From Land Acquisition Risk to Project Success: The Mediating Role of Community Consent and Grievance Redress Mechanism Effectiveness in Uganda’s Linear Infrastructure Projects.

Abstract

Large linear infrastructure projects in developing economies often experience delays, compensation disputes, community resistance and weak grievance handling. Although land acquisition has traditionally been treated as a technical and legal process, this study argues that land acquisition risk affects project success through social legitimacy mechanisms. The study examined the effects of land acquisition risk on community consent, grievance redress mechanism effectiveness and project success in Uganda’s linear infrastructure projects. Using a quantitative dataset of 400 respondents and structural equation modelling, the study assessed the measurement model, construct reliability, convergent validity, discriminant validity, structural paths and mediation effects. Two negatively oriented indicators, LA6 and GR11, were reverse-coded during data cleaning. The measurement model demonstrated strong reliability and validity, with Cronbach’s alpha values ranging from 0.925 to 0.951, composite reliability values ranging from 0.936 to 0.957 and AVE values ranging from 0.571 to 0.671. The structural results showed that land acquisition risk significantly reduced community consent ($\beta = -0.436$, $p < .001$) and GRM effectiveness ($\beta = -0.363$, $p < .001$). Community consent significantly improved GRM effectiveness ($\beta = 0.434$, $p < .001$) and project success ($\beta = 0.185$, $p < .001$), while GRM effectiveness had the strongest direct effect on project success ($\beta = 0.557$, $p < .001$). The direct effect of land acquisition risk on project success was not significant ($\beta = -0.057$, $p = .182$). However, the total indirect effect was significant ($\beta = -0.388$, 95% CI [-0.452, -0.327]), confirming that land acquisition risk affects project success through community consent and GRM effectiveness. The study contributes to project management theory by showing that project success in linear infrastructure is socio-institutional as well as technical. It further recommends that land acquisition readiness, community consent and grievance resolution indicators should be embedded into infrastructure project governance frameworks.

Keywords: land acquisition risk; community consent; grievance redress mechanisms; project success; structural equation modelling; Uganda; linear infrastructure.

1. Introduction

Linear infrastructure projects such as roads, railways, electricity transmission lines, fibre networks, pipelines and water supply systems are central to economic transformation. In Uganda, such projects connect markets, expand access to services, support industrialisation and strengthen regional trade, which is consistent with the infrastructure priorities articulated in Uganda Vision 2040 and the Third National Development Plan (Government of Uganda, 2013; National Planning Authority, 2020). More broadly, infrastructure investment is widely recognised as a driver of productivity, connectivity, inclusion and long-term economic competitiveness (World Bank, 2017; OECD, 2018). However, these projects are also exposed to implementation risks because they pass through multiple land parcels, communities, administrative jurisdictions and livelihood systems (Flyvbjerg, 2007; Flyvbjerg, 2014). Therefore, their success depends not only on engineering design, financing and contractor performance, but also on how project institutions manage land acquisition, compensation, community relations and grievances (Davis, 2014; PMI, 2021).

Land acquisition risk remains one of the most persistent causes of infrastructure delivery difficulty. It includes delayed valuation, contested ownership, compensation disputes, disagreement over rates, livelihood disruption, limited access to acquired corridors and failure to hand over sites to contractors on time (Cernea, 1997; IFC, 2012; World Bank, 2017). In linear projects, even a small unresolved section can disrupt the entire implementation sequence because contractors often require continuous site access to maintain work fronts, logistics and sequencing (Flyvbjerg, 2014; Vanclay, 2017). Moreover, unresolved land issues may trigger protests, litigation, political interference, work stoppages, community hostility and escalation of project costs (ADB, 2012; Vanclay et al., 2015). These challenges show that land acquisition is not only a technical or legal process, but also a stakeholder management and social risk issue.

