultations and debt sustainability analyses, IEA and Tracking SDG 7 energy datasets, and ITU and GSMA digital indicators. National sources include the Bank of Sierra Leone annual reports and balance of payments statistics, Statistics Sierra Leone surveys and the 2021 mid-term census, budget documents of the Ministry of Finance, the Medium-Term National Development Plans, and sectoral reports of the SLRA, SLPA, the Ministry of Energy, the Electricity Distribution and Supply Authority (EDSA) and the National Investment Board. Where national and international series diverge, both are reported and the divergence noted.

4.4 Analytical Techniques

Five techniques are combined. Trend analysis and descriptive statistics characterise infrastructure stocks, access rates and FDI flows over 2010 to 2024. Documentary analysis interrogates legislation, plans and agency reports for mandates, capacity and coordination. Comparative policy analysis positions Sierra Leone against eight African economies selected for relevance rather than similarity: two small success cases (Mauritius, Botswana), two post-conflict reformers (Rwanda, Senegal as regional benchmark), two regional anchors (Ghana, Kenya), one gateway exemplar (Morocco) and one resource-dependent comparator (Namibia). A case study logic treats Sierra Leone as a critical case for infrastructure-constrained FDI in small post-conflict economies (Yin, 2018). Finally, the study synthesises regression evidence from the existing econometric literature rather than estimating new models, since national time series are too short and structurally broken (war, Ebola, pandemic) for credible country-specific estimation.

4.5 Strategic Analysis Tools

Section 10 applies PESTLE analysis, SWOT analysis, Porter's five forces adapted to locational competition for FDI, value chain analysis, gap analysis, institutional capacity assessment, political economy analysis, risk analysis and scenario analysis. These tools are heuristics, not tests; their value lies in forcing completeness and surfacing interactions that sectoral analysis misses.

4.6 Reliability, Validity and Limitations

Reliability is pursued through exclusive reliance on citable, publicly available sources and a transparent audit trail from claim to source. Construct validity rests on triangulation across at least two independent data producers for every central empirical claim. External validity is bounded: findings generalise analytically to small, coastal, resource-rich post-conflict economies, not statistically to all developing countries.

Limitations are material and are stated plainly. Sierra Leonean administrative data are patchy, with gaps and revisions in FDI, road condition and electricity statistics. Several international benchmarking exercises have been discontinued or revised, including the Doing Business series withdrawn in 2021 and replaced by B-READY (World Bank, 2024), which truncates comparability. Sectoral FDI decomposition relies on central bank and UNCTAD estimates with acknowledged coverage weaknesses, so shares reported in Section 6 are indicative. The absence of purpose-built investor interviews means investor perceptions are inferred from surveys and revealed behaviour rather than elicited directly. None of these limitations, singly or together, threatens the direction of the findings, but they properly widen the uncertainty around magnitudes.

Two mitigations are applied throughout. Point estimates that vary across sources are reported as ranges with the qualifier approximate, and no argumentative step depends on the precision of any single number; the analysis is constructed so that its conclusions survive plausible revisions to every statistic cited. Where a figure is the author's estimate rather than a source's, the tables say so explicitly.

4.7 Ethical Considerations

The study uses only public secondary data and involves no human subjects. Care is taken to attribute all data and interpretations, to represent government documents fairly, and to distinguish the author's judgements from source claims. Comparative assessments avoid league-table triumphalism; the purpose is learning, not ranking for its own sake.

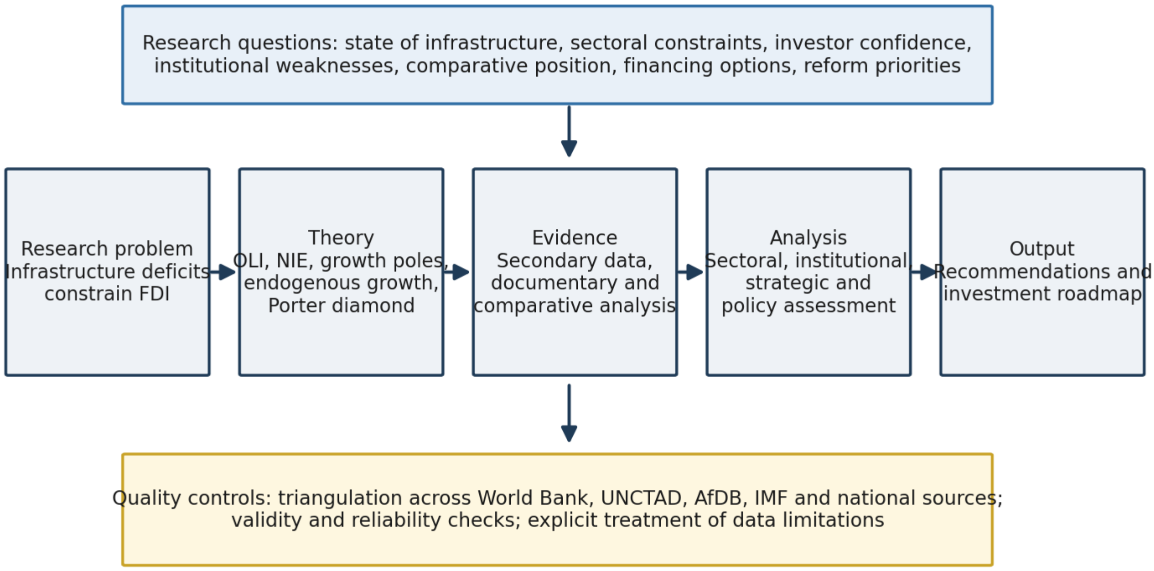

Figure 2. Research framework. Source: Author's construction.

5. THE STATE OF INFRASTRUCTURE IN SIERRA LEONE

This section answers the first research question by sector, combining stock, quality, cost and reliability evidence. Table 1 sets the headline indicators against regional averages.

Table 1 Headline Infrastructure Indicators, Sierra Leone and Comparators, circa 2023

Indicator	Sierra Leone	Sub-Saharan Africa	Rwanda	Ghana	Source
Electricity access (% population)	33	52	56	86	World Bank (2023a)
Installed generation capacity (MW)	approx. 250	n/a	approx. 380	approx. 5,400	Ministry of Energy (2021); IEA (2023)
Paved roads (% classified network)	under 10	approx. 25	28	39	SLRA (2021); AfDB (2020)
Individuals using the internet (%)	approx. 30	37	34	70	ITU (2023)
LPI overall score (1 to 5)	2.0 to 2.2	2.4	2.8	2.7	Arvis et al. (2023)
Access to basic water (% population)	64	65	62	88	World Bank (2022b)
AIDI composite score	approx. 14	27	24	32	AfDB (2023b)

Note. Figures are the most recent comparable estimates and are indicative; national and international sources differ at the margin. AIDI is the Africa Infrastructure Development Index.
Source: Author's compilation.

5.1 Transport Infrastructure

Road network. The classified network comprises roughly 11,300 kilometres: about 8 per cent paved trunk roads radiating from Freetown towards Makeni, Bo, Kenema, Kono and the Guinea and Liberia borders, with the remainder gravel and earth roads of variable condition (SLRA, 2021; AfDB, 2020; Pushak & Foster, 2011). Condition surveys suggest under half of the network is in good or fair condition, and the feeder road system, which carries agricultural produce to markets, deteriorates sharply in the May to October rains. Urban roads in Freetown suffer acute congestion on a constrained peninsula, with a single arterial spine and informal settlement encroachment. The Road Maintenance Fund, financed by fuel levies, persistently collects less than the network's preservation requirement, so rehabilitation gains erode within years (Ministry of Finance, 2023). Bridge infrastructure on secondary routes includes ageing single-lane structures with weight limits that force freight detours.

Rail. The national narrow-gauge railway closed in 1974. The only operating line is the private 200-kilometre Tonkolili to Pepel railway, rehabilitated for iron ore evacuation and closed to general freight (Pushak & Foster, 2011; IMF, 2022). The country therefore moves all non-mineral freight by road, an unusual and costly position for bulk agriculture.

Ports. Freetown's Queen Elizabeth II Quay sits on one of the world's largest natural deep-water harbours. The 2011 container terminal concession brought new cranes, yard investment and berth deepening, lifting productivity materially, yet throughput remains modest at under 150,000 twenty-foot equivalent units annually, reflecting the small economy and thin shipping connectivity rather than terminal capacity (SLPA, 2021; World Bank, 2020). Landside constraints, customs dwell times and congestion on the single port access road erode much of the waterside gain. The Pepel and Nitti ports serve dedicated mineral exports.

Airports and the Lungi question. Freetown International Airport at Lungi received a new privately built terminal in 2023, improving passenger experience. The structural problem is geographic: the airport lies across the wide Sierra Leone River estuary from the capital, so arriving investors face a sea crossing or a long road detour. The arrangement raises the effective cost of every business visit and has become a symbol, fairly or not, of accessibility risk (Ministry of Transport and Aviation, 2020). Options studied include a fixed bridge crossing, estimated in the billions of dollars, airport relocation, and upgraded ferry services; none has reached financial close.

The economics of the choice deserve honest statement. A fixed link is transformational but would rank among the largest single investments in national history, with tolls unlikely to cover capital costs at current traffic; relocation strands the new terminal investment; improved ferries are cheap, quick and reversible but leave the perception problem partially intact. The disciplined answer is sequencing: regulate and brand a reliable fast-ferry service now, publish a rigorous cost-benefit study of the fixed link with independent traffic forecasts, and let the medium-term decision follow the evidence rather than the announcement cycle (Flyvbjerg, 2014). Air connectivity itself is thin, with a limited set of international carriers and no significant air freight capacity, which binds horticulture and tourism alike.

Logistics, borders and corridors. Sierra Leone's Logistics Performance Index scores have hovered near the bottom decile globally, with weakest ratings on tracking, timeliness and customs (Arvis et al., 2023). Border posts at Gbalamuya (Guinea) and Gendema (Liberia) suffer limited joint processing, though ECOWAS corridor initiatives are gradually introducing coordinated management (UNECA, 2020).

Freight economics summarise the transport deficit in a single price: moving a container inland in West Africa costs multiples of the equivalent movement in Asia, and Sierra Leone sits at the expensive end of an expensive region. Trucking markets are thin and ageing, axle-load enforcement is weak, which accelerates the very road deterioration that raises trucking costs, and there is no rail alternative to discipline road pricing. The circularity is the point: bad roads make expensive trucking, expensive trucking overloads trucks, overloading destroys roads. Breaking such circles is what corridor programmes, weighbridges included, are for. Table 2 summarises the transport picture.

