

**RESPONSIBLE INNOVATION ORIENTATION AND SUSTAINABLE PROJECT
PERFORMANCE OF CONSTRUCTION COMPANIES IN RIVERS STATE**

**¹Tunde Ohiare Ozigi, ²Sabiu Sani Alkantara, ³Rosemary Jacob Uranta & ⁴Barile Laius
Ikari**

¹Department of Business Administration, Faculty of Management and Social Sciences, Confluence
University of Sciences & Technology, Osara, Kogi State.

E-mail: ozigito@custech.edu.ng

^{2&3}Department of Management, Faculty of Management Sciences, University of Portharcourt,
Choba, Portharcourt, Rivers State, Nigeria.

⁴Department of Business Administration, Faculty of Administration and Management, Ignatius
Ajuru University of Education, Rumuolumeni, Port Harcourt.

ABSTRACT

For some decades, the problem with responsible innovation orientation lies in the unintended consequences impose on sustainable project performance with its measures such as economic and social performance, hitherto carelessly weakens project performance when applied without balance. Hence this paper looked at responsible innovation orientation and sustainable project performance of road construction firms in Rivers State. The main objective was to determine the relationship between dimensions of responsible innovation orientation (anticipatory and reflexive orientation) and measures of sustainable project performance (economic and social performance). Four research questions and hypotheses guided the study. The study adopted cross sectional survey research design due to the numbers of the road construction firms involves. The target population was 105 respondents derived from 15 road construction firms in Rivers State. The sample size was 105 respondents through census and purposive technique. The data were generated through the use of structured questionnaire and 100 copies of questionnaire retrieved. Structural equations model was used to analyze the data. Findings from the study revealed that anticipatory orientation has a very strong significant correlation with measures of sustainable project performance (economic performance – $\beta = 0.763$, and social performance $\beta = 0.770$). Also, the findings from the study revealed that reflexive orientation has a strong significant correlation with measures of sustainable project performance (economic performance – $\beta = 0.720$ and social performance $\beta = 0.725$). Therefore, the study concluded that dimensions of responsible innovation orientation (anticipatory orientation and reflexive orientation) influence the measures of sustainable project performance (economic performance and social performance). Hereafter this paper recommended that firms should invest in market intelligence, scenario planning, and forecasting tools to anticipate business trends, regulatory changes, and client needs that permit proactive tactic in enhances competitiveness and success.

Keywords: Responsible Innovation Orientation, Anticipatory, Reflexive, Sustainable Project Performance, Economic Performance and Social Performance.

Introduction

The current business environment is characterised by everyday changes and organizations needs to provide strategies to cope with the dynamism as well as aligning towards a sustainable performance if it must survive. Sustainable project performance has attracted increasing scholarly attention, particularly since the outbreak of global emergencies such as the COVID-19 pandemic in early 2020. The crisis led to the abandonment of several projects, especially in Rivers State, where political instability and weak project management have contributed to low levels of project sustainability. Sustainable project performance refers to the ability of projects to achieve long-term durability, timely delivery, cost efficiency, and compliance with environmental standards, while preserving future value.

In road construction companies, sustainable project performance is often assessed using two key dimensions, economic and social performance. Keeping a sustainable project performance in terms of economic and social outputs are an example of several issues that firms face, although is viewed by managers as a key driver of firms' existence and advance (Chen et al., 2006; Díez-Martínez and Peiró-Signes, 2022; Díez-Vial et al., 2023; Parrilli et al., 2023). Besides, sustainable project performance is an organization's ability to achieve its strategic financial objectives while actively generating positive social and economic impacts. Sustainable project performance acts as a life-threatening driver for long-term viability. Moving beyond short-term profits to ensure resilience, stakeholder trust and ongoing market relevance in a rapidly changing world. In a different context, sustainable project performance is conceptualized as the integration of environmental stewardship, social responsibility, and economic viability across all phases of a project's life cycle, thereby extending the traditional project management focus beyond the constraints of time, cost, and scope (Lawal et al., 2024).

This approach aims to create long-term value for both the stakeholders and the plant value reducing negative impacts and promoting resource efficiency. The benefit of road construction firms in economic development of a nation cannot be underestimated as it provides the physical infrastructure and facilities that enable social and economic development (Cheng, 2020). These economic and social impacts can affect the present and future generations. Therefore, there is a growing need for road construction firms to adopt sustainable performance practices that will enhance delivery of projects in a way that balances the needs and expectations of the stakeholders while minimizing the negative effects on the environment and the economy. This has become a significant forces that drives responsible innovation orientation.

Responsible innovation orientation(RIO) provides a strategic lens for enhancing sustainable project performance. It offers a useful framework for improving sustainable project performance. Responsible innovation orientation refers to a strategic approach where organizations align their projects with long-term societal, environmental, and ethical goals. Responsible innovation orientation directly drives sustainable project performance by integrating stakeholder engagement, anticipation, and responsiveness into project management lifecycles (Afsar, et al., 2020). Muff et al. (2020). Advocates of responsible innovation orientation (RIO) have identified four dimensions of responsible innovation orientation to includes-- anticipation, reflexivity, inclusion, and responsiveness. However, for the purpose of this paper we find two of these dimensions relevance to the context of the study, these are anticipatory and reflexive orientation. Anticipatory orientation is a strategic mindset that enables organizations to foresee future challenging and opportunities, embedding foresight into innovation and policy planning (Afsar, et al., 2020, & Muff et al. 2020) . This anticipatory stance is crucial for construction firms, allowing them to predict risks such as resource shortages, regulatory changes or environmental pressures, thereby safeguarding economic performance. By anticipatory future demands, firms can align their strategies with long-term sustainability goals, while ensuring competitiveness and resilience.

