



Unravelling ethical dilemmas: how consultants' decisions impact road construction project performance in Dar es Salaam and Tabora, Tanzania

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Article History

Received: 2024.12.14

Revised: 2025.04.06

Accepted: 2025.04.10

Published: 2025.04.11

Keywords

Ethical dilemmas

Governance

Projects

Tanzania

Transparency

How to cite:

Mwankusye, H. A., Nsimbila, P., & Makoye, E. (2025). Unravelling ethical dilemmas: how consultants' decisions impact road construction project performance in Dar es Salaam and Tabora, Tanzania. *Eastern African Journal of Humanities and Social Sciences*, 4(1), 195-208.

Abstract

This study examines how consultants' decisions, shaped by ethical dilemmas, influence the performance of road construction projects in Tanzania. Grounded in the Virtue Theory of Ethics, the research explores the role of behavioural, socio-economic, institutional, and political factors in shaping ethical decision-making within the construction sector. The study employs Covariance-Based Structural Equation Modelling (CB-SEM) to analyse 289 valid survey responses from road construction professionals. The measurement model was validated using factor loadings, while the structural model assessed the relationships between ethical dilemmas and project performance. The findings reveal that institutional factors have the most significant influence on ethical dilemmas in road construction, followed by behavioural factors, socio-economic factors, and political factors. The regression model confirms that ethical dilemmas significantly impact project performance, with governance structures, transparency, and professional integrity emerging as key determinants. The ANOVA test further confirms the statistical significance of the model, reinforcing the robustness of the relationship between ethical dilemmas and construction project outcomes. The study calls for policy reforms to strengthen ethical governance in road construction. Regulatory bodies should enforce stricter accountability measures, promote ethical leadership training, and integrate digital transparency tools. Practitioners should adopt ethics audits, stakeholder engagement frameworks, and integrity-driven decision-making to enhance project success. This study provides empirical evidence on the structural relationship between ethical dilemmas and project performance, offering a novel perspective on fostering ethical character and professional integrity in the industry. The findings inform policymakers, practitioners, and researchers on improving ethical compliance and infrastructure sustainability.

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Introduction

Ethical conduct in road construction projects ensures efficiency, quality, and cost-effectiveness. Worldwide, the construction industry faces ongoing ethical dilemmas influenced by behavioural, socio-economic, institutional, and political factors (Oluwatosin, 2024; Gomarn & Pongpeng, 2021). These dilemmas arise when consultants encounter conflicts between professional responsibilities



and external pressures, forcing them to choose between ethical and unethical courses of action (Park & Kim, 2024; Yang & Wang, 2014). Decision-making in such situations is shaped by personal attitudes, subjective norms, and perceived behavioural control, which can impact project execution (Fang, 2023; Fang et al., 2023). Ethical breaches, such as corruption, mismanagement, and regulatory non-compliance, result in cost overruns, project delays, and inferior infrastructure (Dlamini & Cumberlege, 2021).

Unethical practices are prevalent in both developing and developed economies, with conflicts of interest and unethical behaviour contributing to project failures even within highly regulated construction sectors (Gao et al., 2021). Given the substantial financial investments involved in large-scale public infrastructure projects, ethical issues have come under increased scrutiny. Historically, construction projects lacked formal ethical oversight and had limited regulatory mechanisms (Gyoo Kang et al., 2014). The consequences included inflated costs, reduced quality, and frequent project delays. In response, ethical frameworks have gradually been incorporated into regulatory systems to address modern infrastructure complexities. Governments and professional organisations have introduced codes of conduct and ethical guidelines to enhance governance in engineering and construction (Kapogiannis et al., 2021). Despite these measures, ethical dilemmas persist due to the discretionary nature of decision-making and hurdles in project oversight (Fang et al., 2023). Technological advancements such as Building Information Modelling (BIM) and automated procurement systems have sought to reduce corruption (Tor & Gambo, 2024), yet consultants continue to face challenges in balancing stakeholder interests, project constraints, and ethical obligations (Gomarn & Pongpeng, 2021).