Although land acquisition risk is widely acknowledged, many project management studies still treat it mainly as a schedule, cost or legal risk. This perspective is useful but incomplete. Land acquisition risk can also be understood as a social legitimacy risk because affected communities evaluate whether the project process is fair, transparent and responsive (Suchman, 1995; Olander & Landin, 2005; Bice, 2014). Where communities perceive unfairness, they may withhold consent, resist project activities or refuse to use formal grievance channels (Prno&Slocombe, 2012; Moffat & Zhang, 2014). Conversely, where communities trust the process, project actors are more likely to secure cooperation, reduce disruption and resolve disputes before they escalate (Thomson &Boutilier, 2011; Davis, 2014). Therefore, community consent is central to the delivery of socially embedded infrastructure projects.

This study therefore examines the mechanisms through which land acquisition risk affects project success. Specifically, the study investigates the mediating role of community consent and grievance redress mechanism effectiveness. Community consent refers to the extent to which affected communities accept the project, trust project actors and cooperate with implementation activities. This understanding is consistent with the concept of social licence to operate, which emphasises legitimacy, credibility and trust between project actors and host communities (Thomson &Boutilier, 2011; Prno&Slocombe, 2012; Bice, 2014). GRM effectiveness refers to the ability of the project complaint system to receive, document, process and resolve concerns in a timely, transparent and fair manner. Effective grievance mechanisms are important because they provide affected persons with a recognised channel for voice, remedy and procedural justice (IFC, 2009; Ruggie, 2011; World Bank, 2017).

The central argument of the study is that land acquisition risk does not automatically translate into project failure. Instead, it affects project success by weakening community consent and undermining grievance handling. This argument is consistent with the broader project success literature, which shows that project outcomes are shaped not only by time, cost and quality, but also by stakeholder satisfaction, benefits realisation, legitimacy and long-term value (Atkinson, 1999; Shenhar et al., 2001; Cooke-Davies, 2002; Turner &Zolin, 2012; Serrador& Turner, 2015). The argument is tested using structural equation modelling on a dataset of 400 respondents from linear infrastructure project contexts in Uganda. The study contributes to project management literature by shifting attention from land acquisition risk as a direct technical constraint to land acquisition risk as a socio-institutional pathway that shapes project outcomes.

2. Literature Review and Hypotheses

Project success has evolved beyond the traditional iron triangle of time, cost and quality. Earlier project management scholarship treated success mainly as compliance with schedule, budget and technical specifications (Atkinson, 1999; Baccarini, 1999). However, contemporary literature increasingly recognises stakeholder satisfaction, benefits realisation, sustainability, strategic value and institutional legitimacy as important indicators of success (Shenhar et al., 2001; Cooke-Davies, 2002; Ika, 2009; Müller &Jugdev, 2012; Turner &Zolin, 2012; Serrador& Turner, 2015). This broader view is especially relevant for public infrastructure projects because such projects are implemented in politically visible, socially embedded and institutionally complex environments where technical delivery alone may not guarantee acceptance or long-term value (Flyvbjerg, 2007; Davis, 2014; PMI, 2021).

Land acquisition risk arises when project implementers face uncertainty, resistance or procedural challenges in obtaining land required for project corridors and sites. In linear infrastructure, this risk is amplified because projects affect long corridors, multiple jurisdictions, different land tenure arrangements and diverse communities. Land acquisition risk can reduce project success by delaying site access, increasing contractor claims, generating compensation disputes and escalating community resistance (Flyvbjerg, 2014; World Bank, 2017; Vanclay, 2017). Moreover, involuntary resettlement and land-related disruptions can create livelihood losses, social dislocation and distrust when affected persons perceive valuation, compensation or consultation processes as unfair (IFC, 2012; Vanclay et al., 2015). However, the direct effect of land acquisition risk on project success may depend on how project institutions manage social acceptance, participation and grievance resolution.

Community consent is closely related to the concept of social licence to operate. It reflects acceptance, trust and willingness to cooperate with project activities (Thomson &Boutilier, 2011; Prno&Slocombe, 2012). In public infrastructure contexts, consent is not a one-time event. Rather, it is continuously shaped by the fairness of compensation, clarity of information, perceived benefits, respect for affected persons and responsiveness to community concerns (Bice, 2014; Moffat & Zhang, 2014). Therefore, land acquisition processes that are perceived as unfair are likely to reduce community consent. Furthermore, where communities distrust the project, they may withhold cooperation, resist site access or escalate concerns through political and legal channels, thereby threatening project continuity and stakeholder satisfaction.