On the other hand, reflexive orientation (RO), highlights the continuous evaluation of social and ethical implications. Arkesteijn et al. (2015) defines reflexive orientation as a critical stance in innovation processes where organizations continuously evaluate their social, ethical, and cultural impacts to ensure accountability. When this is applied in road construction firms, reflexive orientation, ensures that projects remain socially legitimate by embedding stakeholder dialogue, ethical reflection, and cultural sensitivity into decision-making. This strengthens social performance by nurturing trust and inclusivity. Integrating anticipatory and reflexive orientation provide a coherent framework that bridges foresight with accountability, enabling firms to achieve sustainable project performance that balance economic viability with social responsibility. Based on these background, the study focused on responsible innovation orientation and sustainable project performance among road construction firms in Rivers State.

Over the decades, despite the growing emphasis on sustainable project performance of construction firms, many firms are still struggling to balance economic and social performances. Chung and Wee,

(2008); Hervás-Oliver et al. (2024) describes economic performance as the capacity of nation's economy to generate sustained growth, employment, and income distribution while maintaining macroeconomic stability. However, many firms continues to prioritize short-term profitability over long-term sustainability. Similarly, Zehir et al. (2015), conceptualised social performance as the extent to which firms fulfil their social responsibilities by contributing to community development, equity, and welfare. Many construction firms fails to put these into practice by integrating community needs, leading to social resistance, reputational risks, and inequitable outcomes. This imbalance creates a persistent problem in the construction industries; where firms may achieve financial gains but undermine social legitimacy, weakening the sustainability of project outcomes. Thus, responsible innovation orientation, specifically through anticipatory and reflexive orientation has been projected as a recipe to sustainable project performance.

Muff et al. (2020) explain anticipatory orientation as a strategic mindset that enables firms to foresee future challenges and opportunities by embedding foresight into innovation and policy planning. However, in practice anticipatory orientation may produce undesirable effects leading to excessive caution, delayed project execution, and reduced economic performance. Besides, anticipatory orientation often demands extensive foresight studies and scenario planning which increase upfront costs and extend project timelines, thereby weakening lifecycle, costing and financial viability. Melander and Arvidsson (2022) explains reflexive orientation as critical stance in innovation processes where organizations continuously evaluate their social, ethical, and cultural impacts to ensure accountability. However, may reflexivity become counterproductive when firms engage in prolonged stakeholder consultations or excessive ethical reviews, slowing down project delivery and increasing costs. Furthermore, the misapplication of the concept or poorly managed may hinder sustainable project performance in terms of economic and social performance. However, empirical evidence remains in debate of a different locations, mixed results and different scopes. Hence this paper is investigating the relationship between responsible innovation orientation and sustainable project performance of road construction companies in Rivers State. The specific objectives of this study is given as: to;

1. Examine the relationship between anticipatory orientation and economic performance of road construction companies in Rivers State.
2. Evaluate the relationships that exist between anticipatory orientation and social performance of road construction companies in Rivers State.
3. Examine the relationship between reflexive orientation and economic performance of road construction companies in Rivers State.
4. Evaluate the relationships that exist between reflexive orientation and social performance of road construction companies in Rivers State.

The study also seeks to provide answers to the following research questions:

1. What is the relationship between anticipatory orientation and economic performance of road construction companies in Rivers State?
2. To what extent does anticipatory orientation relate with social performance of road construction companies in Rivers State?
3. What is the relationship between reflexive orientation and economic performance of road construction companies in Rivers State?
4. To what extent does reflexive orientation relate with social performance of road construction companies in Rivers State?

For effective and smooth conduct of this research the following null hypotheses were formulated to serve as the study guide:

H₀₁: There is no significant relationship between anticipatory orientation and economic performance of road construction companies in Rivers State.

H₀₂: There is no significant relationship between anticipatory orientation and social performance of road construction companies in Rivers State.

H₀₃: There is no significant relationship between reflexive orientation and economic performance of road construction companies in Rivers State.

H₀₄: There is no significant relationship between reflexive orientation and social performance of road construction companies in Rivers State.

Literature Review

Operational Framework

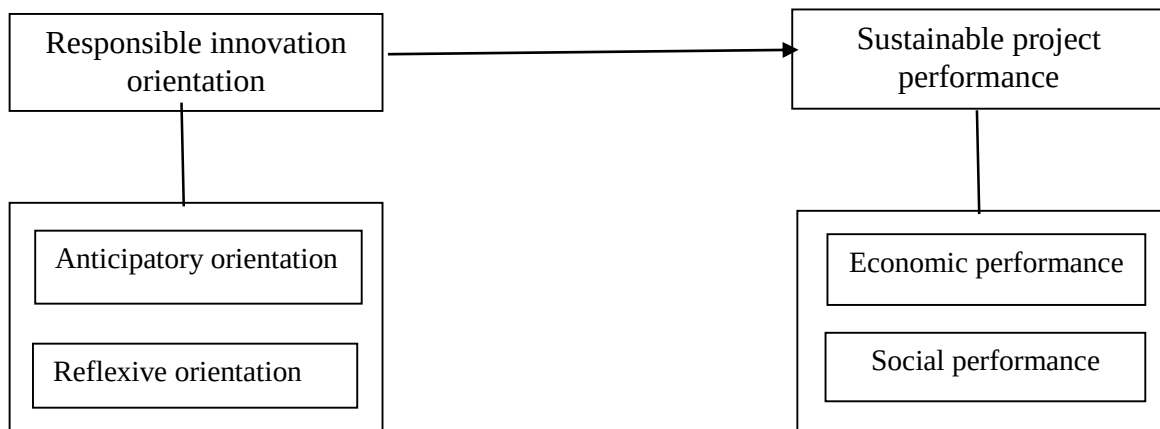


Figure 1.1: Responsible innovation orientation and sustainable project performance

Source: Adopted and moderated from Lawal et al. (2024). And Chunhui et al. (2023).