Table 2. Road and Logistics Indicators, Sierra Leone

Indicator	Value	Year	Source
Classified road network (km)	approx. 11,300	2021	SLRA (2021)
Paved share of network (%)	8 to 10	2021	SLRA (2021)
Network in good or fair condition (%)	approx. 45	2020	AfDB (2020)
Container throughput (TEU)	approx. 130,000	2021	SLPA (2021)
LPI rank (of 139)	bottom decile	2023	Arvis et al. (2023)
Operational railway (km, private)	approx. 200	2022	IMF (2022)

Note. TEU is twenty-foot equivalent unit. Source: Author’s compilation

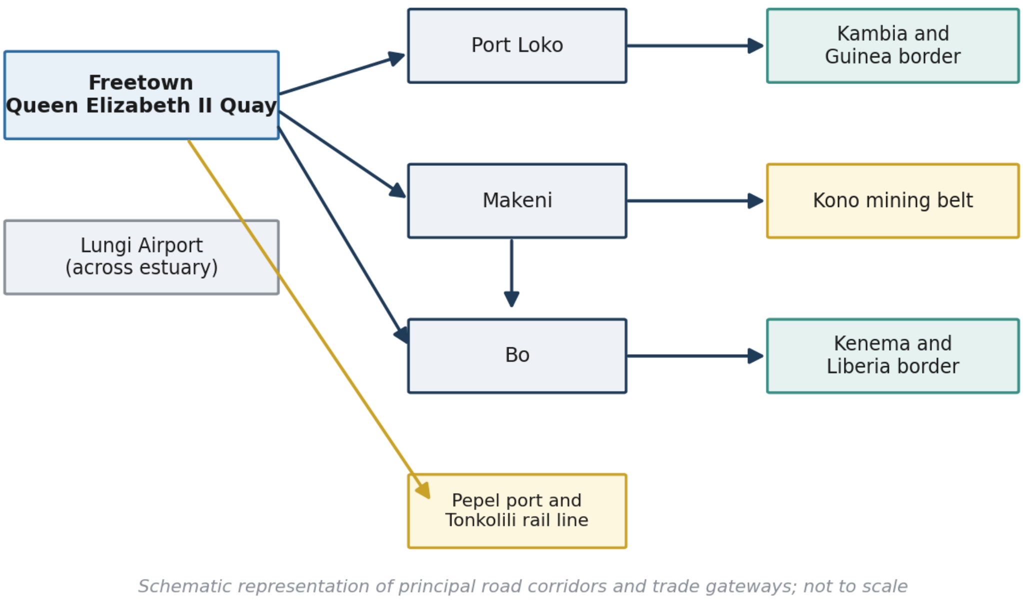

Figure 3. Schematic of principal trade corridors and gateways. Source: Author’s construction.

5.2 Energy Infrastructure

Electricity is the most frequently cited constraint in every firm survey conducted in Sierra Leone (World Bank, 2017, 2023b). Access reached roughly a third of the population by 2023, from around 11 per cent in 2010, but remains heavily urban; rural access is in single digits in several districts (World Bank, 2023a; Statistics Sierra Leone, 2020, 2022). Installed capacity of roughly 250 megawatts is dominated by the 50-megawatt Bumbuna hydropower station, whose output falls sharply in the dry season, supplemented by thermal plants, the Karpowership floating plant contracted after the 2018 supply crisis, and small solar facilities (Ministry of Energy, 2021; IMF, 2024). The Bumbuna II expansion and the CLSG transmission interconnector linking Côte d'Ivoire, Liberia, Sierra Leone and Guinea under the West African Power Pool and the ECOWAS regional master plan (ECOWAS, 2019) offer routes to firm, cheaper supply, but domestic transmission and distribution remain the bottleneck: system losses near 35 to 40 per cent, among the highest in Africa, and EDSA's weak revenue collection undermine sector finances (World Bank, 2021b).

The loss figure repays decomposition. Technical losses from an aged, overloaded network account for perhaps a third; the remainder is commercial, unmetered connections, meter tampering and billing failures, which means the largest single source of new power available to Sierra Leone is not a plant but a metering and enforcement programme. Every percentage point of loss reduction is generation the country does not have to finance, and it is available at a fraction of the cost per delivered kilowatt-hour of new capacity (World Bank, 2021b; Blimpo & Cosgrove-Davies, 2019). Renewable options strengthen the case for sequencing supply after network repair: utility-scale solar costs have fallen to levels that undercut thermal generation across the region, and mini-grid concessions can serve district capitals decades before grid extension becomes economic (IRENA, 2023; IEA, 2022).

The consequences for investors are direct. Enterprise survey respondents report multiple outages weekly, losses from outages of several per cent of annual sales, and widespread reliance on diesel self-generation at unit costs several times the grid tariff (World Bank, 2023b; Blimpo & Cosgrove-Davies, 2019). Industrial tariffs, when grid power is available, are high by regional standards because of thermal and emergency contracting costs. Table 3 assembles the sector indicators; Figure 4 plots the access trajectory against Rwanda, whose 2010 starting point resembled Sierra Leone's.

Table 3: Electricity Sector Indicators, Sierra Leone

Indicator	Value	Source
Access, national (% population, 2023)	approx. 33	World Bank (2023a)
Access, rural (%)	approx. 5 to 8	Statistics Sierra Leone (2022)
Installed capacity (MW)	approx. 250	Ministry of Energy (2021)
Hydropower share of generation (wet season)	over 60%	Ministry of Energy (2021)
Transmission and distribution losses (%)	35 to 40	World Bank (2021b)
Firms citing electricity as major constraint (%)	approx. 60	World Bank (2023b)
Typical outage frequency	several per week	World Bank (2023b)

Note. Source: Author's compilation.

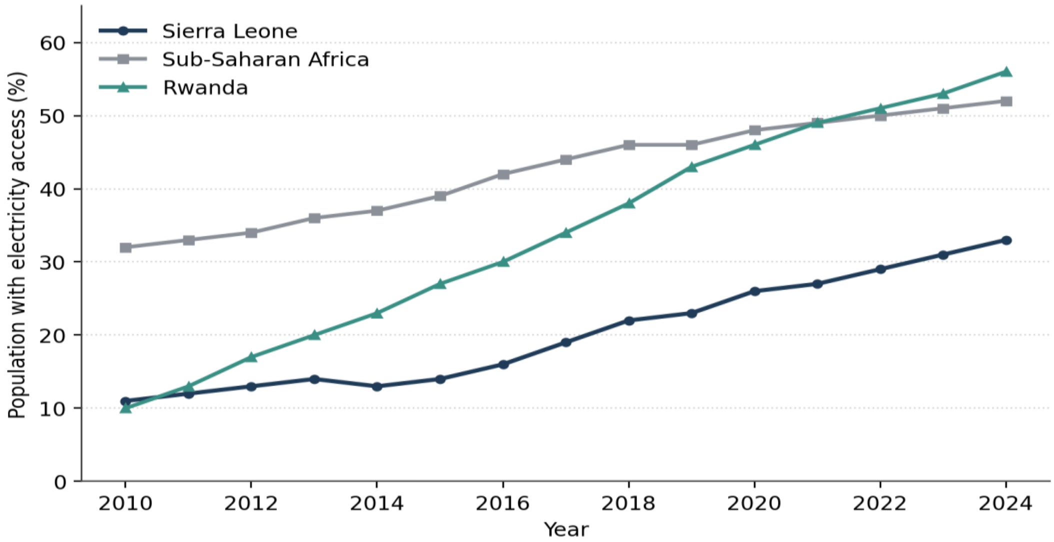

Figure 4. Electricity access trends, 2010 to 2024, Sierra Leone, Rwanda and Sub-Saharan Africa. Source: Author's compilation from World Bank (2023a) and IEA et al. (2023); recent values are provisional.

5.3 ICT and Digital Infrastructure

Sierra Leone landed the Africa Coast to Europe submarine cable in 2011 and has since built segments of a national fibre backbone, yet digital outcomes lag the connectivity endowment. Mobile penetration is broad but internet use stood near 30 per cent of individuals in 2023, data costs absorb a high share of average incomes, and 4G coverage thins quickly outside major towns (ITU, 2023; GSMA, 2024). The backbone is incomplete and insufficiently redundant, so wholesale prices stay high and outages propagate. Digital government has advanced, with the Directorate of Science, Technology and Innovation and the Ministry of Communication, Technology and Innovation driving e-services, digital identification and a national digital development strategy, but data centre capacity is minimal and cybersecurity institutions are nascent (Ministry of Communication, Technology and Innovation, 2021). A small but genuine fintech and start-up ecosystem has emerged around mobile money, whose usage grew rapidly after 2015 (Bank of Sierra Leone, 2021, 2023). For investors, the binding digital constraints are reliability, price and skills rather than raw international bandwidth.

The economic stakes of closing the digital gap are better evidenced than for any other sector, because the arrival of submarine cables created a natural experiment: Hjort and Poulsen (2019) show fast internet raised employment and firm entry across African connection zones, with effects concentrated in higher-skill services. For Sierra Leone the implication is that the marginal digital dollar belongs in the domestic backbone, wholesale open access rules and power for towers, since international capacity already exists and sits underused. Digital public infrastructure, identification, payments and registries, compounds the return by cutting the transaction costs of every other interaction between firms and the state (World Bank, 2016; UNCTAD, 2021).

5.4 Water Infrastructure

Access to at least basic water services covers about two thirds of the population, but piped supply is far scarcer, and the Guma Valley system serving Freetown suffers chronic dry-season shortfalls against a population that has multiplied since the system's mid-century design (World Bank, 2022b). Industrial water supply is unreliable enough that beverage and agro-processing investors typically sink boreholes and build treatment in-house, another self-supply tax on investment. Sanitation coverage is low, and climate change intensifies both flood risk, tragically demonstrated by the 2017 Freetown landslide, and dry-season scarcity (Government of Sierra Leone, 2024).

Water interacts with every other deficit. Hydropower output depends on catchment management; road washouts follow drainage failures; industrial siting follows water as surely as it follows power. The sector also illustrates the maintenance pathology at its starkest: Guma Valley's core assets date from the 1960s, and the cheapest cubic metre available to Freetown is the one currently lost to leakage, exactly as the cheapest kilowatt is the one lost to the distribution network. Non-revenue water and non-revenue electricity are the same disease in different pipes.