Grievance redress mechanisms provide a formal channel through which affected persons can raise concerns and obtain responses. An effective GRM is accessible, transparent, timely, documented and trusted (IFC, 2009; World Bank, 2017). Furthermore, GRMs contribute to procedural justice by showing that complaints will be heard and resolved before they escalate into protests, litigation or contractor disruption (Ruggie, 2011; ADB, 2012). In this sense, GRM effectiveness is not merely an administrative compliance requirement. It is a project governance mechanism that can protect project schedules, reduce conflict, strengthen accountability and improve stakeholder satisfaction (Kemp & Owen, 2013; Vanclay et al., 2015).

Based on these arguments, the study tested nine hypotheses. H1 proposed that land acquisition risk negatively affects project success. H2 proposed that land acquisition risk negatively affects community consent. H3 proposed that land acquisition risk negatively affects GRM effectiveness. H4 proposed that community consent positively affects GRM effectiveness. H5 proposed that community consent positively affects project success. H6 proposed that GRM effectiveness positively affects project success. H7 proposed that community consent mediates the relationship between land acquisition risk and project success. H8 proposed that GRM effectiveness mediates the relationship between land acquisition risk and project success. H9 proposed that community consent and GRM effectiveness sequentially mediate the relationship between land acquisition risk and project success.

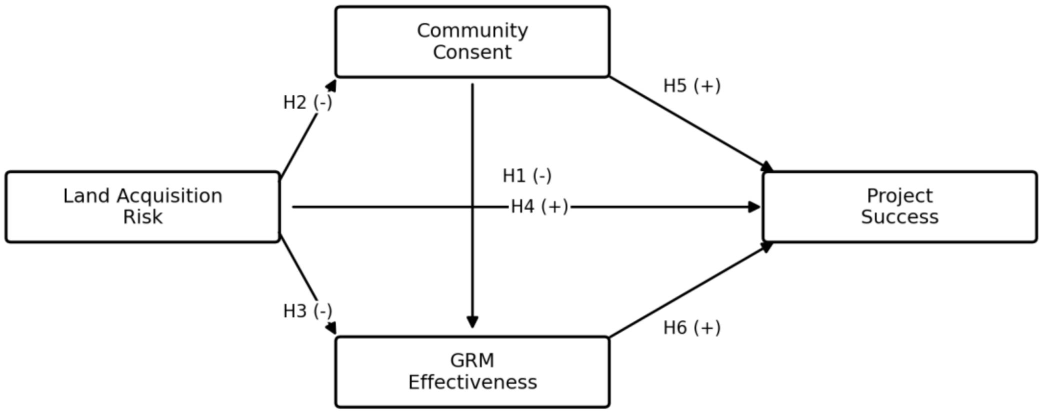

Figure 1. Hypothesised structural equation model

3. Methodology

The study adopted a quantitative explanatory research design. This design was appropriate because the study sought to test theoretically derived relationships among latent constructs and to estimate direct, indirect and total effects. Quantitative explanatory designs are suitable where the researcher intends to examine causal assumptions, test hypotheses and determine the magnitude and significance of relationships among variables (Creswell & Creswell, 2018; Saunders et al., 2019). Moreover, this approach is consistent with structural equation modelling studies because SEM enables simultaneous estimation of measurement and structural relationships among observed indicators and latent constructs (Kline, 2016; Hair et al., 2022). The unit of analysis was the linear infrastructure project setting, while the unit of inquiry comprised stakeholders with knowledge of land acquisition, community engagement, grievance handling and project implementation processes. This distinction was important because project-level phenomena were examined through responses obtained from informed project stakeholders (Yin, 2018; Saunders et al., 2019).

