E-Governance Systems and Project Performance of Construction SMEs in Lusaka, Zambia

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ABSTRACT

E-governance systems are increasingly deployed across Sub-Saharan Africa as mechanisms for improving regulatory efficiency; however, their effects on construction SME project outcomes in developing economies remain inadequately examined. This study investigated the relationship between e-governance adoption and project performance among Small and Medium Enterprises in Lusaka District, Zambia, specifically examining time efficiency, cost management, and quality outcomes. Using a convergent mixed-methods design, quantitative data were collected from 237 construction firms through structured questionnaires while qualitative evidence was obtained from semi-structured interviews with 12 stakeholders. Quantitative data were analysed using descriptive statistics, Pearson correlation, and multiple regression, while qualitative data underwent thematic analysis following Braun and Clarke's framework. Findings revealed statistically significant positive relationships between e-governance adoption and perceived performance improvements across time efficiency (R^2 = .155), cost management (R^2 = .213), and quality outcomes (R^2 = .170), yet negligible effects on actual schedule adherence, budget performance, and quality inspection results. Qualitative findings identified platform accessibility problems, institutional capacity constraints, technical support deficiencies, and infrastructure connectivity limitations as barriers preventing perceived benefits from materialising in measurable performance gains. The study concludes that e-governance platforms deliver localised process improvements in regulatory compliance activities without affecting fundamental project performance determinants, as digital submission systems cannot overcome systemic constraints including inadequate government processing capacity and resource limitations. Theoretical contributions include revealing conditions under which the Technology Acceptance Model's perceived usefulness diverges from actual utility. Practical implications prioritise institutional capacity development alongside platform deployment for sustainable digital governance reform.

Keywords: E-governance systems; construction SMEs; project performance; digital transformation; developing economies

INTRODUCTION

The digital transformation of public administration has fundamentally altered how government services are delivered to businesses and citizens. E-governance, defined by Backus (2001) and refined by Bannister and Connolly (2014), involves the systematic application of Information and Communication Technologies to governmental operations to enhance service delivery efficiency, operational transparency, and citizen accessibility. For Small and Medium Enterprises operating in regulated sectors such as construction, e-governance platforms provide essential digital interfaces for company registration, tax compliance, procurement participation, permit processing, and regulatory reporting (Abasilim and Edet, 2015).

The construction industry, characterised by project-based operations and intensive regulatory oversight, represents a sector where digital governance systems could demonstrably reduce bureaucratic delays, minimise transaction costs, and improve project outcomes (Teicher et al., 2002; World Bank, 2020). This potential is particularly significant for Small and Medium Enterprises, which the Zambia Development Agency (2022) reports constitute over 90% of registered contractors in Zambia and serve as primary employment generators within the sector.

Zambia's digital transformation trajectory reflects both policy commitment and implementation challenges characteristic of the region. The government has pursued e-governance advancement through the National

Digital Transformation Strategy (2023–2027) and the National Electronic Government Plan (2023–2026), achieving measurable progress evidenced by improved global rankings from 148th to 131st on the E-Government Development Index (Smart Zambia Institute, 2023). Despite this progress, the construction sector faces persistent project delivery challenges, with Small and Medium Enterprises encountering substantial barriers when attempting to adopt and utilise digital governance platforms (M'tewa, 2019; Mambwe et al., 2020).

Critically, no empirical research has examined whether e-governance adoption translates into measurable improvements in construction SME project performance across time efficiency, cost management, and quality dimensions in Zambia. This knowledge gap constrains evidence-based policymaking and limits SME decision-making on digital platform adoption. This study addresses the gap by investigating the relationship between e-governance systems and project performance among construction SMEs in Lusaka District, thereby generating evidence to inform policy refinement and operational strategies.