The impact of ethical dilemmas in road construction has been extensively explored, particularly regarding the behavioural, socio-economic, institutional, and political factors influencing ethical decision-making. Developed countries have implemented regulatory compliance measures and corporate social responsibility (CSR) initiatives to mitigate unethical behaviour (Yang et al., 2023). In Germany and the United Kingdom, public-private partnerships (PPPs) promote ethical governance by ensuring transparency in procurement and conflict resolution processes (Kuuribo et al., 2022). In North America, organisations such as the American Society of Civil Engineers (ASCE) and the Construction Industry Ethics and Compliance Initiative (CIECI) have introduced professional ethics training programmes to enhance adherence to ethical standards (Abdulazeez *et al.*, 2021). Likewise, in Asia, rapid urbanisation in China and India has intensified ethical challenges, including bribery in project tenders and regulatory loopholes (Gao et al., 2021).

In Africa, ethical dilemmas in road construction are common due to weak regulatory enforcement and political interference (Tor & Gambo, 2024). In Nigeria, unethical consulting practices have led to inflated costs and substandard infrastructure (Alutu, 2024). Similarly, Ghana and Kenya face contract irregularities and poor execution due to limited accountability and stakeholder engagement (Kuuribo et al., 2022). Although reforms and anti-corruption bodies exist, procurement processes often remain opaque and vulnerable to unethical behaviour (Khoshnava et al., 2020).

In Tanzania, ethical challenges persist in publicly funded road construction projects. Despite the guidelines set by the National Construction Council (NCC) and the Public Procurement Regulatory Authority (PPRA), enforcement remains inconsistent (Sidaeli & Athumani, 2020; Gervas et al., 2023). Reports from the National Audit Office (NAOT, 2022) attribute cost overruns to inadequate feasibility studies, unethical consultancy practices, and non-compliance with regulations. Furthermore, political pressures and conflicting stakeholder interests exacerbate ethical dilemmas, undermining project efficiency and quality (Mwakamui & Ntshwene, 2024).



While ethical dilemmas are widely recognised, empirical research on their root causes remains limited—especially regarding the influence of behavioural factors among consultants. This study seeks to examine how these factors affect ethical decision-making and project outcomes, offering insights and policy recommendations to improve ethical governance and regulatory effectiveness in Tanzania's road construction sector.

Theoretical perspective

This study is grounded in the Virtue Theory of Ethics, which provides a moral framework for understanding the ethical dilemmas faced by consultants in Tanzania's road construction industry. Unlike deontological and consequentialist approaches that focus on rules and outcomes, virtue ethics emphasises character and moral integrity in ethical decision-making. The theory was developed by Aristotle in *Nicomachean Ethics* (Aristotle, 350 BCE/2009), where he argued that ethical behaviour is not merely about adhering to rules or achieving specific outcomes but about cultivating virtues—such as honesty, justice, courage, and wisdom—through habitual practice and moral reasoning (MacIntyre, 2007). Aristotle maintained that a virtuous person acts rightly, at the right time, in the right way, and for the right reasons. Applying this perspective to consultancy, virtue ethics suggests that ethical behaviour extends beyond mere regulatory compliance and involves the cultivation of virtues such as fairness, accountability, and professional responsibility. Given the frequent conflicts of interest, political pressures, and resource constraints encountered by consultants, this study examines how personal character influences decision-making and the extent to which ethical virtues can mitigate unethical practices in project execution. In Tanzania's road construction sector, where weak regulatory enforcement and political interference often undermine project quality, virtue ethics underscores the importance of fostering ethical leadership and a culture of integrity within consultancy firms. By focusing on habitual ethical conduct and professional integrity, this theoretical perspective enhances the understanding of how moral character shapes professional behaviour, ultimately contributing to improved governance, project efficiency, and sustainable infrastructure development.