Conceptual Review

This section presents a review of relevant literature on the key concepts of the study, including responsible innovation orientation, anticipatory, reflexive orientation and sustainable project performance with specific emphasis on economic performance and social performance. The section also examines the theoretical foundations underpinning the study, as well as empirical studies related to the variables, in order to establish the conceptual relationships and identify existing gaps in the literature as depicted on the conceptual framework above.

Concept of Responsible Innovation Orientation

The concept of responsible innovation orientation (RIO) has been categorized in literature as governance and government perspective that emphasizes innovation processes are aligned with societal values, ethical standards, and long term sustainability objectives. Barben et al. (2008) view responsible innovation orientation as a governance paradigm for emerging technologies and broader innovation activities. It builds upon anticipatory governance, upstream engagement, and theories of technology assessment such as constructive technology assessment and real-time technology assessment. Similarly, Von-Schomberg (2012) conceptualise responsible innovation orientation as a transparent and interactive process by which societal actors become mutually responsive to each other with a view to ensure the ethical acceptability, sustainability and societal desirability of the innovation outcome, thereby enabling scientific and technological advances to be appropriately embedded within society. In a related view, Burget et al. (2017) emphasizes that responsible innovation is a process that takes the wider impacts of research and innovation into account. It aims to ensure that unintended negative impacts are avoided, that barriers to dissemination, adoption and diffusion of research and innovation are reduced, and that the positive societal and economic benefits of research and innovation are fully realized. Owen (2012) opined that responsible innovation orientation is a commitment of care for the future through collective stewardship of science and innovation in the present.

Dimensions of Responsible Innovation Orientation

Anticipatory Orientation

Mikkel and Christina (2021) opined that anticipatory orientation involves envisioning of a future event or its present state. It is a common feature used in carrying out organizational activity and a fundamental societal aspiration for governing social, economic and political affairs. Anticipatory orientation is used to mobilize support for policy proposals, to ground strategies and decision-making in reasonable levels of facility and predictability, and to project the appearance of professional credibility and competence in a world of contingencies (Nelson et al., 2008). Also, anticipation is intertwined with the plurality of power relations that make up contemporary liberal democracies (Dean, 2007). In a similar view, Anderson (2010) sees anticipatory orientation as a key means through which life in contemporary liberal democracies is secured, conducted, disciplined and normalized. Still, the ways in which organizations engage in anticipation have not been sufficiently conceptualized in the field of organization and management studies. Hence the researchers define anticipatory orientation as a proactive and foresight driven mindset that equips innovators, policymakers and organizations to anticipate emerging trends, uncertainties and societal needs, enabling organization to build adaptive strategies that balance resilience, sustainability and inclusive growth.

Reflexive Orientation

Several transition scholars assert that several persistent societal problems require reflexivity as a key characteristic that will facilitate change process or governance style (Voss et al. 2006; Geels & Kemp 2007). Reflexive orientation is often seen as quality of approaches that challenge long-standing and undesirable practices by stimulating inquiry, dialogue, interactive learning and learning-by-doing. Similarly, approaches used to evaluate policy or other interventions from a system innovation perspective are said to have stimulate learning and enhance reflexivity (van Mierlo et al. 2010; Arkesteijn et al. 2015). Furthermore, reflexive orientations are characterized by diverse values, interests and knowledge (Wals et al. 2004; Keen et al. 2005; Bos & Brown 2012). Wals (2007) opined that reflexive orientation is both a condition for, or an asset to, social learning which requires persistent reflection and reflexivity throughout the entire process to monitor and facilitate change processes. In its widest perspective, reflexive orientation entails some kind of recursive turning back from the object to itself. This shows that the term reflexivity is rather abstract and very broad in its applicability (Lynch, 2000). Similarly, Beck et al. (2003) opined that reflexive orientation innovation has undercut the basic tenets from which it originated. To give a real-world example, the faster burning of fossil fuels has led to possibly irreversible climate change due to the ways in which energy is produced, food is grown, dwellings are built, etc. This was never intended when people started producing energy with fossil fuels and as such it is an example of how the environment is turning back on society. The reflexive orientation involves co-occurring changes in the economy (markets, dominant consumer practices), politics (rules and regulations, policy networks, power), technology (infrastructure, technical standards), culture (value orientations, symbols), and science (knowledge in perspective, questioning the value of science; Beck et al. 2003; Smith & Raven 2012).

Concept of Sustainable Project Performance

Scholarly literature has conceptualised sustainable project performance as the ability of organisations to achieve long-term value by balancing the environmental factors such economic, social and environmental objectives throughout the project lifecycle.