1.1 Problem Statement

Despite Zambia's investment in e-governance infrastructure and policy frameworks, no empirical evidence demonstrates whether these systems improve project performance outcomes for construction SMEs. Fewer than one-third of Sub-Saharan African firms utilise digital technologies intensively for core business functions (World Bank Group, 2024), and connectivity costs average 20% of per capita income compared to 1% in developed economies (Brookings Institution, 2024). Within Zambia specifically, internet penetration of 31.2% and average mobile speeds of 19.6 Mbps constrain effective platform usage (TS2 Space, 2024). Without understanding the relationship between e-governance adoption and project performance metrics, policymakers cannot determine whether digital transformation investments are yielding intended benefits, and SMEs cannot make informed adoption decisions (Phiri, 2016; Cheelo and Liebenthal, 2020).

1.2 Objectives of the Study

The study was guided by three specific objectives: to determine the relationship between e-governance adoption and project time efficiency among construction SMEs; to assess the relationship between e-governance systems and project cost management among construction SMEs; and to examine the relationship between e-governance utilisation and project quality outcomes among construction SMEs in Lusaka District.

LITERATURE REVIEW

2.1 Theoretical Framework

This study is grounded in three complementary theories. The Technology Acceptance Model (TAM), developed by Davis (1989), posits that technology adoption behaviour is determined by perceived usefulness and perceived ease of use. In examining e-governance adoption, TAM explains why construction SMEs adopt or resist digital platforms based on their perceptions of efficiency gains and navigational ease. The Task-Technology Fit (TTF) theory, proposed by Goodhue and Thompson (1995), argues that technology enhances performance only when its capabilities match the requirements of tasks being performed. For construction SMEs, TTF predicts that e-governance platforms deliver cost and quality improvements only when their functionalities correspond precisely to contractors' operational needs. Institutional Theory, advanced by DiMaggio and Powell (1983), explains how organisations adopt structures and practices in response to coercive, mimetic, and normative institutional pressures. In the construction context, regulatory mandates for digital compliance, industry benchmarking, and professional certification requirements collectively drive SME engagement with e-governance platforms.

2.2 E-Governance and SME Performance: Evidence from the Literature

Global evidence on e-governance effects on firm performance is generally positive but concentrates on large firms in developed economies. Zhang and Zhang (2024) demonstrated that digital government infrastructure in China reduced institutional transaction costs, enabling enterprise technological innovation investment, though their study focused exclusively on large listed corporations. El Khatib and Al Harmoodi (2024) developed theoretical frameworks identifying blockchain, artificial intelligence, and cloud computing as potential e-governance enablers, without empirical validation of performance effects in SME contexts. Saeed et al. (2025)

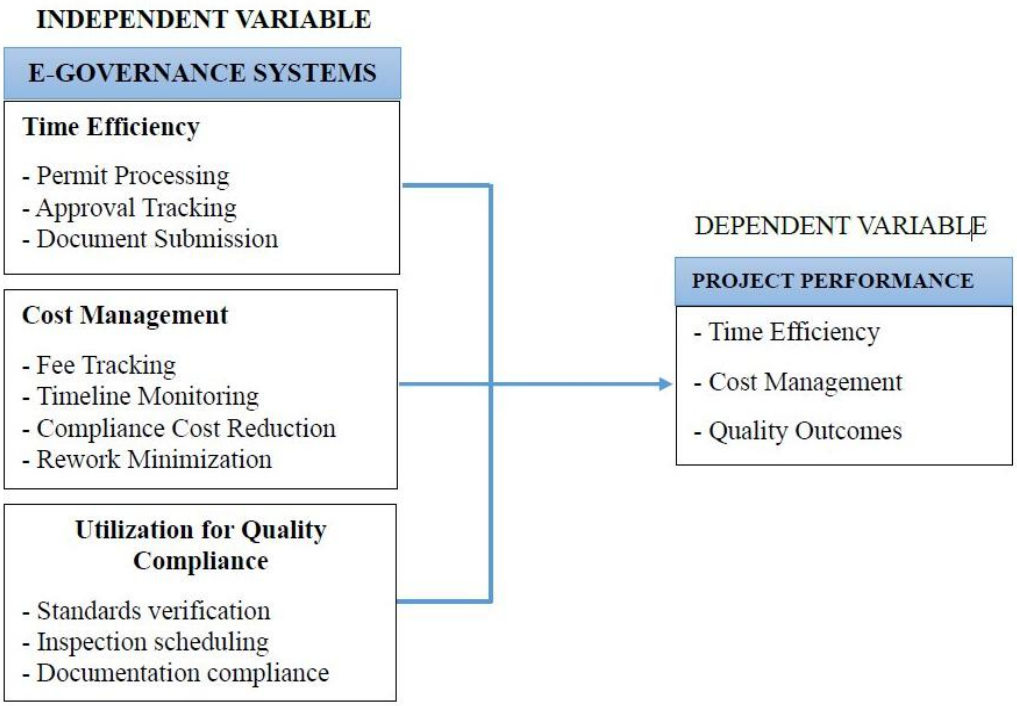
confirmed that governance mechanisms positively influence construction project success through leadership mediation, though their study did not distinguish between internal governance structures and externally mandated e-governance platforms.