Materials and methods

Study sites

This study was conducted in the Dar es Salaam and Tabora regions, chosen for their significance in analysing the impact of ethical dilemmas on road construction project performance. Dar es Salaam, Tanzania's commercial hub, hosts 234 engineering consulting firms, which represent 81% of the national total (Engineers Registration Board [ERB]). The region has several completed and ongoing public road construction projects, such as BRT Phase 2 (Lots I and II), the Morogoro Road widening (Kimara-Kibaha), and the Ubungu Interchange, with a total budget of 552 billion shillings (National Audit Office of Tanzania [NAOT], 2021). Ethical issues identified in NAOT Audit Reports (March 2021) during project implementation warranted the inclusion of Dar es Salaam. Moreover, Tabora was selected due to significant government investment in infrastructure, which exceeded 541.74 billion shillings between 2016 and 2021 (NAOT, 2021). Major projects included Nyahua-Chaya (85.4 km), Usesula-Mpanda (354 km), Urambo-Kaliua (28 km), Kazilambwa-Chagu (36 km) roads, and 54.3 km of airport runways. Audit reports by NAOT (2018–2021) and PPRA (2018/2019) exposed ethical concerns in project implementation. Additionally, poor financial management was noted in four of the eight district councils (NAOT, 2019/2020). These factors rendered both regions suitable for exploring the ethical dilemmas affecting road construction consultancy performance in Tanzania.

Research design and approach

A cross-sectional research design collected both quantitative and qualitative data at a single point in time, providing a snapshot of consultancy practices and ethical challenges in road construction



(Creswell & Creswell, 2018). This design enabled stakeholder diversity, regional comparison, and time efficiency. A mixed-methods approach enhanced this by integrating statistical analysis of behavioural factors and project performance (Bryman, 2016) with qualitative insights into the nature and context of ethical dilemmas (Patton, 2015). This methodological triangulation ensured a more robust analysis, supporting the view that combining methods mitigates individual limitations (Mwonge & Naho, 2021, 2022, 2024).

Study population and sampling techniques

The study focused on professionals directly involved in road construction consultancy – project managers, materials engineers, quantity surveyors, highway engineers, and structural engineers – from 288 registered firms. These individuals were chosen for their active roles in project execution and ethical decision-making, where dilemmas frequently arise due to tensions between integrity, financial pressure, and regulatory demands. Using Yamane's (1967) formula with a 5% margin of error and a population of 1,440, the sample size was calculated to be approximately 314. Systematic sampling was employed to select 62 firms at every fifth interval, with one respondent from each professional category chosen per firm, resulting in 310 participants. To ensure representativeness, individual respondents were selected through a lottery, while purposive sampling identified key informants from ERB and TECU, who provided essential insights into regulatory and ethical issues.

Data type, sources and collection methods

Both primary and secondary data were collected to ensure a comprehensive analysis. Primary data were gathered through structured questionnaires and in-depth interviews with consultants, project managers, and regulatory officials (Creswell, 2014). The questionnaires captured key variables, including respondents' demographic and professional details, organised into four main domains: behavioural factors (BF), such as greed, personal attitudes, and moral beliefs; social and professional pressures; and perceived behavioural control. Socio-economic factors (SEF) included aspects like the respondents' income levels, educational background, and years of professional experience. Institutional factors (IF) involve compliance with ethical standards, perceptions of regulatory effectiveness, and the availability of institutional support mechanisms, including ethics training and whistleblower systems. Political factors (PF) comprise elements such as political influence, government regulations, and political pressure. Secondary data were sourced from government audit reports, policy documents, and previous studies (NAOT, 2021; PPR, 2019), facilitating triangulation and enhancing the reliability of the findings.