The dataset contained 400 valid responses. This sample size was adequate for SEM because it exceeded commonly recommended minimum thresholds for models with multiple latent variables and observed indicators (Kline, 2016; Hair et al., 2022). The measurement model included four latent constructs: land acquisition risk, community consent, grievance redress mechanism effectiveness and project success. Each construct was measured using 11 Likert-type indicators, giving a total of 44 measurement items. Responses were measured on a five-point scale. Likert-type scales are widely used in social science and project management research because they allow respondents to indicate the degree of agreement with attitudinal, perceptual and behavioural statements (Likert, 1932; DeVellis, 2017). The dataset also included demographic and project context variables such as gender, age group, education, livelihood, years in the area, compensation status, grievance filing and perceived project complexity.

Data screening showed no missing values on the 44 measurement indicators. Screening for missing values, coding accuracy, outliers and measurement direction is an important preliminary step before multivariate analysis because poor data quality can distort reliability, validity and structural estimates (Tabachnick&Fidell, 2019; Hair et al., 2022). However, two items, LA6 and GR11, loaded in the opposite direction during initial item screening. These indicators were therefore reverse-coded before reliability, validity and SEM estimation. This treatment is consistent with the handling of negatively worded or oppositely oriented indicators in scale-based analysis, where reverse coding is used to ensure that higher scores consistently represent higher levels of the underlying construct (DeVellis, 2017; Field, 2018). After reverse coding, all retained measurement items loaded positively on their respective constructs.

Structural equation modelling was used to test the measurement and structural models. SEM was appropriate because the study examined latent constructs measured by multiple indicators and tested a mediation-based theoretical model involving direct, indirect and total effects (Byrne, 2016; Kline, 2016). The measurement model was assessed using Cronbach's alpha, composite reliability, average variance extracted, standardised item loadings, Fornell-Larcker discriminant validity and HTMT ratios. Cronbach's alpha and composite reliability were used to assess internal consistency reliability (Cronbach, 1951; Hair et al., 2022). Average variance extracted and standardised item loadings were used to assess convergent validity (Fornell&Larcker, 1981), while Fornell-Larcker and HTMT criteria were used to assess discriminant validity (Fornell&Larcker, 1981; Henseler et al., 2015). The structural model was assessed using standardised path coefficients, R-square values, variance inflation factors, f-square effect sizes and bootstrapped mediation analysis. Variance inflation factors were used to assess multicollinearity, while f-square values were used to determine the relative effect size of predictor constructs (Cohen, 1988; Hair et al., 2022). Bootstrapping was conducted using 5,000 resamples because it is recommended for estimating indirect effects and confidence intervals in mediation analysis without assuming normality of the sampling distribution (Preacher & Hayes, 2008; Hayes, 2018). Statistical significance was evaluated at the 5 percent level.

4. Results

4.1 Respondent and Project Context Profile

Table 1. Respondent and project context profile

Variable	Category	Frequency	Percentage
Gender	Male	217	54.250
Gender	Female	183	45.750
AgeGroup	32-38	100	25.000
AgeGroup	25-31	80	20.000
AgeGroup	39-45	71	17.750
AgeGroup	18-24	56	14.000
AgeGroup	Above 53	48	12.000
AgeGroup	46-52	45	11.250
Education	Secondary	165	41.250
Education	Primary	145	36.250
Education	Tertiary	53	13.250
Education	Missing	37	9.250
Livelihood	Farming	185	46.250
Livelihood	Business	91	22.750
Livelihood	Employment	69	17.250
Livelihood	Casual Labour	40	10.000
Livelihood	Other	15	3.750
YearsArea	6-11 years	143	35.750
YearsArea	Above 11 years	130	32.500
YearsArea	1-5 years	111	27.750
YearsArea	Below 1 year	16	4.000
AffectedOrInvolved	Yes	343	85.750
AffectedOrInvolved	No	57	14.250
CompensationStatus	partially paid	124	31.000
CompensationStatus	fully paid	121	30.250
CompensationStatus	assessed only	71	17.750
CompensationStatus	not assessed	59	14.750
CompensationStatus	not applicable	25	6.250
FiledGrievance	No	231	57.750
FiledGrievance	Yes	169	42.250
ProjectComplexityHigh	Yes	270	67.500
ProjectComplexityHigh	No	130	32.500
PoliticalInterference	Yes	232	58.000
PoliticalInterference	No	168	42.000
AgencyCoordinationEffective	No	214	53.500
AgencyCoordinationEffective	Yes	186	46.500

4.2 Measurement Model

The measurement model was assessed using reliability, convergent validity and discriminant validity tests. The results show that all constructs exceeded the recommended thresholds for internal consistency and convergent validity.