African evidence reveals significant infrastructure barriers to e-governance effectiveness. Borino et al. (2024) demonstrated that connectivity costs averaging 20% of per capita income create prohibitive adoption barriers for Sub-Saharan African SMEs, while Nyakala, Vermeulen and Pretorius (2023) identified resource constraints as impediments to sustainable construction practice in South Africa. Zhao, Yin and Ochieng (2024) found that inadequate training, cost barriers, and organisational resistance constrain digital technology adoption for UK construction SME safety management, emphasising that adoption barriers are not unique to developing economies.

Zambian construction research documents substantial capacity and institutional challenges. M'tewa (2019) identified inadequate financial resources, limited technical skills, and insufficient management expertise as barriers to SME sustainability. Mwanaumo, Ngoy and Kunda (2025) revealed that business formalisation and financial record-keeping significantly influence SME credit access, while Kawimbe (2024) identified inadequate working capital and poor financial management as primary contractor failure determinants. None of these studies examined the relationship between e-governance adoption and project performance outcomes, leaving a critical empirical gap that the current study addresses.

2.3 Conceptual Framework

The conceptual framework positions three dimensions of e-governance systems as independent variables: adoption for regulatory processes (permit processing, approval tracking, document submission), cost-related functionalities (fee tracking, compliance cost reduction, rework minimisation), and quality compliance features (standards verification, inspection scheduling, documentation compliance). The dependent variable, project performance, is measured across three established dimensions constituting the iron triangle: time efficiency (schedule adherence), cost management (budget adherence), and quality outcomes (conformance to specifications). Technology Acceptance Model, Task-Technology Fit, and Institutional Theory provide theoretical grounding for the causal mechanisms proposed.



Source: *Researcher's Conceptualization (2025), adapted from Davis (1989), Goodhue and Thompson (1995), and DiMaggio and Powell (1983)*

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

3.1 Research Philosophy and Design

This study adopted a pragmatist research philosophy, which Saunders, Lewis and Thornhill (2019) describe as prioritising practical problem-solving through methodological flexibility. A convergent parallel mixed-methods design was employed, collecting quantitative survey data and qualitative interview data concurrently, then integrating findings to develop comprehensive understanding (Creswell and Plano Clark, 2018). This approach enabled simultaneous measurement of performance outcomes and exploration of implementation experiences, with triangulation enhancing result credibility through convergence of numerical patterns and experiential narratives (Morse, 2003).