5.5 Industrial and Agricultural Infrastructure

Purpose-built industrial infrastructure is scarce. The first-generation special economic zone at Newton, developed with private participation, hosts light processing but has struggled with power and road links, illustrating network economics in miniature: a zone without reliable connections is a fenced field (Farole & Akinci, 2011; Zeng, 2015). Warehousing is limited and cold chain capacity minimal, which forecloses horticulture and fisheries export models that depend on temperature-controlled logistics. Mining infrastructure is comparatively developed but private and dedicated. Agricultural infrastructure, feeder roads, storage, irrigation, remains the weakest layer, keeping post-harvest losses high and rural investment thin (Ministry of Planning and Economic Development, 2021).

The zone experience worldwide is unforgiving on this point: Farole and Akinci (2011) find that African zones underperform Asian ones chiefly because power, transport and administration inside the fence never matched the promise, not because the instrument is wrong. The policy conclusion for Sierra Leone is a rule rather than a project: no zone phase should be launched until dedicated power, water, fibre and an all-season road connection are contractually secured, because a partially serviced zone damages the country's promotional credibility more than no zone at all.

5.6 Summary of Deficits

Three cross-cutting features define the deficit. First, unreliability dominates absence: firms can usually obtain power, transport and connectivity at some price, but variance is what destroys business models. Second, self-supply is the hidden tariff: generators, boreholes, satellite links and private jetties convert public infrastructure failure into private fixed costs that only large or extractive investors can absorb, which mechanically skews FDI composition. Third, the deficits interact: the zone without power, the port behind a congested road, the cable without a backbone. Network economics predicts exactly this pattern of stranded partial investments, and it argues for the bundled, corridor-based response developed in Section 12.

6. FDI IN SIERRA LEONE: TRENDS, COMPOSITION AND INFRASTRUCTURE SENSITIVITY

6.1 Historical Trends

Sierra Leone's FDI history divides into four phases. Before 2010, inflows were modest and dominated by diamonds and rutile. Between 2010 and 2013, two large iron ore projects, African Minerals at Tonkolili and London Mining at Marampa, drove inflows to a peak near 950 million dollars in 2011, among the highest FDI-to-GDP ratios in Africa at the time (UNCTAD, 2017; Bank of Sierra Leone, 2015). The 2014 to 2016 collapse combined the Ebola epidemic with the iron ore price crash; both flagship mines entered administration, and inflows fell below 150 million dollars

(World Bank, 2021a). Since 2017, inflows have partially recovered into a range of roughly 250 to 400 million dollars annually, sustained by mining rehabilitation under new owners, energy projects and telecommunications, but remain volatile and undiversified (UNCTAD, 2023, 2024, 2025; IMF, 2024). Figure 5 plots the series; Table 4 provides the sectoral decomposition.

Two features of the series deserve emphasis. First, volatility is itself a cost: the swing of Sierra Leone's inflows relative to their mean exceeds that of every comparator examined in Section 7, and volatile inflows translate into volatile construction employment, revenue and foreign exchange, complicating macroeconomic management (Bank of Sierra Leone, 2023). Second, the recovery is compositionally thin. Announced greenfield projects outside mining remain few and small, and reinvested earnings, the component that signals investor satisfaction, contribute little, a pattern consistent with the aftercare weaknesses documented below. Relative to the size of the economy the ratios look more respectable, with FDI often exceeding 5 per cent of GDP in boom years, but that arithmetic reflects a small denominator more than a large numerator, and it is the level and mix of investment that build capacity, not the ratio. The trend series also carries a compositional footnote worth recording: mining rehabilitation at Tonkolili and Marampa under new ownership after 2017 restored flows without restoring diversification, so the headline recovery and the structural problem coexist in the same numbers (UNCTAD, 2016, 2023, 2025).

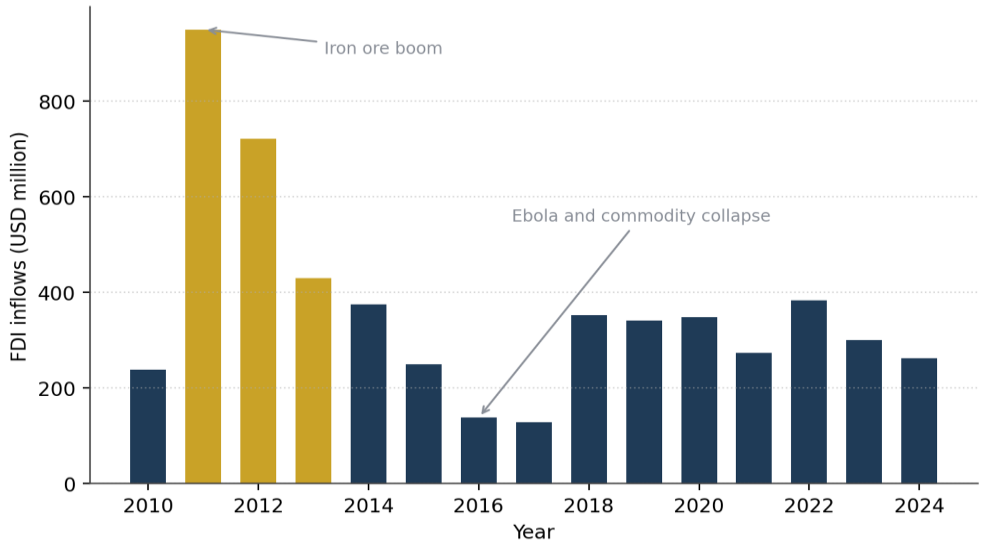

Figure 5. FDI inflows to Sierra Leone, 2010 to 2024. Source: Author's compilation from UNCTAD World Investment Report statistical annexes (UNCTAD, 2016, 2017, 2023, 2024); values are indicative and subject to revision.

Table 4 Indicative Sectoral Distribution of FDI Stock, Sierra Leone

Sector	Estimated share (%)	Infrastructure sensitivity
Mining and quarrying	approx. 52	Low: self-provides power, rail, port
Agriculture and agro-processing	approx. 14	High: feeder roads, power, cold chain
Energy	approx. 9	Constitutive: is infrastructure
Financial services	approx. 8	Medium: digital connectivity
ICT and telecommunications	approx. 6	Constitutive

Manufacturing	approx. 5	Very high: power, logistics
Tourism and hospitality	approx. 3	High: air access, roads, water
Construction and other	approx. 3	Medium

Note. Shares are the author's estimates from Bank of Sierra Leone (2023) balance of payments data and UNCTAD (2023) project information; coverage weaknesses make these indicative. Source: Author's compilation.

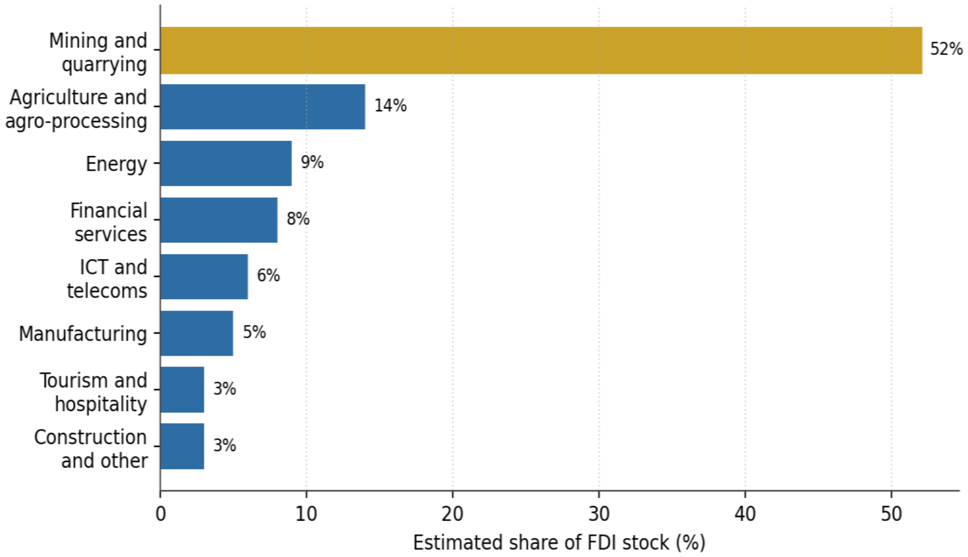

Figure 6. Estimated sectoral distribution of FDI stock. Source: Author's estimates from Bank of Sierra Leone (2023) and UNCTAD (2023).

6.2 How Infrastructure Enters Investment Decisions

The composition in Table 4 is the study's central stylised fact. More than half of FDI stock sits in a sector, mining, that is largely indifferent to public infrastructure because it builds its own. The sectors national plans prioritise for employment and diversification, manufacturing, agro-processing and tourism, are precisely the most infrastructure-sensitive and the least represented. This is the eclectic paradigm operating in reverse: with location advantages confined to geology, only geology-seeking capital arrives (Dunning & Lundan, 2008).

Investor perception evidence corroborates the mechanism. Enterprise surveys rank electricity, transport and access to finance as the leading obstacles (World Bank, 2017, 2023b). UNCTAD investment policy analysis and successive IMF Article IV consultations identify infrastructure and energy reliability among the principal impediments to diversification (UNCTAD, 2010; IMF, 2022, 2024). Regional evidence assembled in Section 3 shows the same ordering across African panels: reliability and connectivity predict non-resource FDI, while resource FDI tracks endowments (Asiedu, 2006; Kinda, 2010). Neighbouring comparison sharpens the point: Côte d'Ivoire and Senegal, with stronger gateways and power systems, attract several times Sierra Leone's inflows with a far more diversified composition (UNCTAD, 2024).

Revealed behaviour supplies a final line of evidence. Where investors have committed outside mining, they cluster in precisely the niches that minimise exposure to public infrastructure: telecommunications operators who build their own towers and power, breweries and cement plants with captive generation and boreholes, and fishing ventures using their own cold storage. The pattern is a market price on infrastructure failure, paid in the currency of foregone sectors.

Conversely, the investments the country most wants, out-grower agro-processing, garment assembly, business services, are those whose margins cannot absorb self-supply, and their absence is the deficit's most eloquent measurement.

6.3 Institutional Analysis

Physical deficits are administered into existence. This subsection assesses the institutions that plan, build, regulate and promote.