Table 2. Reliability and convergent validity results

Construct	Items	Cronbach's alpha	Composite reliability	AVE	Minimum loading	Maximum loading
LAR	11	0.925	0.936	0.571	0.731	0.784
CC	11	0.932	0.942	0.595	0.725	0.808
GRM	11	0.946	0.954	0.651	0.785	0.823
PS	11	0.951	0.957	0.671	0.797	0.843

Table 3. Standardised item loadings

Item no.	LAR loading	CC loading	GRM loading	PS loading
1.000	0.748	0.784	0.803	0.820
2.000	0.782	0.776	0.823	0.797
3.000	0.768	0.763	0.822	0.822
4.000	0.731	0.757	0.799	0.835
5.000	0.733	0.769	0.823	0.809
6.000	0.770	0.725	0.817	0.817
7.000	0.732	0.766	0.804	0.820
8.000	0.784	0.808	0.805	0.799

9.000	0.736	0.770	0.785	0.818
10.000	0.765	0.783	0.797	0.833
11.000	0.762	0.782	0.794	0.843

Table 4. Fornell-Larcker discriminant validity matrix

Construct	LAR	CC	GRM	PS
LAR	0.756	-0.436	-0.552	-0.445
CC	-0.436	0.771	0.592	0.540
GRM	-0.552	0.592	0.807	0.698
PS	-0.445	0.540	0.698	0.819

Note: Diagonal values are the square roots of AVE. Off-diagonal values are construct correlations. Discriminant validity is supported because each diagonal value is greater than the corresponding off-diagonal correlations in its row and column.

Table 5. HTMT ratios

Construct	LAR	CC	GRM	PS
LAR	1.000	0.470	0.590	0.475
CC	0.470	1.000	0.630	0.573
GRM	0.590	0.630	1.000	0.736
PS	0.475	0.573	0.736	1.000

All HTMT values were below the conservative threshold of 0.85, indicating adequate discriminant validity among the constructs.

4.3 Descriptive Statistics and Common Method Bias

Table 6. Descriptive statistics of latent constructs

Construct	N	Mean	SD	Skewness	Kurtosis	Min	Max
LAR	400	3.005	1.070	0.003	-1.045	1.000	5.000
CC	400	2.949	1.111	0.066	-1.061	1.000	5.000
GRM	400	3.092	1.197	-0.115	-1.179	1.000	5.000
PS	400	3.099	1.230	-0.106	-1.233	1.000	5.000

Table 7. Common method bias and collinearity diagnostics

Test	Statistic	Value	Decision
Harman single-factor test	Variance explained by first unrotated factor	41.475	Below 50 percent threshold
Collinearity full VIF check	Maximum structural VIF	1.844	Below 5.00 threshold

4.4 Structural Model Assessment

Table 8. Model fit indices from the supplied SEM output

Fit index	Recommended threshold	Obtained value	Interpretation
CFI	≥ 0.90	0.989	Excellent fit
TLI	≥ 0.90	0.988	Excellent fit
RMSEA	≤ 0.08	0.018	Close fit

The supplied covariance-based SEM fit indices indicate excellent model fit. The dataset-based structural estimates reported below were computed using standardised construct scores and 5,000 bootstrapped resamples.