3.2 Population and Sample

The target population comprised all registered construction Small and Medium Enterprises operating in Lusaka District during 2025. Based on the National Council for Construction (2024) contractor registry, 847 registered SME contractors (NCC Grades 3 through 6) operated in the district. Yamane's (1967) formula was applied at a 95% confidence interval and 5% margin of error, yielding a minimum sample size of 272 firms. Stratified random sampling distributed this sample proportionately across four NCC contractor grades, with 68 firms selected from each grade stratum. Of 272 distributed questionnaires, 241 were returned (88.6% response rate) and 237 remained valid after data cleaning (87.1% valid response rate), substantially exceeding the 70% threshold recommended by Mugenda and Mugenda (2003).

For the qualitative component, purposive sampling selected 12 key stakeholders including owner-directors, project managers, and site managers with direct experience in e-governance platform utilisation. Theoretical saturation following Guest, Bunce and Johnson (2006) guided sampling, with saturation achieved after 12 interviews confirming no new themes emerged from additional data collection.

3.3 Data Collection and Analysis

Structured questionnaires with Likert-scale items measured e-governance adoption levels and project performance outcomes across all three dimensions. Cronbach's alpha testing confirmed excellent internal consistency for all six measurement scales, with coefficients ranging from 0.917 to 0.939, substantially exceeding the 0.70 threshold recommended by Tavakol and Dennick (2011). Semi-structured interview guides facilitated in-depth exploration of implementation experiences, perceived benefits, and barriers through open-ended questions.

Quantitative data were analysed using SPSS version 27, employing descriptive statistics, Pearson correlation analysis, and multiple regression to test relationships between e-governance dimensions and project performance outcomes. Qualitative data underwent thematic analysis following Braun and Clarke's (2006) six-phase process, with NVivo software facilitating systematic coding and theme development. Integration occurred through convergent analysis comparing statistical findings with thematic patterns.

RESULTS AND DISCUSSION

4.1 Demographic Characteristics

The majority of participating firms were classified as Grade 5 contractors (43.0%), followed by Grade 4 (24.5%) and Grade 6 (24.1%) contractors. Most firms employed 31 to 50 workers (37.1%) and had been operating for two to five years (44.7%). Respondents occupied positions with adequate authority for informed perspectives: Site Managers (29.1%), Other positions including quantity surveyors and procurement officers (29.5%), Project Managers (21.5%), and Owner/Directors (19.8%). Most firms undertook four to six projects annually (32.9%), indicating moderate to high project activity levels sufficient for assessing e-governance system effects.

4.2 Descriptive Statistics

E-governance adoption items displayed mean scores ranging from 2.91 to 2.99 (SD 0.907 to 0.993), indicating moderate platform utilisation across all measured dimensions. A critical finding across all three performance

dimensions was the systematic gap between perceived and actual performance. For time efficiency, perceived outcome items yielded mean scores from 2.92 to 3.00, while actual schedule performance yielded a substantially lower mean of 2.29, corresponding to the 50 to 70% completion category. Similarly, cost management adoption means ranged from 2.96 to 3.04, but actual budget performance mean was 2.17 (50 to 70% adherence category). Quality compliance adoption means ranged from 2.92 to 3.02, but actual quality performance (first-attempt inspection pass rates) yielded a mean of 2.19 (50 to 70% category). These perception-reality gaps of 0.63 to 0.88 points characterised all three performance dimensions consistently.

Table 1: Descriptive Statistics for Study Variables

Variable	Mean	Std. Dev.	N
E-Governance Adoption Level	3.32	0.76	237
Time Efficiency (Perceived)	2.92	0.89	237
Actual Schedule Performance	3.08	0.96	237
Cost Management Adoption	3.26	0.79	237
Cost Management Outcomes (Perceived)	2.79	0.90	237
Actual Budget Performance	2.92	0.93	237
Quality Compliance Adoption	3.15	0.78	237
Quality Outcomes (Perceived)	2.79	0.89	237
Actual Quality Performance	3.06	0.88	237

Source: Field Data (2026)

4.3 Correlation and Regression Analysis

Pearson correlation analysis revealed statistically significant moderate positive relationships between adoption levels and perceived outcomes within each performance domain: e-governance adoption with time efficiency ($r = .394$, $p < 0.001$), cost management adoption with cost outcomes ($r = .461$, $p < 0.001$), and quality compliance adoption with quality outcomes ($r = .412$, $p < 0.001$). Cost management demonstrated the strongest correlation, followed by quality and time efficiency. Cross-objective correlations were generally weak and non-significant, with most coefficients below 0.10, demonstrating domain-specific effects.