Investment promotion. The Sierra Leone Investment and Export Promotion Agency (SLIEPA), created in 2007, carried the promotion mandate with chronic underfunding and limited authority over other agencies. The National Investment Board (NIB) Act of 2023 consolidated SLIEPA and the PPP unit into a single body reporting at the centre of government, with one-stop-shop ambitions covering registration, licensing, land access and aftercare (Government of Sierra Leone, 2023). The reform follows the Rwandan and Mauritian template and is institutionally sound; its test is whether the NIB obtains real gatekeeping authority over incentives and PPPs rather than a coordination title (Behuria, 2018; Moore, 1995).

Planning and finance. The Ministry of Planning and Economic Development owns the Medium-Term National Development Plan and the public investment programme; the Ministry of Finance controls budgeting, debt and fiscal risk. The persistent gap lies between plan and budget: the MTNDP's infrastructure ambitions exceed available fiscal space several times over, and project selection has not always followed appraisal (IMF, 2024; Ministry of Finance, 2023). Public investment management assessments point to weak feasibility screening and a thin pipeline of bankable projects, the classic upstream failure that no financing instrument downstream can repair (IMF, 2023a).

Debt dynamics compound the constraint. With external debt service absorbing a growing share of thin revenues and the country assessed at high risk of distress, every non-concessional borrowing decision for infrastructure trades against future fiscal space, which is why the composition of finance matters as much as its volume and why Section 8 insists on concessionality, preparation quality and contingent liability discipline (IMF, 2024).

Sector agencies. The SLRA plans and procures roads while the Road Maintenance Fund finances upkeep; underfunded maintenance is the system's structural flaw. The unbundled power sector assigns generation and transmission to EGTC, distribution to EDSA, and regulation to the Electricity and Water Regulatory Commission (EWRC); EDSA's commercial losses are the sector's fiscal haemorrhage (World Bank, 2021b). The SLPA is both landlord and regulator at the port, a conflict the concession only partly resolves. The Civil Aviation Authority, the National Telecommunications Commission (NATCOM), the Environmental Protection Agency, the National Public Procurement Authority and the National Revenue Authority complete the regulatory perimeter, each competent in places, each understaffed, and none bound into a shared project pipeline.

Coordination and regulatory quality. Worldwide Governance Indicators place Sierra Leone below the regional mean on regulatory quality and government effectiveness, though ahead of fragile-state comparators on voice and stability (Kaufmann & Kraay, 2023). The practical symptom is familiar from NIE: every large project is renegotiated across multiple ministries with veto points and without a common appraisal standard, inflating transaction costs and signalling commitment risk to exactly the long-horizon investors infrastructure requires (Williamson, 2000; Collier et al., 2016). Table 5 maps responsibilities.

Table 5 Institutional Responsibilities for Infrastructure and Investment

Institution	Core mandate	Principal weakness
National Investment Board	Promotion, facilitation, PPP gatekeeping	Newness; authority untested
Ministry of Finance	Budget, debt, fiscal risk	Limited PPP liability monitoring
Ministry of Planning and Economic Development	MTNDP, public investment programme	Plan-budget gap
SLRA and Road Maintenance Fund	Road development and upkeep	Maintenance underfunding
Ministry of Energy, EGTC, EDSA, EWRC	Power policy, supply, regulation	Losses; utility finances
SLPA	Ports landlord and regulator	Role conflict; landside access
Civil Aviation Authority	Air transport oversight	Lungi access unresolved
MoCTI and NATCOM	Digital policy and regulation	Backbone completion; enforcement
NPPA	Procurement oversight	Capacity for complex contracts
EPA	Environmental licensing	Processing timelines

Note. Source: Author's compilation from statutes and agency reports.

The table's pattern is instructive: no single institution is the villain, and none is idle. The system fails between institutions, at the seams where a road project needs an environmental licence, a power connection, a procurement clearance and a budget line held by four different principals with four different clocks. Coordination failures of this kind are the textbook case for centre-of-government machinery, which is why the recommendations in Section 12 propose a standing infrastructure delivery council with a published pipeline rather than another restructuring of individual agencies (Fukuyama, 2013; Moore, 1995). International evidence adds a caution about investment promotion specifically: agencies succeed when they are professional, focused on a few priority sectors and measured on facilitation outcomes, and they fail when they become gatekeepers of discretionary incentives, a temptation the NIB's consolidated powers place squarely before it (James, 2013; UNCTAD, 2024).

7. COMPARATIVE ANALYSIS: SIERRA LEONE AGAINST AFRICAN PEERS

Comparison disciplines self-diagnosis, and continental frameworks from Agenda 2063 to the Programme for Infrastructure Development in Africa set the benchmarks against which national performance is read (African Union Commission, 2015; AUDA-NEPAD, 2020; AfDB, 2024). Eight economies are examined across infrastructure quality, FDI performance, reform experience, PPP practice, energy, digital capability, logistics and governance. Table 6 condenses the evidence; Figure 7 plots composite infrastructure scores.

Table 6: Comparative Positioning, circa 2023

Country	AIDI score	Electricity access (%)	LPI score	FDI inflows (USD bn, approx.)	Signature lesson
Mauritius	approx. 80	100	2.7	0.6	Services graduation via early EPZs and air access
Morocco	approx. 79	100	2.5	2.1	Gateway strategy: Tanger Med and export platforms
Botswana	approx. 40	75	2.8	0.5	Rents converted through credible institutions
Namibia	approx. 38	56	2.6	1.1	Port-led logistics positioning (Walvis Bay)
Ghana	approx. 32	86	2.7	1.3	Energy expansion; fiscal risk of power contracts
Kenya	approx. 29	76	2.8	0.8	Digital leapfrogging; SGR debt caution
Senegal	approx. 27	68	2.5	2.6	New gateway assets plus PPP framework
Rwanda	approx. 24	56	2.8	0.4	Institutional consolidation; access acceleration
Sierra Leone	approx. 14	33	2.0 to 2.2	0.3	Baseline case

Note. AIDI is the AfDB Africa Infrastructure Development Index (AfDB, 2023b); LPI from Arvis et al. (2023); FDI from UNCTAD (2024). Values are indicative. Source: Author's compilation.

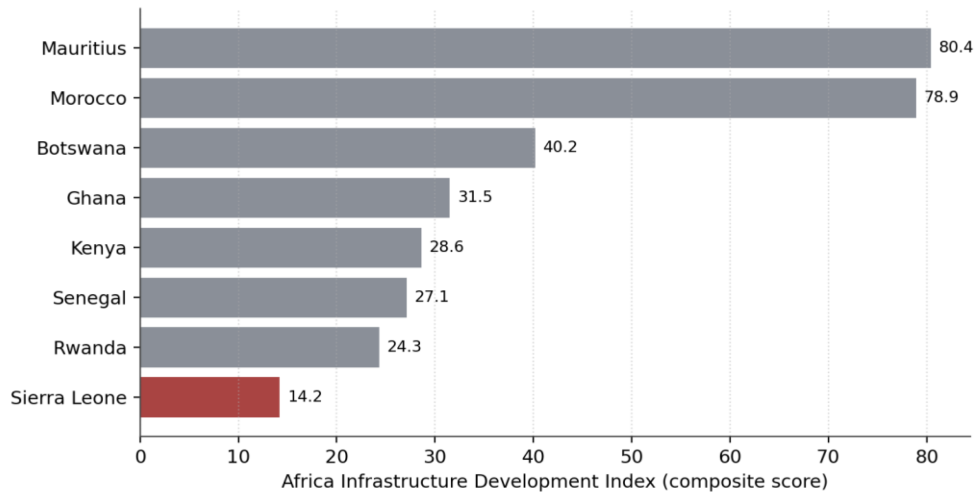

Figure 7. Africa Infrastructure Development Index, selected countries. Source: Author's compilation from AfDB (2023b); values approximate.

Five comparative lessons carry weight for Freetown. First, **institutional consolidation precedes physical catch-up**. Rwanda's Development Board and Mauritius's Economic Development Board gathered promotion, facilitation and PPP screening under single roofs with centre-of-government backing before their infrastructure indices moved; the NIB reform follows this sequence and should be resourced accordingly (Behuria, 2018; Zafar, 2011). Second, **gateways are products**. Morocco did not merely build Tanger Med; it marketed berth productivity, hinterland connections and zone integration as a package to automotive investors (AfDB, 2023a). Sierra Leone's natural harbour is a latent product awaiting the same treatment. Third, power **sequencing beats power ambition**. Ghana expanded capacity rapidly but through take-or-pay contracts that produced multi-billion-dollar arrears when demand lagged, a warning against contracting emergency capacity into permanence (IMF, 2023b; Eshun & Amoako-Tuffour, 2016). Rwanda's staged access programme, mixing grid densification with off-grid solar, offers the cheaper path. Fourth, **debt discipline is a competitiveness variable.** Kenya's standard gauge railway shows how a transformational asset can become a fiscal overhang that crowds out maintenance elsewhere (Wissenbach & Wang, 2017). Fifth, **governance is the multiplier**. Botswana's unremarkable geography and remarkable institutions attracted steadier investment than richer endowments elsewhere, a pattern the Ibrahim Index data confirm across the sample (Acemoglu et al., 2003; Mo Ibrahim Foundation, 2023).

The comparison also clarifies what Sierra Leone should not copy. Ethiopia-scale industrial park programmes presume power surpluses and administrative depth the country lacks; Mauritius's services model presumed education stocks built over decades. The usable frontier for the 2020s is Rwandan institutional practice plus Senegalese gateway investment at a scale the debt position permits.

Three further comparative observations refine the strategy. On **PPP practice**, Senegal and Kenya both learned to route unsolicited proposals through competitive challenge systems after early direct negotiations produced poor value; Sierra Leone can adopt the rule before, rather than after, paying the tuition (World Bank, 2018). On **digital infrastructure**, Kenya's experience shows regulation mattering more than construction: mobile money flourished under an enabling central bank posture years before fibre reached most counties, suggesting Sierra Leone's Bank-led payments liberalisation is a foundation to build on rather than a sideline (GSMA, 2024). On **ease of doing business reform**, the comparators that climbed fastest treated reform as a permanent bureaucratic function with named owners and published scorecards, not as a campaign; the B-READY successor framework rewards exactly this institutionalisation (World Bank, 2024).