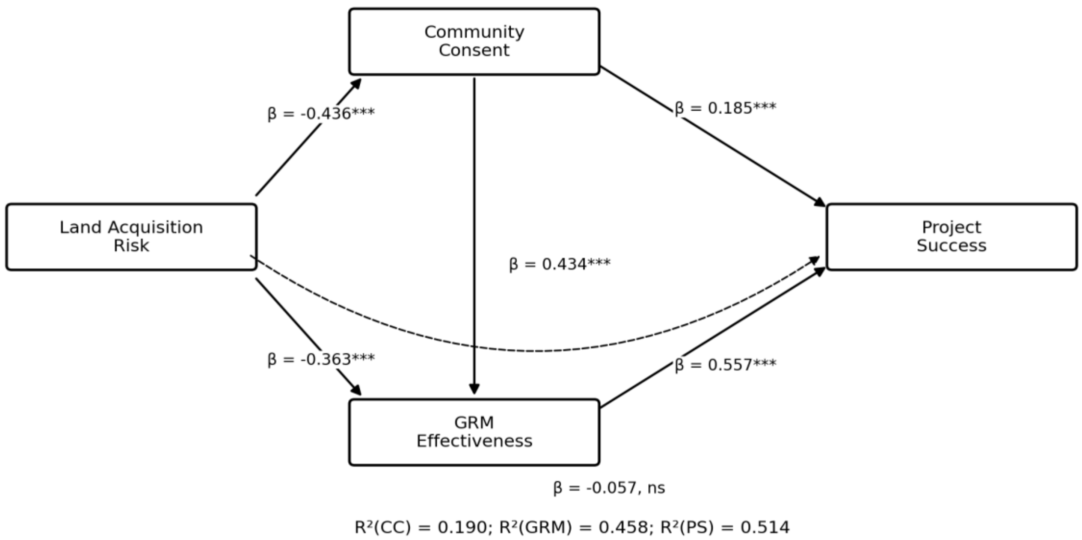

Figure 2. Final structural model with standardised coefficients

Table 9. Structural path coefficients and hypothesis testing

Hypothesis	Path	Beta	SE	t	p	Boot LL	Boot UL	Decision
H1	LAR -> PS	-0.057	0.043	-1.337	0.182	-0.143	0.026	Not supported
H2	LAR -> CC	-0.436	0.045	-9.671	p < .001	-0.517	-0.352	Supported
H3	LAR -> GRM	-0.363	0.041	-8.833	p < .001	-0.441	-0.285	Supported
H4	CC -> GRM	0.434	0.041	10.570	p < .001	0.356	0.510	Supported
H5	CC -> PS	0.185	0.044	4.194	p < .001	0.097	0.274	Supported
H6	GRM -> PS	0.557	0.048	11.716	p < .001	0.467	0.643	Supported

Table 10. Coefficient of determination

Endogenous construct	R-square	Adjusted R-square	Interpretation
Community Consent	0.190	0.188	Weak to moderate explanatory power
GRM Effectiveness	0.458	0.455	Moderate explanatory power
Project Success	0.514	0.510	Moderate to substantial explanatory power

Table 11. Inner model collinearity statistics

Endogenous construct	Predictor	VIF
CC	LAR	1.000
GRM	LAR	1.235
GRM	CC	1.235
PS	LAR	1.478

PS	CC	1.583
PS	GRM	1.844

Table 12. Effect size statistics

Endogenous construct	Omitted predictor	R2 included	R2 excluded	f-square
CC	LAR	0.190	0.000	0.235
GRM	LAR	0.458	0.351	0.197
GRM	CC	0.458	0.305	0.281
PS	LAR	0.514	0.512	0.005
PS	CC	0.514	0.493	0.044
PS	GRM	0.514	0.346	0.347

4.5 Mediation Analysis

Table 13. Bootstrapped mediation results

Hypothesis	Effect	Estimate	Boot SE	95% CI LL	95% CI UL	p	Decision
H7	LAR -> CC -> PS	-0.081	0.021	-0.125	-0.041	p < .001	Supported
H8	LAR -> GRM -> PS	-0.202	0.028	-0.257	-0.150	p < .001	Supported
H9	LAR -> CC -> GRM -> PS	-0.106	0.015	-0.138	-0.077	p < .001	Supported
	Total indirect effect	-0.388	0.032	-0.452	-0.327	p < .001	Supported
	Total effect	-0.445	0.042	-0.526	-0.361	p < .001	Supported

The results show that land acquisition risk had a significant negative effect on community consent ($\beta = -0.436$, $p < .001$), supporting H2. This implies that increases in land acquisition risk reduce the likelihood that affected communities will trust, accept and cooperate with infrastructure project actors.