Critically, all three adoption measures showed non-significant correlations with their respective actual performance measures: e-governance adoption with actual schedule performance ($r = –.035$, $p > 0.05$), cost management adoption with actual budget performance ($r = .023$, $p > 0.05$), and quality compliance adoption with actual quality performance ($r = .084$, $p > 0.05$). These patterns confirm that e-governance adoption influences perceived but not objective project performance outcomes.

Table 2: Correlation Matrix for Key Study Variables

Variable	EGA	Time Eff.	Actual Sched.	CM Adopt.	CM Out.	Actual Budget	QC Adopt.	QC Out.	Actual Quality
EGA	1								
Time Efficiency	.394**	1							
Actual Schedule	–.035	–.082	1						
CM Adoption	–.090	.041	.026	1					
CM Outcomes	–.031	–.023	.006	.461**	1				
Actual Budget	.003	–.039	–.055	.023	.006	1			
QC Adoption	.013	.059	.037	.024	–.028	–.049	1		
QC Outcomes	–.069	–.133*	.136*	.003	.005	–.001	.412**	1	
Actual Quality	.112	.030	.084	–.037	.028	–.014	–.094	.049	1

*** p < 0.01; * p < 0.05 (2-tailed).*
EGA = E-Governance Adoption; CM = Cost Management; QC = Quality Compliance.

Source: Field Data (2026)

Multiple regression analysis confirmed domain-specific effects. Model 1 predicting time efficiency revealed that e-governance adoption was the sole significant predictor ($\beta = 0.394$, $p < .001$), explaining 15.5% of variance ($R^2 = 0.155$, $F(3,233) = 15.03$, $p < .001$). Model 2 predicting cost outcomes showed cost management adoption as the only significant predictor ($\beta = 0.461$, $p < .001$), explaining 21.3% of variance ($R^2 = 0.213$), representing the highest explanatory power among domain-specific models. Model 3 predicting quality outcomes demonstrated quality compliance adoption as the unique predictor ($\beta = 0.412$, $p < .001$), explaining 17.0% of variance ($R^2 = 0.170$). A combined Model 4 predicting overall project performance revealed significant contributions from all three adoption types (EGA: $\beta = 0.142$, $p < .05$; cost adoption: $\beta = 0.208$, $p < .01$; quality adoption: $\beta = 0.185$, $p < .01$), explaining 24.5% of variance. These domain-specific effects confirm Goodhue and Thompson's (1995) Task-Technology Fit proposition that technology-task alignment drives performance impacts.

Table 3: Multiple Regression Analysis – E-Governance Effects on Project Performance

Predictor	Model 1: Time Efficiency β	Model 2: Cost Outcomes β	Model 3: Quality Outcomes β	Model 4: Overall β
E-Governance Adoption	0.394***	–0.025	–0.071	0.142*
Cost Management Adoption	0.041	0.461***	–0.020	0.208**
Quality Compliance Adoption	0.063	–0.022	0.412***	0.185**
R^2	0.155	0.213	0.170	0.245
Adjusted R^2	0.151	0.206	0.161	0.235
F-statistic	15.03***	21.45***	16.14***	25.32***
**** p < .001; ** p < .01; * p < .05. N = 237 for all models.*				

Source: Field Data (2026)