Namibia completes the comparative set with a narrower but pointed lesson: Walvis Bay converted a modest port into a regional logistics proposition through corridor marketing and customs cooperation with landlocked neighbours, showing that gateway strategy is available to small economies that will never rival Durban or Tanger Med on volume. Freetown's natural harbour gives Sierra Leone a stronger physical starting point for the same play than Namibia ever held.

8. FINANCING INFRASTRUCTURE: INSTRUMENTS AND ARCHITECTURE

8.1 The Fiscal Starting Point

Sierra Leone entered the mid-2020s at high risk of debt distress, with revenue below a sixth of GDP, elevated inflation and currency depreciation raising external debt service (IMF, 2024). Public investment alone cannot close an infrastructure gap plausibly requiring several hundred million dollars annually for a decade. The financing question is therefore architectural: how to combine instruments so each does what it does best within debt limits.

8.2 The Instrument Set

Public investment and domestic revenue remain the foundation for non-commercial assets, feeder roads, rural water, resilience works. The efficiency agenda matters more than the volume agenda: public investment management reform can raise the output of existing spending by a third or more (IMF, 2023a).

Domestic revenue mobilisation is the quiet complement. At under a sixth of GDP, revenue cannot carry an infrastructure programme, and every point of GDP gained through tax administration, rationalised exemptions and property revenue is worth more than an equivalent point of borrowing because it arrives without debt service. The National Revenue Authority's publication of tax expenditure costs is the right first step towards pruning incentives that the FDI evidence says purchase little (National Revenue Authority, 2023; James, 2013). Earmarked instruments such as the fuel levy for road maintenance need rates and collection restored to preservation requirements.

Multilateral and bilateral development finance dominates current flows: World Bank IDA energy and water operations, AfDB corridor projects, the Millennium Challenge Corporation compact signed in 2024 targeting the power sector, and Islamic Development Bank transport finance (World Bank, 2023c; IMF, 2021; Millennium Challenge Corporation [MCC], 2024). Concessionally preserves debt space; the constraint is absorption and preparation capacity.

Public-private partnerships suit revenue-generating assets: the container terminal concession is the domestic proof of concept, and pipeline candidates include port expansion, independent power producers, toll-worthy road segments and data centre capacity. Two design disciplines are non-negotiable given global experience: competitive procurement rather than unsolicited proposals, and full disclosure of contingent liabilities in budget documents, since guarantees are debts in waiting (Engel et al., 2014; Guasch et al., 2014; World Bank, 2018, 2022c).

Blended, green and climate finance fit Sierra Leone's profile unusually well. High climate vulnerability qualifies adaptation projects for the Green Climate Fund and adaptation windows; renewable generation and mini-grids attract results-based finance; and blended structures can crowd private capital into solar independent power producers that pure commercial terms would price out (OECD, 2018, 2023; IEA, 2023; IRENA, 2023).

Capital market and diaspora instruments are longer-term options.

Green and climate instruments deserve a specific national strategy rather than opportunistic pursuit. Sierra Leone's vulnerability profile qualifies adaptation investments, drainage, coastal protection, climate-proofed corridors, for grant-heavy windows, while its renewable endowment qualifies mitigation projects for results-based payments; a small climate finance unit that packages projects to fund requirements would repay its cost many times over (OECD, 2023; Hallegatte et al., 2019).

Sequencing across instruments matters as much as choice among them. The realistic order for the coming decade runs: concessional and grant finance carries the core power and corridor programme while preparation capacity is built; PPPs carry the gateway, generation and digital assets where user revenues exist; blended structures bridge the projects between those categories; and market instruments arrive last, once a track record of performing assets exists to price them against. Attempting the sequence in reverse, bonds before bankable projects, PPPs before appraisal capacity, is the recorded route to expensive failure across the comparator set (Gutman et al., 2015; World Bank, 2018). Resilience economics argues these are not luxuries: designing assets for the climate they will actually face costs a few per cent more and avoids multiples in reconstruction, a lesson the 2017 Freetown disaster taught at terrible price. Domestic infrastructure bonds await deeper pension and insurance pools; diaspora bonds have worked where trust and marketing infrastructure exist (Plaza & Ratha, 2011); municipal finance for Freetown depends on property revenue reform already begun. Sovereign wealth accumulation from mineral revenues, on the Botswana pattern, is a discipline worth legislating before the next commodity upswing, not after. **Islamic finance** structures, sukuk in particular, match asset-backed infrastructure and diversify the investor base (IsDB experience across West Africa supports feasibility). **Carbon finance** can monetise forest protection and clean cooking at the margin.

Table 7 orders the instruments; Figure 8 sketches the architecture.

Table 7 Financing Instruments Matched to Asset Classes

Asset class	Primary instrument	Supporting instruments
Feeder roads, rural water, resilience	Public investment, concessional finance	Climate finance
Trunk roads and corridors	Concessional finance	Tolling on viable segments
Generation (hydro, solar IPPs)	PPPs with blended finance	Guarantees, results-based finance
Transmission and distribution	Concessional finance (MCC, IDA)	Utility performance contracts
Ports and terminals	Concessions	Landlord port investment
Digital backbone and data centres	Private and PPP	Universal service fund for rural
SEZs and industrial platforms	PPP and private developers	Public trunk connections

Note. Source: Author's construction.

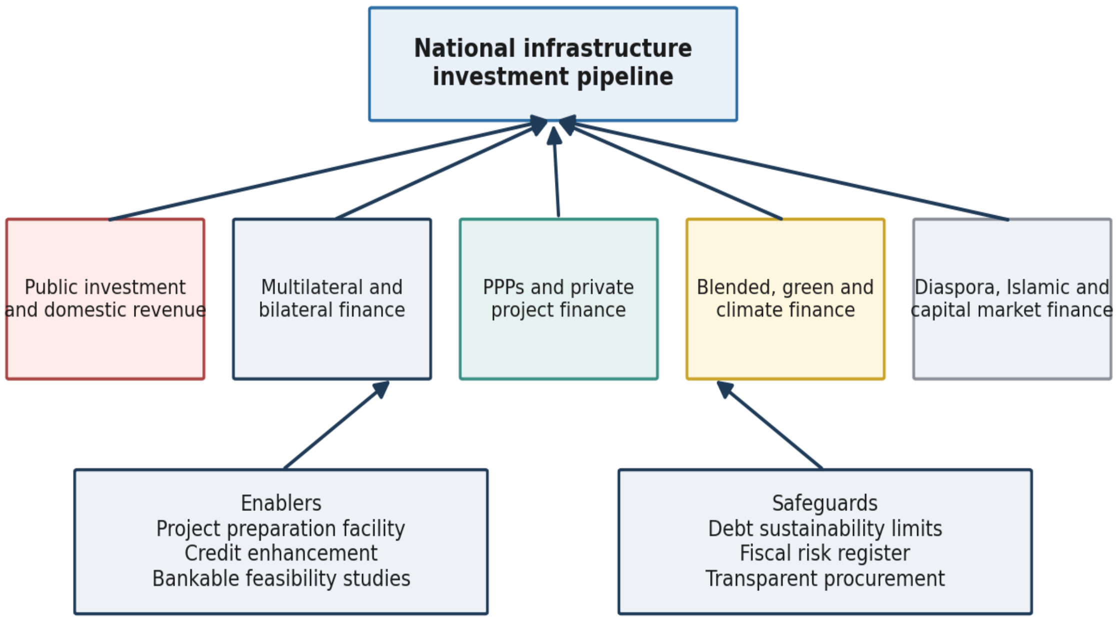

Figure 8. Blended financing architecture for the national pipeline. Source: Author's construction.

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8.3 The Binding Constraint Is Preparation

Across instruments, the scarce factor is not capital but bankable projects. Global infrastructure investors report pipelines, not funds, as the constraint in low-income markets (Gutman et al., 2015; ICA, 2018). A national project preparation facility, seeded by development partners and housed at the NIB with Ministry of Finance oversight, is therefore the highest-leverage financing reform available: modest millions spent on feasibility, safeguards and transaction advice unlock orders of magnitude more in committed capital.

Preparation capacity also changes the country's bargaining position. A government that arrives at the table with its own feasibility studies, traffic forecasts and risk allocations negotiates; one that depends on the counterparty's numbers accepts. The renegotiation literature shows the cost of the second posture, with a majority of concessions in weak-capacity environments renegotiated on terms favouring the concessionaire (Guasch et al., 2014). Every dollar in the preparation facility is therefore also an investment in negotiating power, and it is the one financing reform that improves the terms of all the others.

9. STRATEGIC ANALYSIS

9.1 PESTLE Analysis

Figure 9 summarises the macro-environment. **Politically,** Sierra Leone has sustained competitive elections and peaceful transfers since 2007, an underpriced asset in regional perspective, but investment programmes reset with electoral cycles and inter-agency rivalry persists. **Economically**, a narrow export base, inflation episodes and leone depreciation raise the cost of imported capital goods and the risk premium on long-dated contracts (IMF, 2024). **Socially**, a young, urbanising population offers labour and market growth while pressing services; human development indicators remain among the world's lowest, and skills gaps in engineering and technical trades constrain construction and operations (UNDP, 2023). **Technologically**, subsea capacity, mobile money growth and falling solar costs create leapfrog options unavailable a decade ago (GSMA, 2024; IRENA, 2023). **Legally**, the PPP Act 2014, the NIB Act 2023 and the land reform acts of 2022, which clarified customary tenure and land registration, have improved the formal framework; enforcement and judicial speed lag the statutes (Government of Sierra Leone, 2023). **Environmentally**, high exposure to flooding, coastal erosion and rainfall variability threatens assets and qualifies the country for climate finance in equal measure (Government of Sierra Leone, 2024).