Rubel et al. (2021) contends that sustainable project performance organisations will only succeed if they are able to combine these factors with the financial objective of the organisation. The authors posit that the ability of an organization to dynamically achieve valuable high performance in both societal as well as financial aspects is reinforced by appropriate leadership style and the ability to instill a sense of responsibility, mutual learning, and norms to foster voluntary environmental behavior in employees. In a related perspective, Ahmad et al., (2018), explain that sustainable

project performance needs the integration of economic, environmental, and social criteria (the Triple Bottom Line People, Planet, Prosperity) into project management processes. It focuses on creating long-term value for stakeholders, minimizing negative environmental impacts, and maximizing positive social outcomes throughout the project's lifecycle, rather than just meeting time, cost, and scope goals. Consequently, companies are becoming more conscious of the prerequisite to include economic and social performance into their routine business operations. This is in response to outside influences such as societal concerns, governmental regulations, or competitive advantages that demand more environmentally friendly practices and profitable strategies.

Similarly, Kim and Hall (2021), Wang et al. (2021) and Sancak (2023) view sustainability as a critical concern for firms as it provides opportunity for development, long term growth, competitive advantage, and financial viability. Therefore, this paper view sustainability as the ability to carryout project in a manner that promote social responsibility, maintains organisation financial success and supports environmental sustainability while continuously creating long term value for stakeholders.

Measures of Sustainable Project Performance

Economic Performance

Economic performance has been described as the ability of an economy to grow, develop and sustain a stable economic environment. Indicators such as gross domestic product (GDP), inflation rate, unemployment level, productivity, balance of payments, and public debt are usually used to measure economic viability over time. On the other hand, the commonly economic indicators especially at the organizational level, economic performance reflects a firm's ability to achieve profitability, maintain cost efficiency, enhance productivity, and sustain long term financial viability (Michael and Boussa, 2024). Economic performance is crucial for a country's development as it directly impacts the well-being of its citizens. This can be described the ability of a firm to achieve desired financial outcomes such as profitability, revenue growth, return on investment, cost efficiency, and market competitiveness over a specified period. Economic performance serves as a critical metric for evaluating the success of a firm's strategies and operations in both the short and long term. In the context of sustainable project performance, economic performance is increasingly analyzed not just through financial indicators, but also through the firm's capacity to deliver value to stakeholders while maintaining resilience and adaptability in a dynamic business environment. In our society, economic performance is particularly crucial given the volatile business climate characterized by inflation, currency fluctuations, regulatory uncertainties, and infrastructural deficits. As a result, firms often measure performance using indicators such as gross profit margin, net income, earnings per share, market share, and productivity ratios (Akinbuli & Olamide, 2021).

Social Performance

Management literature have described social performance as the principles, practices, and outcomes of social, economic, and environmental relationships between organizations and societal actors. It also includes both the deliberate actions of firms toward stakeholders and the unintended externalities arising from corporate activities (Cavanagh et al, 2005.) In a similar dimension, Siegerink et al., (2022), view Social performance as a reflection of an organization's ability to translate its social mission into practice by assessing how its activities, policies, and commitments affect stakeholders. It evaluates non financial outcomes relating to local communities, employee well being, human rights, and broader societal development. In another perspective, social performance comprises employee well being, inequalities within organizations, and the resources that firms either contribute to or deplete for future societal well being (Exton & Shinwell, 2019). Based on these perspectives, this paper viewed social performance as a complex organizational issue that focuses on management and business policies that align with societal values and objectives.

Theoretical Review

The researchers decided to adopt multiple theoretical perspectives to grind the problem under investigation. This includes Responsible Innovation Theory, Stakeholder Theory, and the Triple Bottom Line Theory. However, we considered Responsible Innovation Theory as the most appropriate and relevant to the study. This is so because it seems to provide the strongest and most direct explanation for how responsible innovation influences sustainable project performance. This Theory as put forward by Owen et al. (2012), assumed that innovation should be anchored on four related principles: anticipation, reflexivity, inclusion, and responsiveness. The Theory further assumes that innovators must be focus and futuristic about potential business risks (anticipation) as well as future societal impacts. Innovators should embrace various stakeholder's views in decision making process while remaining responsive to emerging knowledge and societal concerns. This positions innovation as a socially embedded and ethically accountable process rather than a purely technical or economic activity.

Responsible Innovation Theory is particularly relevant to this study because it provides a conceptual framework through which responsible innovation orientation can be measured with sustainable project performance. For example the anticipatory dimension aligns with foresight and strategic planning in project execution, while the reflexive dimension emphasizes continuous evaluation of ethical, social, and contextual implications of innovation decisions. The combination of these constructs support the integration of ethical reasoning and stakeholder sensitivity into innovation processes, which are critical in road construction projects where social impact is significant.

Another theory considered to be supportive to the study is the Stakeholder Theory proposed by Freeman, R. E. (1984). The theory assumes that organizations are responsible to all stakeholders, not only shareholders, and that value creation should consider the interests of all groups affected by organizational activities. These stakeholders include employees, host communities, regulators, suppliers, and society at large. In this study, stakeholder theory helps to explain the importance of responsible innovation orientation through anticipatory and reflexive practices that help firms to identify, engage, and respond to stakeholder expectations throughout the project lifecycle.

In a similar perspective, the study attracts the Triple Bottom Line framework by Elkington, J. (1997). This framework helps to conceptualize sustainability into three interdependent dimensions: economic viability, social equity, and environmental protection. It shifts project evaluation beyond the traditional indicators such as cost, time, and scope, to include broader sustainability outcomes. Within this study, the Triple Bottom Line provides a direct foundation for sustainable project performance by emphasizing balanced outcomes across economic, social, and environmental dimensions.