4.4 Qualitative Findings

4.4.1 E-Governance and Time Efficiency

Five themes emerged regarding e-governance and time efficiency. Platform accessibility challenges were identified as a significant barrier, with government e-governance platforms experiencing frequent downtimes, particularly during business hours. One respondent explained that platform offline episodes during peak hours force firms to visit physical offices, defeating the purpose of digital systems (Participant 4, 2026). Conversely, reduced physical documentation requirements generated tangible time savings, with digital document uploads replacing mandatory in-person deliveries to multiple government offices. Faster approval notifications via SMS and email were universally recognised as an unambiguous benefit, enabling quicker resource mobilisation once regulatory clearances were secured. However, system downtime and technical failures, including lost documentation requiring resubmission and malfunctioning payment gateways, were described as actually increasing processing time in some instances (Participant 2, 2026). Staff digital literacy gaps, particularly among older site supervisors, created additional barriers through application submission errors triggering rejections and resubmissions.

4.4.2 E-Governance and Cost Management

Five themes characterised the cost management relationship. Transparent fee structures emerged as the most frequently mentioned benefit, with digital platforms displaying complete regulatory fee breakdowns before submission, reducing unexpected costs during project execution. Reduced travel and personnel costs generated tangible savings through eliminated fuel expenses and more efficient staff deployment. However, digital payment transaction costs imposed by mobile money charges and payment gateway commissions, ranging from 2% to 5% per transaction, partially offset these savings. Duplicate payment issues arising from confirmation message failures created additional financial complications and administrative burden. Most fundamentally, respondents identified limited cost control features as constraining platform effectiveness, with one participant noting that platforms function as payment mechanisms rather than cost management tools, with regulatory fee amounts fixed by government regardless of payment method (Participant 9, 2026).

4.4.3 E-Governance and Quality Outcomes

Digital standards access was the most positively regarded quality feature, with online availability of building codes enabling real-time compliance reference during design and construction. Improved defect tracking through digital records that trace corrections through re-inspection was recognised as enhancing accountability. However, inspection scheduling inefficiencies were prominent, with inspectors frequently absent from confirmed appointments, causing delays identical to those experienced with manual scheduling (Participant 12, 2026). Incomplete digital documentation requirements created compliance challenges when inspector expectations exceeded what platforms specified. Limited technical support availability meant that compliance ambiguities required telephone calls or physical visits to regulatory offices, eliminating digital efficiency advantages.

4.4.4 Implementation Challenges and Systemic Barriers

Four cross-cutting barriers emerged. Infrastructure connectivity constraints, particularly unreliable internet at construction sites in peri-urban areas, prevented site-based platform access. Institutional capacity limitations were identified as the most fundamental systemic barrier, with insufficient government staff creating approval bottlenecks regardless of submission method. As one respondent articulated, e-governance digitises the application process without increasing processing capacity, so approval times remain unchanged, with the bottleneck being institutional rather than technological (Participant 10, 2026). Resistance to digital transformation among government officials maintaining parallel paper processes compounded the burden, while inadequate user training for both SME staff and government personnel generated errors, frustrations, and inefficiencies that constrained realisation of platform benefits.

4.5 Integration of Quantitative and Qualitative Findings

The convergent integration of quantitative and qualitative findings reveals a consistent and theoretically coherent pattern. TAM explains positive perceptions through specific, tangible benefits that e-governance delivers: reduced documentation requirements, faster approval notifications, improved fee transparency, and enhanced standards access. These partial improvements generate genuine perceived usefulness while remaining insufficient to affect overall project outcomes. TTF theory illuminates the perception-reality gap through fundamental misalignments between platform capabilities and comprehensive project performance requirements. Platforms address submission convenience and information access without encompassing the regulatory processing capacity, inspection reliability, and comprehensive cost control that actual performance improvement requires. Institutional Theory identifies how government capacity constraints, infrastructure deficiencies, and incomplete digital transformation constitute systemic barriers that no platform deployment alone can overcome. The pattern consistently demonstrates that e-governance delivers front-end process improvements without establishing meaningful relationships with the back-end institutional constraints determining project timelines, budgets, and quality outcomes.