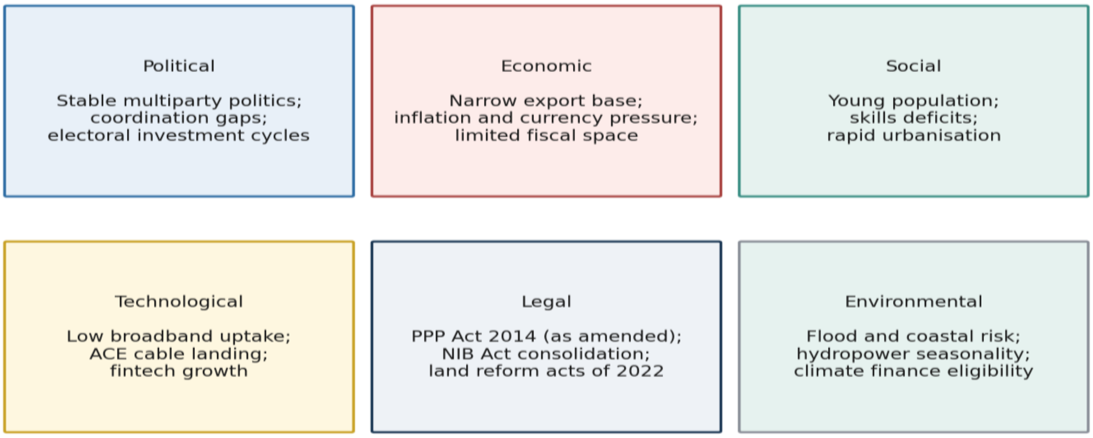

Figure 9. PESTLE framework for infrastructure-led investment promotion.
Source: Author's construction.

9.2 SWOT Analysis

Figure 10 presents the SWOT synthesis. The strategic reading matters more than the lists: Sierra Leone's strengths are latent (harbour, hydropower, minerals, location) while its weaknesses are operational (reliability, cost, coordination). Latent strengths and operational weaknesses define a conversion problem, and conversion problems are solved by institutions and sequencing, not by endowment discovery. The opportunity set, regional power trade, solar cost declines, AfCFTA market access, green finance, is unusually well matched to the weakness set, which is the strategic ground for optimism.

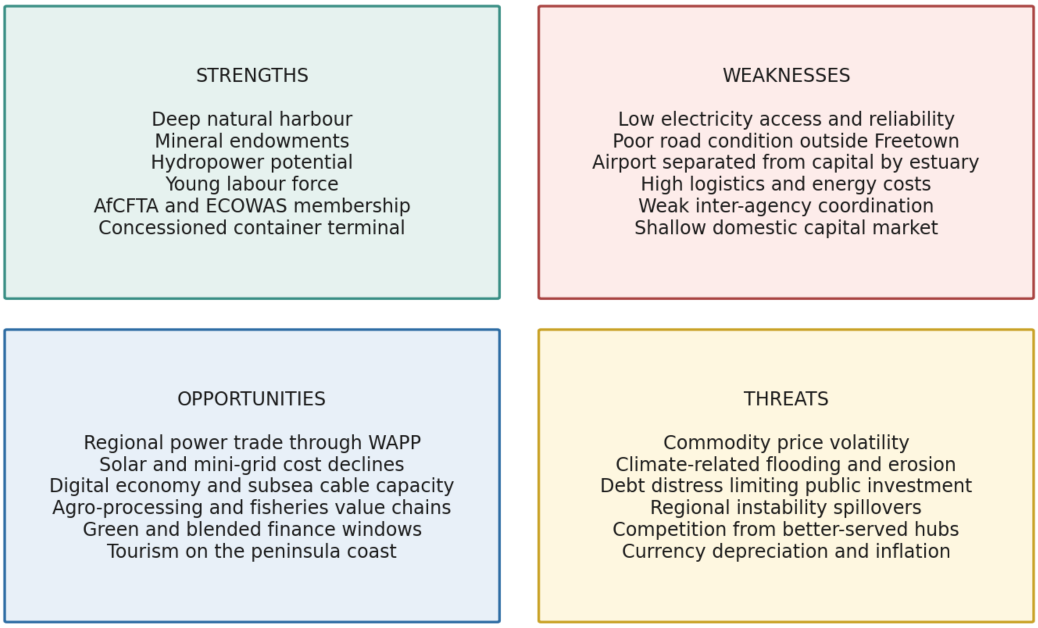

Figure 10. SWOT analysis.
Source: Author's construction.

9.3 Porter's Five Forces, Adapted to Locational Competition

Treating countries as competitors for mobile investment: **rivalry among destinations** is intense, with Senegal, Côte d'Ivoire and Ghana offering superior gateways within the same time zones; **the threat of substitutes** is the investor's option to serve West Africa from established hubs through trade rather than local presence, an option AfCFTA paradoxically strengthens for laggards; **buyer power** (investors) is high given global capital's choices and Sierra Leone's small market; **supplier power** manifests as construction cost premiums and thin local contractor markets; **entry barriers for the destination** itself are the fixed costs of credibility, gateway quality and power reliability. The analysis implies niche strategy: compete where rivals cannot easily replicate, the deep harbour, mineral-linked processing, marine resources and peninsula tourism, rather than head-on for footloose light manufacturing.

Niche strategy has a corollary for promotion: targeting beats breadth. An agency of the NIB's size cannot court every sector, and the five forces logic identifies where Sierra Leonean location advantages are defensible. Mineral-linked processing exploits ore bodies rivals cannot move; fisheries exploit an exclusive economic zone; the harbour exploits geography; tourism exploits an underdeveloped coastline within six hours of Europe. Each niche has a named infrastructure prerequisite, power for processing, cold chain for fisheries, landside access for the port, air links and utilities for tourism, which converts promotion strategy directly into the investment priorities of Section 12.

9.4 Value Chain and Gap Analysis

Tracing representative value chains locates the binding links. For cocoa and cashew, the losses concentrate in feeder roads and storage before export; for fisheries, in cold chain and port handling; for tourism, in air access and last-mile utilities; for light manufacturing, in power reliability and industrial land. Gap analysis against the MTNDP targets shows the largest shortfalls in energy access trajectory and paved corridor kilometres, and the institutional capacity gaps cluster in project preparation, contract management and regulatory economics rather than in policy design, where documents are generally sound (Government of Sierra Leone, 2024; IMF, 2023a).

Value chain analysis also reveals where modest investments unlock disproportionate value. For rice, the national staple, milling and storage near production zones would cut import dependence more cheaply than farm-gate programmes; for cocoa, quality premiums are lost to humidity in transit that basic warehousing would prevent; for tourism, the binding link is not hotel stock but the arrival experience, which the ferry reform addresses at trivial cost relative to a bridge. The pattern across chains is consistent with the network economics of Section 2: value leaks at the weakest link, so investment should be assigned by link, not by sector prestige.

9.5 Political Economy, Risk and Scenarios

The political economy of infrastructure in Sierra Leone follows a recognisable grammar: visible new construction is politically rewarded, invisible maintenance is not; ribbon-cutting beats loss reduction; and emergency procurement creates rents that reform threatens (Collier et al., 2016; Flyvbjerg, 2014). Reform coalitions must therefore bundle unglamorous fixes with visible wins. Principal risks are commodity price shocks transmitting to revenue, climate events destroying assets, debt distress freezing the pipeline, and contract renegotiations damaging credibility. Three scenarios frame the stakes to 2035. Under **drift**, current trends persist: access creeps upward, FDI stays extractive, and the country remains a price-taker on its own development. Under **selective transformation**, the roadmap in Section 12 is executed on the power-gateway-digital core: non-resource FDI multiplies from a low base and diversification becomes visible in the flow data by 2030. **Under shock**, debt or climate crisis interrupts investment and the deficit compounds. Policy chooses among these more than fortune does.

Risk analysis translates the scenarios into management. The commodity risk argues for the stabilisation fund and for promoting sectors uncorrelated with minerals; the climate risk argues for resilience standards in every procurement and for insurance and contingent credit lines arranged before events; the debt risk argues for the concessionality-first financing hierarchy and the liability register; the credibility risk, the quiet one, argues for scrupulous performance of the state's existing contracts, because a single high-profile renegotiation would reprice every future project. Political economy analysis adds the implementation insight: each recommendation in Section 12 is paired where possible with a visible early win, since reforms that deliver nothing observable before the next election rarely survive it (Collier et al., 2016).

10. POLICY FRAMEWORK EVALUATION

The formal policy architecture is broadly adequate on paper. The **Medium-Term National Development Plan 2024 to 2030**, organised around the Big Five Game Changers including energy, technology and infrastructure, correctly identifies the constraint set and adopts a feed-the-nation and human capital logic consistent with this article's analysis (Government of Sierra Leone, 2024).

Its predecessor plan carried similar diagnostics (Government of Sierra Leone, 2019). The gap is the classic one between plan and public investment programme: costing exceeds fiscal space and prioritisation criteria are not binding.

The **PPP Act 2014** established procedures and a unit now folded into the NIB; the framework needs subsidiary regulations on unsolicited proposals, standardised contracts and a published contingent liability register (World Bank, 2022c). **Investment law** consolidation under the NIB Act 2023 is a genuine advance; the incentive regime, however, still leans on discretionary tax expenditures whose cost the National Revenue Authority has begun to publish (National Revenue Authority, 2023), and the evidence is clear that reliability of infrastructure and rules outperforms tax holidays in attracting the investment that stays (James, 2013; UNCTAD, 2023). The **land reform acts of 2022** address a first-order constraint for agriculture and zone development, subject to implementation of registration systems. **Energy policy** correctly prioritises loss reduction, CLSG utilisation and least-cost planning; delivery depends on utility governance more than on further strategy documents (World Bank, 2021b; Ministry of Energy, 2021). **Digital transformation strategy** and the procurement framework under the NPPA are directionally sound with capacity-bound execution (Ministry of Communication, Technology and Innovation, 2021; National Public Procurement Authority, 2022). **Regional integration** through ECOWAS corridor programmes and **AfCFTA implementation** raise the return to every gateway and corridor investment by enlarging the market that Sierra Leonean locations can serve, provided rules of origin and border management keep pace (UNECA, 2020; World Bank, 2020).

The evaluation verdict: Sierra Leone's binding constraints are not missing policies but unfinanced, unsequenced and weakly enforced ones. That verdict directs the recommendations towards institutions, preparation capacity and sequencing rather than towards new strategy papers.

One further evaluative point concerns policy stability. Investors price the probability that today's framework survives tomorrow's election, and Sierra Leone's alternation of governments has repeatedly re-litigated flagship projects, the airport question being the standing example. Cross-party instruments, parliamentary ratification of the pipeline, statutory protection for signed concessions, published appraisal criteria that constrain all governments equally, convert political competition from a source of investor risk into a source of accountability, and they cost nothing but restraint.

11. DISCUSSION

11.1 Theory Meets Evidence

The Sierra Leonean evidence behaves as the integrated framework predicts, with two instructive refinements. The eclectic paradigm's location logic is confirmed almost mechanically: where public location advantages are absent, FDI composition collapses onto immobile endowments, and the observed 50-plus per cent mining share is the paradigm's signature (Dunning & Lundan, 2008). Transaction cost and network reasoning are confirmed in the texture of the deficits: self-generation premiums, demurrage, stranded zones and an unfinished backbone are all transaction costs and broken network effects wearing local clothes (Williamson, 1985; Economides, 1996).