Data analysis

Data analysis involved Covariance-Based Structural Equation Modelling (CB-SEM) for the quantitative data, assessing relationships between behavioural factors affecting consultants' ethical dilemmas (Hair et al., 2019). Confirmatory Factor Analysis (CFA) was conducted to validate the proposed relationships. Qualitative data were analysed using thematic analysis, which involved identifying key themes and patterns within interview responses. Thematic analysis followed a structured process of familiarisation, coding, theme development, and validation. The integration of these analytical methods provided a robust examination of how ethical dilemmas influence road construction project performance, complementing statistical findings with contextual insights from industry professionals.

Results and discussion

Response rate

A total of 310 questionnaires were distributed to respondents within the study area. Of these, 289 were fully completed and returned, yielding a response rate of 93.23%. This high response rate is a key strength of the study, as it enhances the statistical validity of the sample and the findings,



making them more representative of the broader population and reinforcing the credibility of the research outcomes (Shutt, 2019; Msambali & Mwonge, 2023, 2024).

Structural Model for SEM

Before presenting the findings data collected, the questionnaires were systematically coded and analysed using appropriate statistical tools to examine the relationships between key explanatory variables and ethical dilemmas in road construction projects. The model is specified as follows:

$$Y_i = \beta_0 + \beta_1 x_{1i} + \dots + \beta_k x_{ki} + \mu_i \tag{1}$$

were:

Y_i represents the dependent variable (ethical dilemmas in road construction projects).

β_0 is the constant term (intercept)

β_i (where $i = 1,2,3,4$) are parameters to be estimated.

x_i (where $i = 1,2,3,4$) denote the independent (explanatory) variables.

μ_i represents the error term, capturing unobserved factors influencing Y_i .

Given the four key explanatory variables under investigation, the model is further refined as follows:

$$Y_i = \beta_0 + \beta_1 BF + \beta_2 SEF + \beta_3 IF + \beta_4 PF + \mu_i \tag{2}$$

where:

BF refers to behavioural factors,

SEF denotes socio-economic factors,

IF stands for institutional factors, and

PF represents political factors.

This regression model evaluates how political, socio-economic, behavioural, and institutional factors affect variations in ethical dilemmas within road construction projects. The inclusion of these variables is grounded in empirical and theoretical justifications, as ethical decision-making in construction projects is frequently shaped by regulatory frameworks, financial constraints, professional conduct, and governance structures. The estimated results of the structural model are summarised in Table 1.

Table 1: Summary of the regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	Shapiro-Wilk
1	0.937 ^a	0.879	0.877	0.27932	1.89	0.897

a. Predictors: (Constant), BF , SEF , IF , PF

Source: Research findings, (2024)



The model summary provides key insights into the explanatory power and overall goodness of fit of the regression model. The R-value of 0.937 signifies a strong positive correlation between the independent and dependent variables, indicating that the selected factors significantly influence ethical dilemmas in road construction projects. The R-Square value of 0.879 suggests that approximately 87.9% of the variation in ethical dilemmas can be explained by political, socio-economic, behavioural, and institutional factors. Moreover, the adjusted R-Square value of 0.877 reinforces the model's robustness by accounting for potential overfitting, confirming that these four variables collectively explain 87.7% of the variation in ethical dilemmas within the sector. Additionally, the Durbin-Watson statistic of 1.89 indicates that autocorrelation is not a significant concern, thus ensuring the reliability of the regression estimates. Furthermore, the Shapiro-Wilk test result of 0.897 suggests that the residuals exhibit an acceptable level of normality, supporting the validity of the model's assumptions.

Moreover, the results of the Analysis of Variance (ANOVA) provide further insights into the variability within the regression model, serving as a crucial test for the overall significance of the model. Table 2 presents these results.