CONCLUSIONS

This study investigated the relationship between e-governance systems and project performance among construction SMEs in Lusaka District, Zambia, revealing a consistent pattern across all three performance dimensions. E-governance adoption demonstrates statistically significant positive relationships with perceived performance improvements in time efficiency ($R^2 = .155$), cost management ($R^2 = .213$, the strongest effect), and quality outcomes ($R^2 = .170$), yet negligible relationships with actual schedule adherence, budget performance, and quality inspection results.

For time efficiency, e-governance streamlines application submission processes through eliminated documentation requirements and faster notifications, but institutional capacity constraints and platform reliability problems prevent these improvements from affecting overall project schedules. For cost management, improved fee transparency and reduced administrative expenses generate strong perceived benefits, but platforms address only narrow regulatory fee categories while core project costs, dominated by materials, labour, and equipment, remain unaffected by digital payment convenience. For quality outcomes, digital standards access and defect tracking improve perceived quality management without affecting inspection pass rates, as

information access cannot substitute for technical execution capabilities and material quality that determine regulatory compliance.

The consistent perception-reality gap demonstrates that e-governance platforms deliver localised improvements in specific compliance activities without establishing meaningful relationships with the systemic constraints, including inadequate government agency capacity, infrastructure deficiencies, and resource limitations, that determine overall project performance. The study contributes to theory by revealing conditions under which TAM's perceived usefulness diverges from actual utility, and extends TTF applications by demonstrating how platform capabilities must align not only with task requirements but also with institutional capacity for back-end processing.

RECOMMENDATIONS

Based on empirical findings, three practical recommendations are offered. First, government agencies including the National Council for Construction, Lusaka City Council, and the Zambia Development Agency should invest in robust technical infrastructure ensuring consistent platform availability, establishing redundant server capacity, real-time monitoring, and service level agreements guaranteeing 99% uptime during business hours. Second, the Ministry of Infrastructure, Housing and Urban Development should coordinate with regulatory agencies to expand personnel capacity for processing digital applications and conducting inspections in alignment with platform capabilities, recognising that front-end digitisation delivers limited benefits without corresponding back-end capacity enhancement. Third, the National Council for Construction, in partnership with construction industry associations, should establish practical digital literacy training programmes targeting site supervisors, administrative personnel, and owner-directors through accessible formats including weekend workshops and on-site demonstrations. These recommendations prioritise institutional capacity development alongside platform deployment as the critical pathway for sustainable digital governance reform in Zambia's construction sector.

REFERENCES

1. Abasilim, U. D. and Edet, S. E. (2015) E-governance: A tool for effective service delivery in Nigeria. Arabian Journal of Business and Management Review, 4(6), pp. 1–6.
2. Backus, M. (2001) E-governance and developing countries: Introduction and examples. Research Report No. 3. The Hague: International Institute for Communication and Development.
3. Bannister, F. and Connolly, R. (2014) ICT, public values and transformative government: A framework and programme for research. Government Information Quarterly, 31(1), pp. 119–128.
4. Borino, F., Carlson, B. and Matani, M. (2024) Advancing firm digitalization in Sub-Saharan Africa. World Trade Review, 23(1), pp. 45–67.
5. Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), pp. 77–101.
6. Brookings Institution (2024) Digital access and connectivity in Africa: Challenges and opportunities. Washington, DC: Brookings Institution.
7. Cheelo, C. and Liebenthal, R. (2020) Institutionalized supplier development initiatives: Effects on knowledge transfer, operational performance and competitiveness among SME construction companies in Zambia. Journal of Public Procurement, 20(3), pp. 267–289.
8. Creswell, J. W. and Plano Clark, V. L. (2018) Designing and conducting mixed methods research. 3rd edn. Thousand Oaks, CA: SAGE Publications.
9. Davis, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), pp. 319–340.
10. DiMaggio, P. J. and Powell, W. W. (1983) The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), pp. 147–160.
11. El Khatib, M. and Al Harmoodi, S. (2024) E-governance models and disruptive technologies in project management. International Journal of Innovation and Technology Management, 21(3), pp. 1–18.
12. Goodhue, D. L. and Thompson, R. L. (1995) Task-technology fit and individual performance. MIS Quarterly, 19(2), pp. 213–236.