The first refinement concerns reliability. The econometric literature typically measures infrastructure stocks, kilometres, megawatts, lines per capita, yet the Sierra Leonean evidence shows variance doing the damage: firms plan around the worst week, not the average one. This supports the newer strand emphasising quality-adjusted measures (Donaubauer et al., 2016) and suggests that for policy purposes, an hour of assured power is worth more than a megawatt of nominal capacity. The second refinement concerns institutions as infrastructure. New institutional economics is often read as a claim about property rights and courts; here its force is narrower and more operational. The plan-budget gap, the absent project pipeline and the uncoordinated appraisal standards are institutional deficits that generate physical ones on a lag. The country's infrastructure gap is, in an exact sense, a public administration gap with a construction lag attached (North, 1990; IMF, 2023a).

11.2 The Comparative Mirror

Set against the eight comparators, Sierra Leone's position is unusual in the size of the gap between latent and realised advantage. Mauritius and Botswana began with thinner natural endowments; Rwanda began with comparable devastation and a landlocked handicap Sierra Leone does not share. The harbour alone, on Morocco's evidence of what gateway strategy yields, is an asset most competitors would trade for. The comparative reading therefore rejects both fatalism and complacency: the deficits are severe, the remedies are demonstrated, and the differentiating variable across cases is sustained institutional execution rather than initial conditions (Acemoglu et al., 2003; Behuria, 2018; AfDB, 2023a).

The mirror also corrects a common framing error in national debate, which treats the infrastructure gap as primarily a financing gap. The comparators that closed their gaps did not begin with more money; they began with better project selection, procurement and maintenance, which then attracted the money. Finance follows execution capability far more reliably than execution capability follows finance, a causal ordering the aid-and-infrastructure literature supports and the failed project inventories of the region illustrate (Donaubauer et al., 2016; Ansar et al., 2016). The strategic implication is uncomfortable but liberating: the constraint most within Sierra Leone's control is the one that matters most.

11.3 Development Implications

Two implications extend beyond FDI. First, the same deficits that deter foreign investors tax domestic firms and households more heavily still, since they lack the scale for self-supply; infrastructure reform is distributional policy. Second, the composition effect matters for structural transformation: as long as infrastructure screens out labour-intensive sectors, FDI will raise exports without proportionate employment, reproducing the enclave pattern the development literature has long criticised (Asiedu, 2006; UNCTAD, 2023). Infrastructure policy is therefore industrial policy conducted by other means.

A third implication concerns the state's own learning. The analysis found policy documents largely sound and delivery systems weak, which suggests the binding scarcity is not knowledge of what to do but organisational capability to do it repeatedly: appraise, procure, supervise, maintain. Capability of this kind is built the way firms build it, through repetition on real projects with feedback, which is an argument for a steady, published pipeline of moderate projects over occasional mega-projects that exceed the system's carrying capacity and teach nothing when they fail (Flyvbjerg, 2014; IMF, 2023a). It is also an argument for honesty in sequencing: the comparative cases succeeded by doing few things completely rather than many things partially.

12. STRATEGIC RECOMMENDATIONS AND INVESTMENT ROADMAP

Recommendations are organised by actor and horizon; Table 8 provides the matrix, Figure 13 the phased roadmap. Three principles govern the whole: concentrate rather than scatter, prepare before financing, and publish commitments so credibility compounds.

12.1 Short Term (Years 1 to 2): Credibility and Quick Wins

Government and NIB. Operationalise the NIB one-stop shop with statutory response deadlines; establish the national project preparation facility; publish a single prioritised project pipeline with appraisal summaries; legislate the contingent liability register for all PPPs and guarantees. **Energy sector.** Execute EDSA loss-reduction contracts with metering roll-out; complete commercial arrangements to draw firm power through the CLSG interconnector; competitively procure 30 to 50 megawatts of solar with storage rather than extending emergency thermal contracts. **Transport.** Restore the fuel levy to maintenance-preserving levels; launch a port community system to cut dwell times; implement an interim Lungi solution through regulated fast-ferry services with published schedules while the fixed-link study is completed honestly. **ICT.** Complete backbone gap segments and enforce infrastructure sharing to cut wholesale prices. **Development partners.** Align behind the pipeline; fund preparation, not only construction.

Private investors in the short term should engage the published pipeline early, since first movers in power and logistics will shape standards, and should document infrastructure obstacles through the NIB's aftercare channel, which converts complaint into reform intelligence. **Regional organisations** should accelerate joint border post implementation on the Guinea and Liberia corridors, where the engineering is trivial and the coordination is everything.

12.2 Medium Term (Years 3 to 5): The Core Programme

Complete Bumbuna II and associated transmission; bring the first competitively procured solar IPPs to commercial operation; raise electricity access towards half the population with grid densification plus mini-grid concessions for district capitals. Rehabilitate the Freetown to Conakry and Freetown to Monrovia corridor segments with climate-resilient design and joint border posts. Deliver the port expansion under the existing concession framework with landside access investment sequenced first. Establish one fully serviced SEZ phase, power, water, fibre and road confirmed before ground-breaking, targeted at agro-processing and fisheries with cold chain as anchor infrastructure. Stand up a tier-three data centre through PPP. Local governments receive a matching facility for feeder roads and markets tied to maintenance performance.

12.3 Long Term (Years 5 to 15): Consolidation and Depth

Decide and finance the Lungi fixed link or relocation on published cost-benefit terms; develop hydropower sites beyond Bumbuna within West African Power Pool trading; extend corridors to the Kono and agricultural hinterlands; issue domestic infrastructure bonds as pension assets deepen, followed by diaspora and green instruments; legislate a stabilisation and intergenerational fund for mineral revenues before the next boom. Regional organisations and international financial institutions should treat the Freetown gateway as a regional public good serving Guinea's forest region and beyond, financing it accordingly under the corridor logic of the Programme for Infrastructure Development in Africa (AUDA-NEPAD, 2020).

Table 8: Policy Recommendations Matrix

Actor	Short term (1 to 2 yrs)	Medium term (3 to 5 yrs)	Long term (5 to 15 yrs)
Government centre	Pipeline, preparation facility, liability register	MTNDP-budget integration	Sovereign fund legislation
NIB	One-stop shop, aftercare unit, PPP gatekeeping	SEZ transactions, IPP procurement	Second-generation promotion targeting
Ministry of Finance	Fuel levy restoration, guarantee limits	Blended finance windows	Infrastructure and diaspora bonds

Energy institutions	Loss reduction, CLSG power, solar procurement	Bumbuna II, access to 50%	Hydro expansion, WAPP trading
Transport institutions	Port community system, ferry regulation	Corridor rehabilitation, port expansion	Lungi fixed link decision
ICT institutions	Backbone completion, sharing rules	Data centre, e-government scale-up	Regional digital hub positioning
Local government	Maintenance compacts	Feeder road facility	Municipal finance
Development partners	Fund preparation	Co-finance core programme	Regional gateway finance
Private investors	Engage published pipeline	IPP, SEZ, logistics entry	Long-dated instruments

Note. Source: Author's construction.

12.4 Roadmap, Monitoring and Expected Impact

Figure 13 sequences the programme. Monitoring should track a short indicator set published annually: hours of assured industrial power, distribution losses, port dwell time, corridor travel times, broadband price as a share of income, preparation facility throughput, PPP liabilities as a share of GDP, and non-resource FDI inflows. On conservative multipliers from the empirical literature, execution of the core programme is consistent with a doubling of non-resource FDI within seven years and measurable diversification of the inflow composition by 2032, alongside the growth and employment effects that infrastructure elasticities imply (Calderón & Servén, 2010; Timilsina et al., 2020).

Monitoring design matters as much as target setting. Each indicator should have a named institutional owner, a published baseline and an annual audited release, because credibility compounds only when failure is as visible as success. The roadmap's expected impact rests on mechanisms this article has documented rather than on optimism: assured power removes the self-generation tax that prices out manufacturing; gateway efficiency converts the harbour from geography into product; corridor rehabilitation reconnects agricultural supply to the port; and the digital backbone lowers the transaction costs of everything else. None of these mechanisms requires Sierra Leone to become exceptional; they require it to become reliable, which is a humbler and more attainable ambition.

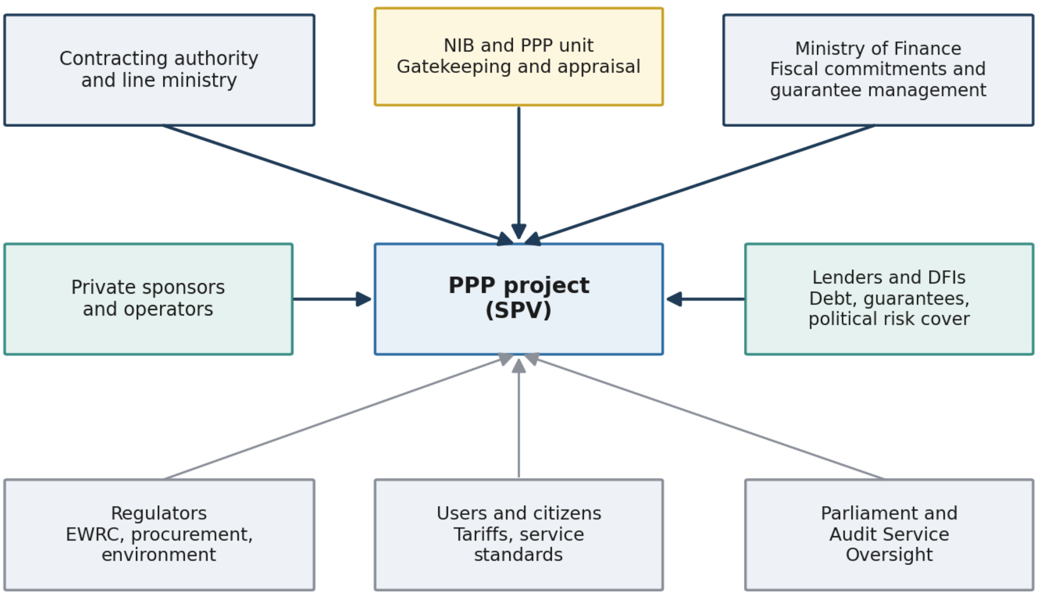

Figure 11. PPP ecosystem for infrastructure delivery. Source: Author's construction.