Table 2: ANOVA Test Results: validating the overall significance of the regression model

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	160.285	4	40.071	513.731	0.000 ^a
	Residual	22.157	284	0.078		
	Total	182.442	288			

a. Predictors: (Constant), BF, SEF, IF, PF

The ANOVA results demonstrate the statistical significance of the regression model in explaining variations in the dependent variable. The sum of squares attributed to the regression model (160.285) is significantly higher than the residual sum of squares (22.157), indicating that the independent variables collectively account for a considerable proportion of the total variability in the dependent variable. Furthermore, the F-statistic value of 513.731, along with a highly significant p-value of 0.000, confirms that the overall regression model is statistically significant at the 95% confidence level. This suggests that the explanatory variables – BF, SEF, IF, and PF – have a meaningful impact on the dependent variable beyond what could occur due to random variation.

Additionally, to assess the impact of ethical dilemmas on road construction project performance, a structural model was utilised. In this model, ethical dilemmas served as the dependent variable, while BF, SEF, IF, and PF were considered independent variables. The structural coefficients derived from the model are presented in Table 3.

Table 3: Coefficients of regression mode

	Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.525	0.345		7.769	0.001
	BF	-0.305	0.039	-0.274	1.787	0.000
	SEF	0.047	0.059	0.017	19.802	0.002
	IF	0.886	0.045	0.726	2.830	0.000
	PF	0.133	0.047	0.066	7.769	0.005



Behavioural factors (BF): The negative and statistically significant relationship between behavioural factors and ethical dilemmas ($\beta = -0.305$, $p < 0.01$) indicates that enhanced ethical behaviour among stakeholders reduces ethical dilemmas in road construction projects. This aligns with Virtue Ethics, which emphasises moral character over strict adherence to rules in ethical decision-making (MacIntyre, 2007). In road construction, unethical practices such as bribery and fraud often arise from personal attitudes and external pressures. One respondent noted that:

...consultants' decisions at various stages – planning, procurement, execution, and maintenance – critically influence ethical dilemmas. These issues decrease when transparency improves, especially during planning and procurement. However, supervision, which relies heavily on human judgement, remains vulnerable to misconduct... (Planning KII, TANROADS)

This highlights the importance of early-stage decisions in enhancing project integrity, while later stages, particularly supervision, present greater ethical risks. Empirical studies support this viewpoint, linking unethical behaviour to cost overruns and quality issues (Kuoribo et al., 2023). Similarly, Ofori-Kuragu et al. (2020) found that weak enforcement of ethical codes and social pressures often lead to corruption in construction. Therefore, improving ethics training and accountability mechanisms can help alleviate ethical dilemmas and boost performance in road construction projects.

Socio-Economic Factors (SEF): The weak yet positive association between socio-economic factors (SEF) and ethical dilemmas ($\beta = 0.047$, $p < 0.01$) indicates that economic conditions – such as income inequality and job insecurity – may contribute to ethical challenges in road construction. According to Virtue Ethics, this suggests that external pressures – such as financial hardships – might lead individuals to act against virtuous principles, prioritising survival over moral integrity. Furthermore, these results align with the findings of Abdulazeez et al. (2021), who suggest that economic downturns and high unemployment rates often create incentives for unethical behaviour in the construction sector, as professionals and contractors might resort to bribery and cost inflation to secure contracts. In low-income economies, limited financial resources exacerbate ethical dilemmas, particularly when contractors encounter financial constraints that compromise project standards.

Institutional Factors (IF): Institutional factors have emerged as the strongest determinant of ethical dilemmas, demonstrating a highly significant positive effect ($\beta = 0.886$, $p < 0.01$). This suggests that weak regulatory institutions and inadequate governance structures create an environment where ethical violations can thrive. According to Virtue Ethics, institutions – like individuals – must embody moral virtues to promote ethical behaviour within their operations. Empirical studies support this argument. Odeyemi et al. (2024) found that when institutions fail to uphold principles such as fairness and honesty, corruption becomes systemic in construction projects. Similarly, Sohail et al. (2023) identified that ethical dilemmas in infrastructure projects often stem from institutional weaknesses, including a lack of transparency in procurement and insufficient regulatory enforcement.