The integration of these theories provide a complementary explanatory framework for the study. While Responsible Innovation Theory serves as a measuring lens for ethical and cognitive processes that guide innovation decisions, Stakeholder Theory on the other hand explains the relational obligations of firms toward affected actors, and the Triple Bottom Line framework exposed the multidimensional structure of sustainability performance. Collectively, they provide a strong theoretical basis for understanding how responsible innovation orientation influences sustainable project performance in road construction firms in Rivers State.

Empirical Review

Reviews from several scholars such as Jeanneth et al. (2025), Pieter and Barbara (2017), Siegerink et al. (2022) revealed several limitations to the current study on responsible innovation orientation and sustainable project performance. There are indications that previous studies on these concepts differ from the present study in terms of geographical, scope and variables examined, and their findings are generally mixed. However, most of the existing evidence still suggests a positive relationship among the variables. Therefore, there is need to conduct an empirical study that cut across sectors and multi countries to measure how responsible innovation orientation directly influences sustainable project performance of road construction firms in Rivers State.

METHODOLOGY

This study used a cross-sectional survey research design. The target population consisted of 105 respondents derived from 15 road construction firms in Rivers State. A census sampling technique was adopted to include all the 105 respondents (Managers across the departments as presented in the table 1) because of the researcher's ability to access all the respondents. A five-point likert scale was used on the validated structured questionnaire to elicit responses. The hypotheses were tested using partial least squares-structural equation modeling (PLS-SEM) with SmartPLS version 4.

RESULTS

A total of 105 questionnaires were distributed to respondent, of which 100 copies representing 95% of the total distributed, were retrieved and used for the study. The hypothesis testing was undertaken at a 95% confidence interval implying a 0.05 level of significance. The decision rule was set at a critical region of $p > 0.05$ for acceptance of the null hypothesis and $p < 0.05$ for rejection of the null hypothesis.

Table 1: Distribution of Questionnaire

S/No.	Total number of Construction Companies	Total number Distributed	Number of questionnaires retrieved
1	Arab Contractors Nigeria Ltd	7	7
2	China Civil Engineering Construction Corp (CCECC) Nigeria Ltd	7	7
3	Craneburg Construction Company Ltd	7	6
4	Dantata & Sawoe Construction Company	7	6
5	Fisancol Transcontinental Services Ltd	7	6
6	FW Dredging Ltd	7	6
7	Gf Precision Nigeria Ltd	7	7
8	Gitto Costruzioni Generali Nigeria Ltd	7	7
9	Hitech Construction Company	7	6
10	JCC Plant Yard	7	7
11	Julius Berger Nigeria Limited	7	7
12	Lubrik construction company ltd.	7	7
13	Monier construction company Nigeria Ltd (MCC)	7	7
14	RCC (Reynolds Construction Company Nigeria Ltd)	7	7
15	Setraco Nigeria	7	7
	Total	105	100

Source: Rivers State ministry of works and Nigeria Society of Engineers' contractors list. The above table shows the total copies of questionnaires administered. Out of 105, 100 were filled and returned.

Table 2: Distribution of Demographic Variables

Category	Manager's Distribution		Percentage (%)
Questionnaires Administered	105		-
Gender	Male	65	65
	Female	35	35
Positions	Research & Dev.	15	15
	Engineering	20	20
	Human Resource	10	10
	HSE	15	15

	Production	15	15
	Quality Assurance	10	10
	Finance	15	15
Work Experience	1 –05years	20	20
	6–10years	30	30
	11–15years	25	25
	16+years	25	25