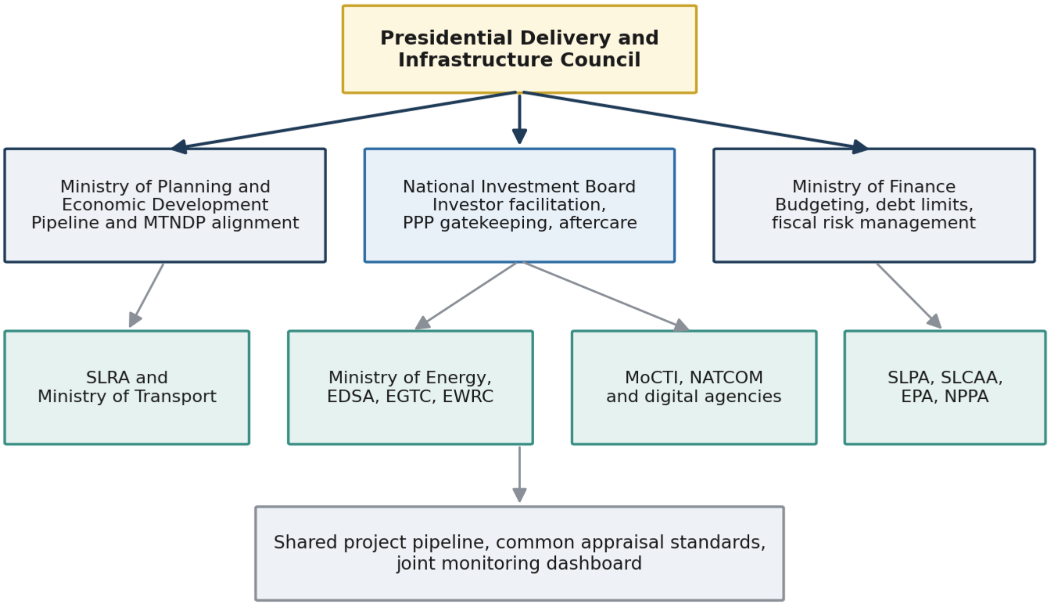

Figure 12. Proposed institutional coordination model. Source: Author's construction.

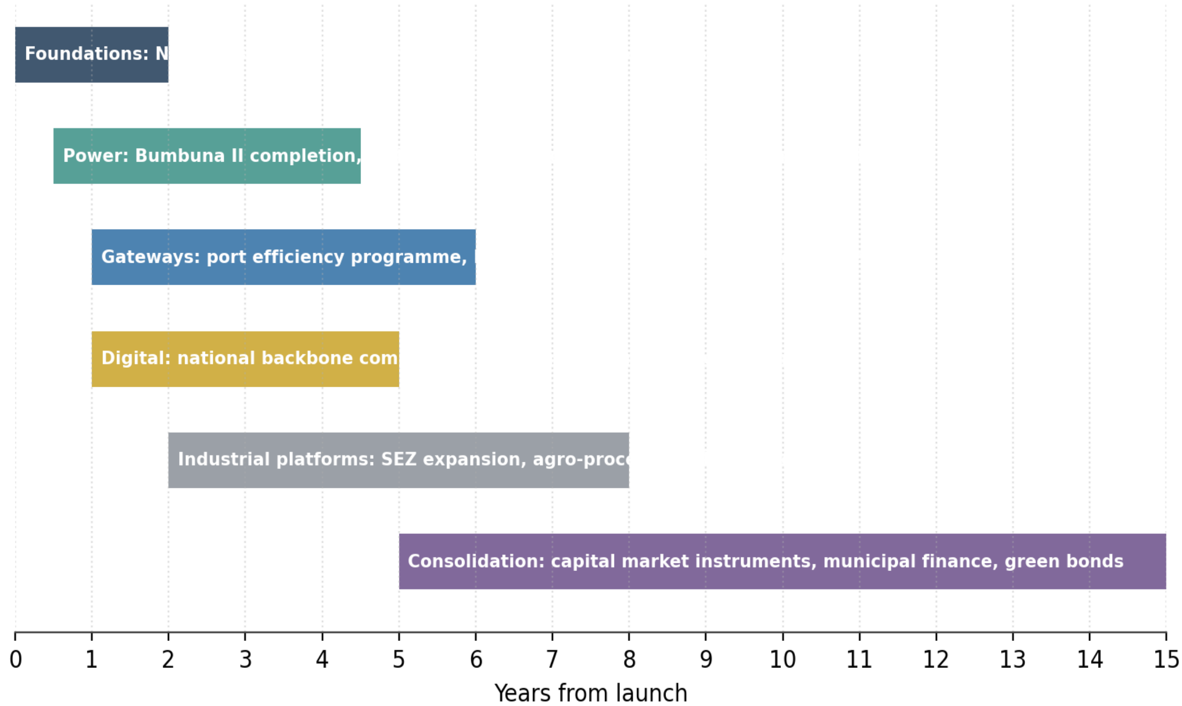

Figure 13. Phased strategic roadmap. Source: Author's construction.

13. CONCLUSION

13.1 Key Findings

This article set out to explain how infrastructure deficits constrain FDI in Sierra Leone and what strategy could reverse the relationship. Five findings answer the research questions. First, the deficits are severe, broad and interlocking: electricity access near a third of the population with high losses and costs, a road network under a tenth paved, bottom-decile logistics performance, an incomplete digital backbone and minimal industrial infrastructure. Second, these deficits shape FDI through cost, risk, market access and signalling channels, and their clearest fingerprint is compositional: inflows concentrate in mining, the one sector that can build its own infrastructure, while the employment-rich sectors national plans target are screened out. Third, unreliability and cost, not absence, are the operative constraints; firms plan around variance. Fourth, physical deficits are institutionally produced, through the plan-budget gap, weak project preparation, fragmented mandates and underfunded maintenance, so institutional reform is infrastructure policy. Fifth, comparative experience shows the position is remediable within a policy generation, and that Sierra Leone holds latent assets, above all the harbour and hydropower potential, that most successful comparators lacked at their starting points.

13.2 Policy Implications

The policy implication is a sequenced conversion strategy rather than a project list: credibility and preparation first; the power-gateway-corridor-digital core second; consolidation through capital market depth and the Lungi decision third. The financing architecture must be blended by design and disciplined by a published contingent liability register, because in a debt-constrained economy, credibility is the cheapest source of capital. For the National Investment Board specifically, the findings define the job: not the distribution of incentives but the removal of frictions, a published pipeline, statutory response times, honest aftercare and gatekeeping strong enough to say no to unbankable proposals. An agency measured on those outputs will do more for FDI than any tax holiday it could ever sign, and its first annual report should say so in numbers.

13.3 Theoretical and Practical Contributions

The article contributes to scholarship in several registers. To **infrastructure and development economics**, it supplies a documented small-economy case where quality and variance, not stocks, bind, supporting the quality-adjusted measurement agenda. To **FDI research and investment promotion**, it demonstrates a compositional test: infrastructure constraints reveal themselves in what kind of capital arrives, not only in how much, a diagnostic transferable to other resource-rich economies. To **institutional economics and public policy**, it traces the causal chain from administrative deficits to physical ones, giving new institutional claims operational content in a post-conflict setting. To **African development studies and political economy**, it adds a systematic comparative positioning of Sierra Leone against eight peers, resisting both the fatalist and the brochure readings of the country. To **strategic management**, it adapts locational five-forces and conversion-problem framing to national investment strategy. To **development planning**, it offers a phased roadmap whose sequencing is derived from theory rather than assembled from wish lists.

13.4 Future Research Agenda

Three lines of research would strengthen the evidence base this article could only assemble from secondary sources. First, firm-level work in Sierra Leone: discrete choice and survey experiments eliciting how investors trade off power reliability, logistics time and tax incentives would put local numbers on the mechanisms documented here. Second, evaluation designs attached to the coming investments, the MCC compact, CLSG utilisation and the SEZ programme, so that Sierra Leone generates causal evidence rather than only receiving it. Third, political economy fieldwork on maintenance: why preservation loses to construction in budget politics, and which institutional designs, earmarking, performance compacts, delegated management, survive electoral cycles in comparable settings. A final, harder question deserves theoretical attention: whether AfCFTA raises or lowers the FDI prospects of infrastructure laggards, since continental market access can be served from the best-connected hubs. The answer will decide how much time countries like Sierra

Leone have to convert their latent advantages, and this article's judgement is that the window is real but not indefinite.

Infrastructure will not attract investment because it is built; it will attract investment because it works, predictably, at a price firms can plan on. That standard is demanding, measurable and, on the evidence assembled here, within Sierra Leone's reach.

The country has met demanding standards before. It ended a civil war that many judged unendable, held peaceful transfers of power that many judged unlikely, and eradicated an epidemic that overwhelmed richer states. The infrastructure task is, by comparison, a problem of administration and patience: thousands of unglamorous decisions, metered connections, maintained culverts, published contracts, honoured commitments, each small, all cumulative. Nations are not condemned to their present logistics scores. The harbour has waited five hundred years for the economy it deserves; the argument of this article is that it need not wait another generation.

About the Authors

Dr Dante Allie Bendu is widely regarded as the father of accounting in Sierra Leone and was the first chartered and certified accountant in the country to hold a doctorate. His qualifications span a BSc Honours in Accounting and Finance, the ACCA and CIMA professional designations, the FeICM fellowship, an MSc, an MA in Marketing and Management, and a PhD in Accounting and Strategic Management. He began lecturing in 1986 and rose to senior lecturer at Fourah Bay College, University of Sierra Leone, where he has taught from undergraduate to doctoral level and supervised a substantial number of theses. Seconded to KPMG between 1988 and 1990, he gained direct exposure to professional practice at the highest level. He leads national work on corporate governance through the African Peer Review Mechanism, has published journal articles and textbooks, and heads the Sarante Experts Group Consultancy.

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Together the authors join senior scholarship to applied practice. Dr Bendu contributes four decades of teaching and professional leadership in accounting, Mr Kargbo a research agenda in public financial management, Mr Conteh doctoral work in theoretical economics at Peking University, and Dr Mansaray long experience in public administration and human capital management. Their combined perspective grounds this work in both theory and the realities of Sierra Leone's development.

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