Political Factors (PF): The positive and significant relationship between political factors (PF) and ethical dilemmas ($\beta = 0.133$, $p = 0.005$) illustrates how political dynamics impact ethical challenges in the construction sector. In accordance with Virtue Ethics, this indicates that political leaders and policymakers must exhibit virtues such as justice, fairness, and integrity to foster ethical governance in infrastructure projects (Aristotle, 2009). Additionally, empirical evidence from Gotsis and Kortezi (2010) shows that political interference in infrastructure projects frequently leads to contract misallocation, cost inflation, and substandard project delivery. Likewise, Pezoa



(2017) found that politically connected firms are more likely to obtain public construction contracts, even when they fail to meet technical and financial requirements.

Also, during data collection, one of the respondents attested that:

... political interference significantly influences ethical dilemmas in construction projects. Contractors may be pressured by politicians to fast-track projects to serve political agendas, which could compromise their professional integrity and ethical conduct.

This testimony illustrates how political dynamics can complicate ethical dilemmas, as contractors may feel pressured to prioritise political interests over quality and professional standards. To reduce the impact of political factors, governance reforms – such as independent project evaluation committees and transparent tendering processes – are essential for upholding ethical standards.

SEM Experimental Models

The Structural Equation Modelling (SEM) analysis highlights the standardised relationships between the independent variables – BF, SEF, IF, PF – and Project Performance (PP). The measurement model indicates that IFs are the most consistently measured, reflecting strong governance, organisational policies, and resource availability. Behavioural factors are also well measured, particularly indicators BF3, BF7, BF8, and BF9 (loadings > 0.85), which effectively capture leadership, management, and team cohesion. Socio-economic factors are measured at a moderate level, with SEF6 and SEF7 (loadings > 0.80) proving to be the most reliable in capturing socio-economic influences. Political factors demonstrate acceptable measurement, with indicator loadings ranging from 0.67 to 0.80, although PF1 has the weakest loading – suggesting challenges in fully representing the complexity of political dynamics.

Among the project performance indicators, PPt stands out as the strongest, while PPq and PPc contribute less, particularly PPc. The limited contribution of PPc suggests potential measurement challenges or differences in how project performance is perceived across various dimensions. Overall, the SEM results confirm that the latent constructs are measured with adequate reliability, with IF demonstrating the highest measurement strength, followed by BF, SEF, and PF. Refer to Figure 1.