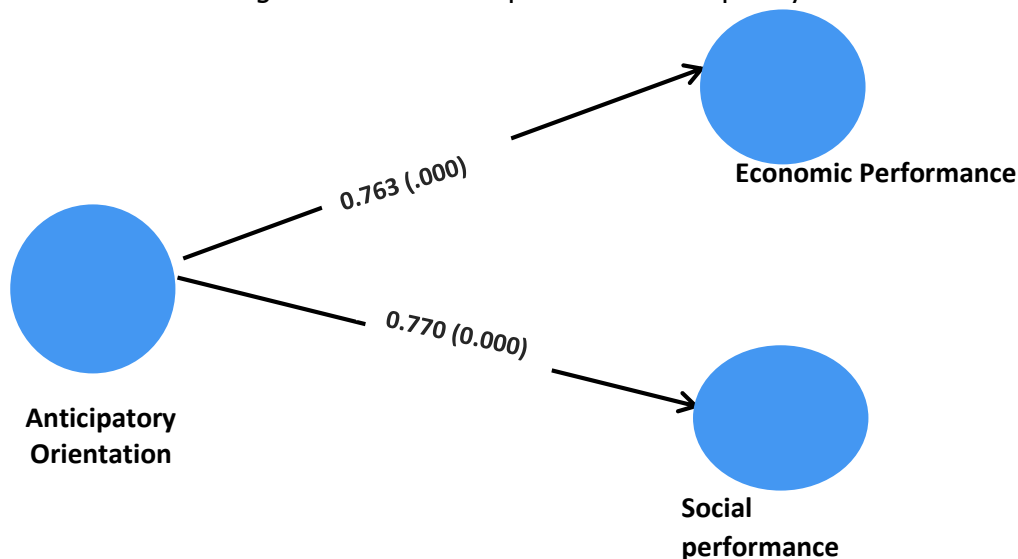
Source: Data Output

Out of 105 questionnaires administered, 100 were retrieved, giving a 95% response rate, which is highly reliable for the data analysis. Then gender distribution shows a male majority of 65%, though female was 35% which are significantly represented. Nevertheless, across the seven positions, engineering (20%) and Finance/Production/HSE (15% each) dominate, reflecting a workforce strongly oriented toward technical and operational functions with balanced representation in support roles like human resource and quality assurance. Even work experience was evenly distributed with 50% of respondents having more than 10 years of experience which suggesting a seasoned workforce capable of handling complex projects. Then educational qualifications reveal that most respondents hold MSc (45%) or HND (40%), while a smaller but important segment (15%) possess PhDs, indicating a blend of practical skills and advanced academic expertise. Overall, the data portrays a technically skilled, experienced and academically diverse workforce that is well positioned to drive responsible innovation orientation and sustainable project performance.

Hypotheses Testing

Ho₁: There is no significant relationship between anticipatory orientation and economic performance.

Ho₂: There is no significant relationship between anticipatory orientation and social performance.



H₀₃: There is no significant relationship between reflexive orientation and economic performance.

H₀₄: There is no significant relationship between reflexive orientation and social performance.

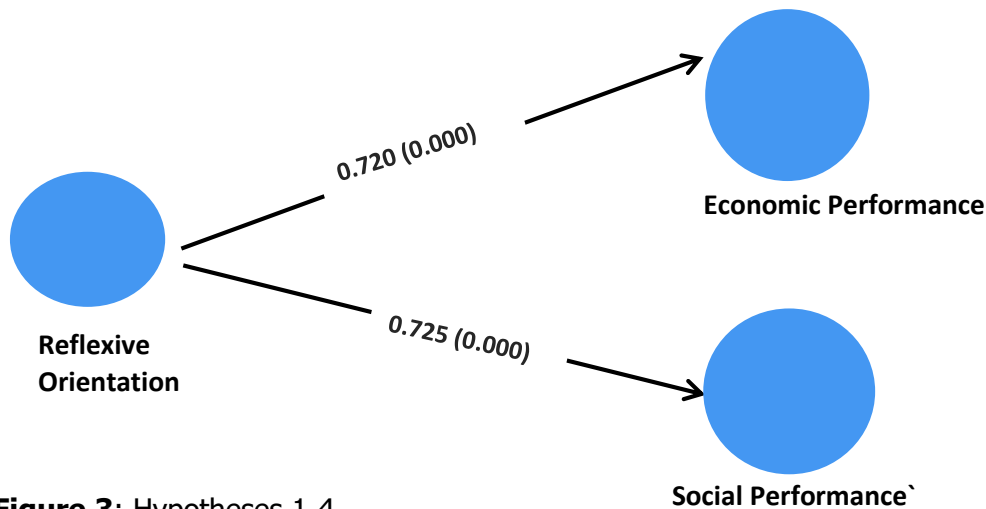


Figure 3: Hypotheses 1-4

Table 3: Analysis of the effect of dimensions of responsible innovation orientation (anticipatory and reflexive orientations) on measures sustainable project performance (economic and social performance)

Hypothesized Path	Standardized Beta	Std. Error	T-Value Value	P-Value (2-tailed)	Relationship Strength	Decision
Anticipatory Orientation → Economic Performance	0.763	0.058	13.12	0.000	Very Strong Positive	Significant
Anticipatory Orientation → Social Performance	0.770	0.060	12.85	0.000	Very Strong Positive	Significant
Reflexive Orientation → Economic Performance	0.720	0.067	10.74	0.000	Strong Positive	Significant
Reflexive Orientation → Social Performance	0.725	0.069	10.52	0.000	Strong Positive	Significant

N=100

The table above shows that anticipatory orientation has a very strong and statistically significant positive influence on both economic performance ($\beta=0.763$) and social performance ($\beta=0.770$). This result shows that firms which proactively anticipate future market trends, prepare for uncertainties and decisively position themselves ahead of competitors achieve superior financial outcomes while also contributing positively to social well-being. Hence, the high T-values and P-values that confirms the strength of these effects, emphasizing anticipatory orientation as an essential key driver of sustainable project performance.

Analysis on reflexive orientation also demonstrates strong and positive correlation with economic ($\beta = 0.720$) and social performance ($\beta = 0.725$). This indicates that organizations that consistently reflect on their practices, learn from past experiences, and adapt strategies accordingly are better able to reinforce both economic and social performance. Then, reflexive performance enhances continuous improvement, and responsiveness to stakeholder feedback, which in turn translates into efficiency gains and enhanced trust among stakeholders. The statistical significance validates the reliability of these relationships.

Discussion of Findings

From the Ho1 to Ho2: The analysis revealed a very strong positive correlation between anticipatory orientation with economic and social performance. This finding emphasizes the importance of organisations adopting a proactive stance in anticipating future market trends, preparing for uncertainties and tactically positioning themselves ahead of competitors. Economically, such foresight enables firms to innovate, remain competitive and achieve superior economic outcomes. Socially, anticipatory orientation allows firms to align with emerging societal expectations, strengthen stakeholder trust and contribute meaningfully to community growth. The strength of the statistical results shows that anticipatory orientation is a critical driver of sustainable project performance. This finding agreed with the work of Mikkil and Christina (2021), such anticipatory activities gauge and guide organizational processes and modes of thinking and acting along different temporal orientations, and have governance effects that makes anticipation performative by its very nature.