Land acquisition risk also had a significant negative effect on GRM effectiveness ($\beta = -0.363$, $p < .001$), supporting H3. This finding suggests that unresolved land issues weaken the operation of grievance systems, possibly by increasing complaint volume, reducing trust in project institutions and making resolution more difficult.

Community consent had a significant positive effect on GRM effectiveness ($\beta = 0.434$, $p < .001$), supporting H4. Furthermore, community consent had a significant positive effect on project success ($\beta = 0.185$, $p < .001$), supporting H5. These results demonstrate that social acceptance is important for both complaint resolution and project performance.

GRM effectiveness had the strongest direct effect on project success ($\beta = 0.557$, $p < .001$), supporting H6. This means that accessible, timely, fair and trusted grievance systems are central to infrastructure delivery success. However, the direct path from land acquisition risk to project success was not statistically significant ($\beta = -0.057$, $p = .182$), meaning H1 was not supported.

The mediation results show that the effect of land acquisition risk on project success was transmitted through community consent and GRM effectiveness. The indirect effect through community consent was significant ($\beta = -0.081$, 95% CI [-0.125, -0.041]), the indirect effect through GRM effectiveness was significant ($\beta = -0.202$, 95% CI [-0.257, -0.150]) and the sequential indirect effect through community consent and GRM effectiveness was significant ($\beta = -0.106$, 95% CI [-0.138, -0.077]). The total indirect effect was also significant ($\beta = -0.388$, 95% CI [-0.452, -0.327]). Therefore, H7, H8 and H9 were supported.

5. Discussion

The findings provide strong evidence that project success in linear infrastructure projects is not purely a technical delivery outcome. Rather, success is shaped by the way project institutions manage land-related risks, community consent and grievance redress. The non-significant direct path from land acquisition risk to project success is particularly important. It suggests that land acquisition risk is not automatically fatal to project outcomes. Instead, its effect becomes damaging when it undermines social legitimacy and grievance resolution.

The negative effect of land acquisition risk on community consent confirms that affected communities evaluate infrastructure projects through the fairness and credibility of land acquisition processes. When valuation, compensation, ownership verification or site access processes are perceived as unfair or unclear, communities may reduce their cooperation with the project. Moreover, loss of consent may manifest through protests, refusal to vacate, delayed access, political mobilisation or continued contestation of project boundaries.

The negative effect of land acquisition risk on GRM effectiveness further indicates that grievance systems cannot function well when land processes are poorly managed. A GRM may exist formally, but if communities perceive that land acquisition decisions are predetermined, delayed or unfair, they may avoid the system, overload it or escalate their complaints outside formal channels. Therefore, a GRM should be established early, properly resourced and integrated with land acquisition teams before construction begins.

The positive effect of community consent on GRM effectiveness shows that grievance systems operate better where communities trust project actors. Consent does not mean the absence of complaints. Rather, it means that affected persons believe that complaints can be raised without intimidation and that project institutions will respond fairly. Consequently, consent strengthens the legitimacy and usage of formal grievance channels.

The strongest direct predictor of project success was GRM effectiveness. This finding reinforces the view that grievance management should not be treated as a peripheral social safeguard activity. It is a project management capability that protects time, cost, quality, stakeholder satisfaction and project continuity. Furthermore, GRM performance should be monitored using clear indicators such as grievance registration rate, average resolution time, satisfaction with resolution, escalation rate and closure of compensation-related complaints.

The sequential mediation result is also theoretically important. It shows that land acquisition risk first reduces community consent, reduced consent then weakens GRM effectiveness and weak GRM effectiveness subsequently reduces project success. Therefore, social legitimacy operates as a causal chain. The implication is that project managers should not wait for land disputes to become construction delays. They should manage legitimacy risks at the front end of the project through transparent communication, fair compensation processes and credible grievance systems.