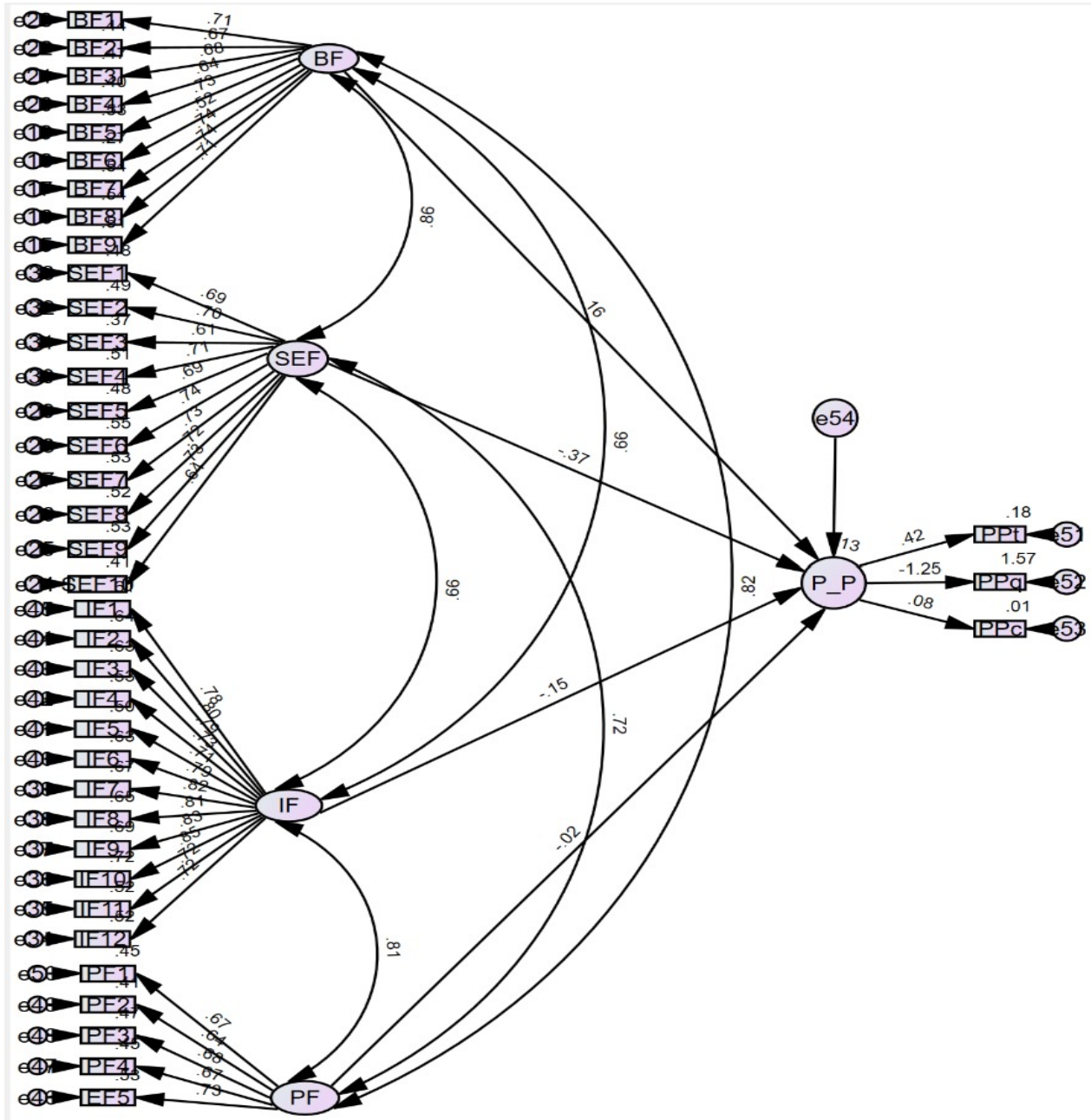


Figure 1: Exploratory Factor Analysis Model

Source: Research Findings (2024)

The results of the measurement model reveal the standardised factor loadings for each latent construct, offering insights into the reliability and validity of the indicators used in the study. The findings demonstrate that IF and BF exhibit strong measurement properties, while SEF and PF are moderately reliable. Refer to *Appendix 1* for the evaluation of the latent variable measurement model.

Policy and practical implications



This study's findings have important policy and practical implications for improving ethical decision-making and project performance in road construction. By identifying key behavioural, socio-economic, institutional, and political factors that influence ethical dilemmas, policymakers and industry practitioners can create targeted strategies to enhance governance, accountability, and efficiency within the sector.

First, **strengthen institutional governance and regulatory frameworks:** The study highlights the significance of institutional factors (IF) in influencing project outcomes, showing strong correlations with governance-related indicators. Policymakers should enforce stricter regulations and enhance institutional oversight to tackle ethical dilemmas in road construction. Furthermore, prioritising transparency and anti-corruption measures, along with more robust enforcement mechanisms, is essential to ensure compliance with ethical standards.

Secondly, **enhancing ethical leadership and professional integrity:** Considering the significant role of behavioural factors (BF), policies should prioritise ethics training and leadership development for project managers and engineers. Moreover, professional organisations should integrate ethical decision-making frameworks into their accreditation and licensing processes, ensuring that ethical considerations are embedded in project management practices.