13. Guest, G., Bunce, A. and Johnson, L. (2006) How many interviews are enough? An experiment with data saturation and variability. Field Methods, 18(1), pp. 59–82.
14. Kawimbe, C. (2024) Failure causes of small-scale contractors in Zambia. International Journal of Construction Management, 24(3), pp. 456–472.
15. M'tewa, M. (2019) Establishing ways of developing sustainable SME contractors in Zambia. Master's thesis. University of Zambia.
16. Mambwe, M., Mwanaumo, E., Thwala, W. D. and Tivendale, L. (2020) Mapping out research focus for construction subcontracting in developing countries. Journal of Construction Business and Management, 4(2), pp. 41–51.
17. Morse, J. M. (2003) Principles of mixed methods and multimethod research design. In: Tashakkori, A. and Teddlie, C. (eds.) Handbook of mixed methods in social and behavioral research. Thousand Oaks, CA: SAGE Publications, pp. 189–208.
18. Mugenda, O. M. and Mugenda, A. G. (2003) Research methods: Quantitative and qualitative approaches. Nairobi: Acts Press.
19. Mwanaumo, E. M., Ngoy, K. and Kunda, M. M. (2025) Exploring determinants of financial access for SMEs in Zambia's construction sector. African Journal of Commercial Studies, 4(1), pp. 12–28.
20. National Council for Construction (2024) 2024 list of contractors as at 2nd October 2024. Lusaka: National Council for Construction.
21. Nyakala, T., Vermeulen, W. and Pretorius, L. (2023) Construction sustainability: Empirical evidence on SME development and delivery challenges in South Africa. Journal of Construction in Developing Countries, 28(1), pp. 67–89.
22. Phiri, M. (2016) Analysis of 20% subcontracting policy in Zambian construction sector. Master's thesis. University of Zambia.
23. Saeed, N. M., Boateng, E. B. and Agyekum, K. (2025) Bridging governance and success: The mediating role of project leadership in construction projects. International Journal of Construction Management, 25(1), pp. 1–14.
24. Saunders, M., Lewis, P. and Thornhill, A. (2019) Research methods for business students. 8th edn. Harlow: Pearson Education Limited.
25. Smart Zambia Institute (2023) Zambia e-government development index report. Lusaka: Smart Zambia Institute.
26. Tavakol, M. and Dennick, R. (2011) Making sense of Cronbach's alpha. International Journal of Medical Education, 2, pp. 53–55.
27. Teicher, J., Hughes, O. and Dow, N. (2002) E-government: A new route to public sector quality. Managing Service Quality, 12(6), pp. 384–393.
28. TS2 Space (2024) Internet connectivity and mobile speeds in Zambia. Available at: https://ts2.space (Accessed: 25 January 2025).
29. World Bank (2020) Digital government and COVID-19: Action today for tomorrow. Washington, DC: World Bank Group.
30. World Bank Group (2024) Enterprise surveys: Digital technology adoption in Sub-Saharan Africa. Washington, DC: World Bank Group.
31. Yamane, T. (1967) Statistics: An introductory analysis. 2nd edn. New York: Harper and Row.
32. Zambia Development Agency (2022) SME classification and development framework. Lusaka: Zambia Development Agency.
33. Zhang, L. and Zhang, Y. (2024) Impact of digital government construction on the intelligent transformation of enterprises: Evidence from China. Government Information Quarterly, 41(1), pp. 1–14.
34. Zhao, X., Yin, Y. and Ochieng, E. G. (2024) Accelerating the uptake of advanced digital technologies for health and safety management within construction SMEs. Safety Science, 170, pp. 1–13.