From Ho3 to Ho4: The analysis showed a strong positive correlation between reflexive orientation and economic and social performance. Reflexive orientation emphasizes on continuous reflection learning from past experiences and adapting strategies in response to feedback. Economically, this reflective capacity raises efficiency, elasticity and continuous improvement enabling firms to sustain development even in unpredictable situations. Socially, reflexive orientation enhances accountability, responsiveness to stakeholders and rightness in the eyes of the public. The statistical significance of this relationship affirms that reflexive orientation is a meaning full contributor to sustainable project performance. This finding agreed with the work of Pieter and Barbara (2017), suggest a shifting compatibility between initiative and context–reflexivity alignment: the extent to which an innovation initiative shares an orientation towards structural change with its institutional setting.

CONCLUSION

In conclusion we can adduce that anticipatory orientation highlights the importance of proactive foresight in driving economic and social performance While reflexive orientation emphasizes the role of continuous reflective learning and adapting to the concept of sustainable project performance while enhancing stakeholders trust. Together, these orientations provide a complementary foundation for organisations such as road construction companies to achieve sustainable project performance in dynamic settings.

RECOMMENDATIONS

1. Road construction companies in Rivers State should invest in market intelligence systems, scenario planning, and forecasting tools to better anticipate industry trends, regulatory changes, environmental risks, and client needs. This will improve strategic decision making, enhance competitiveness, reduce uncertainty, and strengthen long term profitability.
2. Road construction companies should establish structured mechanisms for continuous evaluation, such as periodic project reviews, lessons learned workshops, stakeholder feedback systems, and post project assessment meetings. These practices will promote organizational learning, operational adaptability, and continuous improvement in project delivery.
3. Management of road construction companies should integrate corporate social responsibility initiatives into their core business strategies to ensure that economic objectives are aligned with community development, social inclusion, and stakeholder expectations. This will enhance social legitimacy, public trust, and sustainable project outcomes.
4. Managers of road construction companies should promote an organizational culture that supports both anticipatory and reflexive orientations by encouraging proactive thinking, ethical reflection, knowledge sharing, and responsiveness to environmental and stakeholder concerns. In addition,

regular training programmes and leadership development initiatives should be implemented to strengthen responsible innovation practices across all organizational levels.

5. Government agencies and professional regulatory bodies should develop sustainability guidelines and monitoring frameworks that encourage responsible innovation practices in road construction projects. This will help ensure compliance with ethical, social, and sustainability standards within the construction sector.

CONFLICT OF INTEREST

The Authors declare no potential conflict of interest with respect to the research, authorship and publication of this article.

REFERENCES

- Afsar, B., Maqsoom, A., Shahjehan, A., Afridi, S.A., Nawaz, A. & Fazliani, H. (2020). Responsible leadership and employee's pro-environmental behavior: The role of organizational commitment, green shared vision, and internal environmental locus of control. *Corporate Social Responsibility and Environmental Management*, 27(1), 297-312.
- Ahmad, I., Donia, M.B.L., Khan, A. & Waris, M. (2018). Do as I say and do as I do? The mediating role of psychological contract fulfillment in the relationship between ethical leadership and employee extra-role performance. *Personnel Review*, 48(1), 98-117. Doi: 10.1108/PR-12-2016-0325.
- Akinbuli, S. F., & Olamide, A. T. (2021). Financial performance analysis of Nigerian listed firms: Post-COVID-19 recovery trends. *African Journal of Finance and Economic Development*, 14(2), 89–104.
- Anderson, B. (2010). Preemption, precaution, preparedness: Anticipatory action and future geographies. *Progress in Human Geography*, 34, 777–798.
- Arkesteijn, M., van Mierlo, B. & Leeuwis, C. (2015). The need for reflexive evaluation approaches in development cooperation. *Evaluation*, 21(1), 99 –115
- Barben D, Fisher E, Selin C, Guston, D. H. (2008). *Anticipatory governance of nanotechnology: Foresight, engagement, and integration*. In: Hackett EJ, Amsterdamska O, Lynch M, Wajcman, J. (eds). *The handbook of science and technology studies* (3rd). MIT Press.
- Beck, U., Bonss, W. & Lau, C. (2003). The theory of reflexive modernization. Problematic, hypotheses and research programme. *Theory, Culture & Society*, 20(2), 1–33.
- Bos, J. J. & Brown, R. R. (2012). Governance experimentation and factors of success in socio technical transitions in the urban water sector. *Technological Forecasting and Social Change*, 79(7), 1340–1353.
- Burget, M., Bardone, E. & Pedaste, M. (2017). Definitions and conceptual dimensions of responsible research and innovation: A literature review. *Sciences and Engineering Ethics* 23, 1–19. <https://doi.org/10.1007/s11948-016-9782-1>.
- Cavanagh, T.E., Oza, A. & Bennett, C. J. (2005). *The measure of success: Evaluating corporate citizenship performance*. Conference Board.