Third, **reforming socio-economic policies to support ethical practices:** Socio-economic factors (SEF) play a significant role in shaping ethical dilemmas. Governments should implement incentive-based policies that encourage ethical compliance, such as contracting frameworks that reward integrity and social responsibility in procurement processes. Addressing economic inequalities through fair labour practices and equitable resource distribution will reduce the likelihood of unethical behaviour driven by financial pressures.

Fourth, **mitigating political influence in project implementation is crucial.** The findings highlight the moderate yet significant impact of political factors (PF) on ethical dilemmas. Depoliticising procurement and tendering processes through independent oversight bodies will help reduce undue political interference. Therefore, establishing public accountability mechanisms—such as citizen watchdog groups and digital transparency platforms—can enhance public participation in decision-making and improve project accountability.

Finally, **promoting the adoption of advanced technologies can significantly enhance ethical compliance and transparency in the construction sector.** Policymakers should encourage the integration of digital tools—such as blockchain-based contract management systems and AI-powered fraud detection—into public and private infrastructure projects. These technologies can strengthen governance frameworks, reduce opportunities for corruption, and ensure greater accountability, thereby fostering a more ethical and transparent environment for road construction projects.

Conclusion

This study examines the structural relationship between ethical dilemmas and road construction project performance, focusing on behavioural, socio-economic, institutional, and political factors. The results show that institutional factors (IF) have the greatest influence on ethical dilemmas, followed by behavioural factors (BF), socio-economic factors (SEF), and political factors (PF). The study further confirms that ethical considerations are central to project performance, reinforcing the need for robust governance, ethical leadership, and transparent decision-making processes. From a theoretical perspective, the study aligns with the Virtue Theory of Ethics, which emphasises the development of ethical character and professional integrity in decision-making. Ethical dilemmas in road construction often arise from conflicts between individual moral values and external pressures, such as political influence and economic constraints. The findings underscore



the necessity of fostering ethical virtues – such as honesty, fairness, and accountability – within the construction industry to enhance overall project performance and sustainability. Moreover, the policy implications suggest that regulatory bodies should strengthen governance structures by enforcing stricter ethical guidelines and accountability measures. Enhancing ethical leadership through professional training and integrating ethical considerations into procurement policies can help mitigate unethical practices. Additionally, the practical implications highlight the importance of ethics audits, stakeholder engagement, and digital transparency tools in improving ethical compliance and project outcomes.

Despite the contributions of this study, certain limitations must be acknowledged. The research primarily focused on a specific region, which may impact the generalizability of the findings to broader contexts. Future studies should consider comparative analyses across different geographical areas to assess the consistency of ethical challenges in road construction. Furthermore, qualitative insights into ethical dilemmas from key stakeholders, such as project managers, contractors, and regulatory authorities, could offer a deeper understanding of ethical decision-making in the industry.

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Appendix 1: Evaluation of Latent Variable Measurement Model

Latent Variable	Indicator	Standardised Loading
Behavioural Factors (BF)	BF1	0.71
	BF2	0.67
	BF3	0.88
	BF4	0.69
	BF5	0.73
	BF6	0.72
	BF7	0.86
	BF8	0.86
	BF9	0.85
Socio-economic Factors (SEF)	SEF1	0.69
	SEF2	0.76
	SEF3	0.71
	SEF4	0.61
	SEF5	0.74
	SEF6	0.83
	SEF7	0.82
Institutional Factors (IF)	IF1	0.78
	IF2	0.82
	IF3	0.84
	IF4	0.66
	IF5	0.79
	IF6	0.85
	IF7	0.88
	IF8	0.87
	IF9	0.9
	IF10	0.93
	IF11	0.83
	IF12	0.85
Political Factors (PF)	PF1	0.67
	PF2	0.76
	PF3	0.8
	PF4	0.79
	PF5	0.72
Project Performance (PP)	PPt	0.82
	PPq	0.42
	PPc	0.08