6. Theoretical and Practical Implications

Theoretically, the study contributes to infrastructure project management literature by demonstrating that land acquisition risk operates through social legitimacy mechanisms. This extends risk management theory by showing that land acquisition should be analysed not only as a schedule and cost risk, but also as an institutional and stakeholder risk. Furthermore, the study supports stakeholder theory by showing that affected communities are not passive recipients of infrastructure development. They actively shape project outcomes through consent, cooperation and grievance behaviour.

Practically, the findings suggest that project sponsors should conduct land acquisition readiness assessments before contractor mobilisation. Such assessments should verify valuation completion, compensation status, ownership disputes, livelihood impacts, site handover readiness and unresolved grievances. Furthermore, project dashboards should include community consent and GRM performance indicators alongside cost, time and quality indicators.

Government agencies, contractors and consultants should also establish GRMs before compensation disputes escalate. A functional GRM should be accessible at community level, documented, time-bound, transparent and linked to decision makers who can resolve complaints. Moreover, GRM teams should include legal, land, social safeguard, engineering and community liaison expertise because many land-related grievances cut across technical and social domains.

7. Recommendations

1. Project sponsors should institutionalise land acquisition readiness gates before procurement, financial close and contractor mobilisation.

2. Project management teams should treat community consent as a measurable success condition rather than a one-off consultation requirement.

3. GRM systems should be established before major land acquisition and construction activities begin, and their performance should be tracked throughout the project cycle.

4. Compensation, valuation and grievance data should be integrated into project monitoring dashboards to support early warning and timely decision making.

5. Contractors, supervising consultants and government agencies should receive training in stakeholder engagement, dispute de-escalation and procedural justice because technical competence alone is insufficient for socially embedded infrastructure projects.

8. Limitations and Areas for Further Research

The study was based on cross-sectional quantitative data. Therefore, causal interpretation should be made with caution even though the structural model was theoretically specified. Future studies may use longitudinal designs to examine how land acquisition risk, community consent and grievance resolution evolve across the project life cycle.

Future research may also compare road, rail, electricity, water and telecommunications projects because the intensity of land acquisition risk may differ across infrastructure types. Furthermore, qualitative case studies could provide deeper evidence on how affected persons experience valuation, compensation and grievance handling processes.

Another area for further research is the role of political interference, inter-agency coordination and contractor-community relations in shaping GRM effectiveness and project success. These contextual variables were available in the dataset and may be incorporated in future moderated SEM models.

9. Conclusion

The study concludes that land acquisition risk affects linear infrastructure project success primarily through social legitimacy mechanisms. Although land acquisition risk did not have a significant direct effect on project success, it significantly reduced community consent and GRM effectiveness. Community consent improved both GRM effectiveness and project success, while GRM effectiveness had the strongest direct effect on project success. Therefore, successful delivery of linear infrastructure projects requires more than technical planning and financing. It requires credible land acquisition processes, sustained community consent and effective grievance resolution. For Uganda and similar developing country contexts, this means that social legitimacy should be embedded into infrastructure project governance, monitoring and risk management frameworks.

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Appendix A. Author Verification Checklist

1. The uploaded dataset contains a DATA_TYPE field with the value SIMULATED_FOR_METHOD_TESTING_ONLY for all 400 records. The author should verify whether this was a testing flag retained in the file or whether the dataset is simulated. The manuscript should only be submitted to a journal after confirming that the dataset represents the approved field data.

2. LA6 and GR11 were reverse-coded during analysis because they initially loaded in the opposite direction. The author should verify the wording of these items in the questionnaire to confirm that they were negatively worded indicators.

3. The supplied SEM fit indices were CFI = 0.989, TLI = 0.988 and RMSEA = 0.018. If the journal requires chi-square, degrees of freedom, SRMR or standard AMOS output tables, the original AMOS or SmartPLS output should be added.

4. The Excel workbook accompanying this manuscript contains the generated analysis tables for reliability, validity, loadings, discriminant validity, structural paths, mediation, R-square, VIF and f-square.