- Chen, Y. S, Lai, S. B. & Wen, C. T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, 67, 331-339. <https://doi.org/10.1007/s10551-006-9025-5>
- Cheng, C. C. J. (2020). Sustainability orientation, green supplier involvement, and green innovation performance: Evidence from diversifying green entrants. *Journal of Bus Ethics* 161, 393 – 414. <https://doi.org/10.1007/s10551-018-3946-7>
- Chung, C. J. & Wee, H. M. (2008). Green-component life-cycle value on design and reverse manufacturing in semi-closed supply chain. <https://doi.org/10.1016/j.ijpe.2007.10.020>
- Chunhui, H., Muhammad, A. S. & Misbah, A. (2023). *Impact of responsible leadership on sustainable performance: A moderated mediation model*. Kybernetes ©Emerald Publishing Limited 0368-492X DOI 10.1108/K-03-2023-0342
- Dean, M. (2007). *Governing societies: Political perspectives on domestic and international rule*. McGraw Hill.
- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Oxford, England: Capstone Publishing.
- Exton, C. & Shinwell, M. (2018). Policy uses of well-being metrics: Describing Countries' experiences. OECD Statistics Working Papers, 7, <https://dx.doi.org/10.1787/d98eb8ed-en>.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston, MA: Pitman.
- Hervas-Oliver, J. L, Márquez-García J. A. A. & García-Chamizo. F. (2024). Are clusters and industrial districts really driving sustainability? <https://doi.org/10.1108/CR-06-2024-0109>
- Jungmann, R. & Windeler, A. (2026). Reflexive Innovation and Reflexive Modernization. In: Schulz-Schaeffer, I., Windeler, A., Blättel-Mink, B. (eds) *Handbook of innovation*. Springer, Cham. https://doi.org/10.1007/978-3-031-25143-6_58-1.
- Kim, M.J. & Hall, C. M. (2021). Do perceived risk and intervention affect crowd funder behavior for the sustainable development goals? A model of goal-directed behavior. *Journal of Cleaner Production*, 311, 127614.
- Lawal, Y.A., Abdul-Azeez, I. F. & Olawale, I. O. (2024). Sustainable project management practices and the performance of construction companies. *Management dynamics in the Knowledge Economy*, 12(3), 302 – 320. Doi:10.2478/mdke-2024-0018
- Lynch, M. (2000). Against reflexivity as an academic virtue and source of privileged knowledge. *Theory, Culture & Society*, 17(3), 26–53.
- Melander, L. & Arvidsson, A. (2022). Green innovation networks: A research agenda. *Journal of Clean Prod*, 357. <https://doi.org/10.1016/j.jclepro.2022.131926>
- Michael, B. & Boussa, A. S. (2024). Economic performance and human development in Nigeria. *IIARD International Journal of Economics and Business Management*, 10(1), 285-309. www.iiardjournals.org

- Mikkil, F. & Christina, G. (2021). Anticipation and organization: Seeing, knowing and governing futures. *Organization Theory*, 2, 1 – 25. DOI: 10.1177/26317877211020325.
- Nelson, N., Geltzer, A., & Hilgartner, S. (2008). Introduction: The anticipatory state: Making policy-relevant knowledge about the future. *Science and Public Policy*, 35, 546–550.
- Owen, R., Macnaghten, P., & Stilgoe, J. (2012). Responsible research and innovation: From science in society to science for society, with society. *Science and Public Policy*, 39(6), 751–760. <https://doi.org/10.1093/scipol/scs093>
- Parrilli MD, Balavac-Orlić M, Radicic D (2023). Environmental innovation across SMEs in Europe. *Technovation*, 119, 102541. <https://doi.org/10.1016/j.technovation.2022.102541>
- Peiró-Signes, Á, Segarra-Oña, M. D. V. & Miret-Pastor, L. (2011). Eco-innovation attitude and industry's technological level - an important key for promoting efficient vertical policies. *Environ Eng Management Journal*, 10, 1893–1901. <https://doi.org/10.30638/eemj.2011.253>
- Rubel, M. R. B., Kee, D. M. H. & Rimi, N. N. (2021). Green human resource management and supervisor pro-environmental behavior: the role of green work climate perceptions. *Journal of Cleaner Production*, 313, 127669.
- Rubel, M. R. B., Kee, D. M. H. & Rimi, N.N. (2021). Green human resource management and supervisor pro-environmental behavior: The role of green work climate perceptions. *Journal of Cleaner Production*, 313, 127669.
- Sancak, I.E. (2023). Change management in sustainability transformation: a model for business organizations. *Journal of Environmental Management*, 330, 117165.
- Siegerink, V., Shinwell, M. & Žarnic, Ž. (2022). *Measuring the non-financial performance of firms through the lens of the OECD well-being framework: A common measurement framework for "Scope 1" Social performance*. *OECD Papers on Well-being and Inequalities*, 03, OECD Publishing. <https://dx.doi.org/10.1787/28850c7f-en>.
- Smith, A. & Raven, R. (2012). What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy*, 41, 1025–1036.
- van Mierlo, B., Arkesteijn, M. & Leeuwis, C. (2010). Enhancing the reflexivity of system innovation projects with system analyses. *American Journal of Evaluation*, 31(2), 143–161.
- Von-Schomberg, R. (2012). Prospects for technology assessment in a framework of responsible research and innovation' in: *Technikfolgen abschätzen lehren: Bildungspotenziale transdisziplinärer Methode*. Springer.
- Wang, J., Yang, X., Bailey, A. & Wang, J. (2021). Positive spillover of consumers' sustainable behaviors: the mediating role of self-determination need satisfaction. *Journal of Cleaner Production*, 317, 128436.
- Zehir, C, Can, E. & Karaboga, T. (2015). Linking entrepreneurial orientation to firm performance: The role of differentiation strategy and innovation performance. *Procedia Soc Behav Sciences*, 210, 358 - 367. <https://doi.org/10.1016/j.sbspro.2015.11.381>

