

FROM INSTITUTIONAL PRESSURES TO FINANCIAL PERFORMANCE: THE MEDIATING ROLE OF MANAGEMENT CONTROL SYSTEMS IN SUSTAINABLE CONSTRUCTION AND RESILIENT INFRASTRUCTURE IN MOROCCO

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ABSTRACT

Large construction firms face coercive, normative, and mimetic demands that encourage the formal adoption of management practices. However, adoption that secures legitimacy does not necessarily deliver sustainable economic growth or stronger financial results. This study examines whether management control systems (MCS) mediate the relationship between institutional pressures and perceived financial performance in large construction companies in Morocco, a sector central to resilient infrastructure and sustainable industrialization. Using a quantitatively dominant sequential explanatory mixed-methods design, the quantitative phase analyses 170 valid enterprise-level questionnaire responses from construction firms with annual revenue of at least MAD 100 million through reliability tests, exploratory factor analysis, Pearson correlations, ordinary least squares regression, and bootstrap mediation (5,000 resamples); the qualitative phase draws on two key informant interviews. The results show that institutional pressures are positively associated with MCS ($\beta = 0.52, p < 0.001$) and that MCS are positively associated with financial performance ($\beta = 0.44, p < 0.001$). In contrast, the direct effect of institutional pressures on financial performance is not significant once MCS and firm-level controls are included ($\beta = 0.09, p = 0.228$). The indirect effect through MCS is 0.23, with a 95% bootstrap confidence interval of [0.14, 0.35], and the mediation model explains 28% of the variance in financial performance. The findings suggest indirect-only mediation in which about 72% of the total association between institutional pressures and performance operates through formalized control systems. At the same time, the interviews indicate that internal endorsement, practical relevance, and adaptation to project complexity determine whether formal controls become operationally meaningful.

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INTRODUCTION

Modern organizations operate within institutional environments shaped by regulation, professional standards, stakeholder scrutiny, and competitive imitation. Neo-institutional theory explains how coercive, normative, and mimetic pressures lead organizations to adopt structures that are regarded as legitimate in their field (DiMaggio & Powell, 1983; Scott, 2014). Recent evidence confirms that such pressures remain a powerful driver of formal management practices: normative and mimetic pressures shape the formal systems and values of sustainability control systems (Ruiz-Blanco et al., 2025), all three

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pressure types raise the adoption of environmental management accounting in manufacturing firms (Alnaim & Metwally, 2024), coercive and normative pressures increase voluntary environmental disclosure (Fan et al., 2024), and institutional pressures operate indirectly through organizational engagement when firms adopt sustainable human resource practices (García-Cruz et al., 2025). Legitimacy and economic performance, however, are not the same thing. An organization may install an approved procedure to satisfy external demands without integrating it into daily routines, and the gap between formal structure and operational practice remains a central theme of institutional research (Bromley & Powell, 2012; Meyer & Rowan, 1977).

This gap is especially relevant for management control systems. Current studies document symbolic rather than substantive responses to institutional demands across several domains: regulation-induced environmental control systems can produce unintended consequences for innovation (Antonini & Gomez-Conde, 2024), reactive firms maintain decoupled and simplified control configurations that amount to symbolic compliance (Edirisinghe et al., 2025), environmental management accounting adopted at the policy stage relates negatively to sustainability performance while adoption at the commitment stage relates positively (Mat Yusoh et al., 2024), and institutional pressures can trigger greenwashing unless firms develop the capability to reconcile competing demands (Can & Turker, 2024). Systematic reviews now describe decoupling as a multi-mechanism phenomenon rooted in governance, institutional, informational, and resource conditions (Ștefănescu & Suci, 2026), and recent work shows that aspirational talk and action are not always disconnected when national commitments are strong (Tirado-Valencia et al., 2026). Therefore, whether externally induced control systems create economic value depends on how organisational actors interpret and use them.

Management control systems extend well beyond accounting reports. They combine planning, budgeting, performance evaluation, administrative controls, and information processes that coordinate organizational action (Malmi & Brown, 2008). Recent research links control systems to organizational capabilities and performance (Phan et al., 2024), to risk integration (Hiebl, 2024), to organizational resilience (Weber et al., 2024), and to the governance theory that underpins control design (Stevens, 2024). The way controls are used matters as much as their presence: boundary and diagnostic controls improve control effectiveness mainly through interactive use (Al-Dhubaibi, 2025), balanced combinations of control levers reduce dysfunctional behaviour whereas isolated levers increase it (Müller et al., 2025), and the intensity of lever use improves firm performance indirectly through ambidexterity (Wang & Dyball, 2026). When control routines are treated as formalities, official adoption coexists with informal workarounds and weak operational application; when they are embedded in decision-making, they support communication, learning, coordination, and timely intervention (Ahrens & Chapman, 2004; Mundy, 2010).

The construction sector offers a demanding setting in which to study this process. Projects involve many stakeholders, interdependent tasks, subcontracting, regulatory obligations, and high uncertainty (Gerald et al., 2011), and rising external complexity reshapes the design of control packages (Dávila et al., 2024). Construction clients and professional communities filter institutional pressures for sustainability before they reach site practice (de Gier et al., 2025); institutional conditions explain greenwashing configurations in engineering firms (Meng et al., 2026), institutional limitations are the most critical barrier to sustainable construction in African infrastructure projects (Malik et al., 2025), and cost overruns remain pervasive where planning and contract controls are weak (Alhammedi et al., 2024). In Morocco, public procurement obligations, the expectations of large institutional clients, bank financing norms, and technical certification requirements have pushed large construction firms to formalise internal management practices. At the same time, national energy and climate commitments have tightened the coupling between sustainable construction and sustainable development since 2015 (Saqib et al., 2026). Earlier evidence from the same setting shows that the contribution of control systems to financial performance is strengthened by active managerial use and project complexity (Said et al., 2026). Evidence from other emerging markets likewise shows that governance structures and sustainability practices improve firm performance mainly through internal mechanisms rather than directly (Islam et al., 2026a; Sultana, 2026a). The scientific problem addressed here is therefore whether institutional pressures are directly related to the financial performance of large construction firms, or only insofar as they are translated into functioning management control systems.

The study aims to estimate and explain the indirect relationship between institutional pressures and perceived financial performance, mediated by management control systems, in large Moroccan construction companies. To achieve this aim, the study tests three hypotheses using a quantitatively dominant sequential explanatory mixed-methods design: 170 valid enterprise-level questionnaire responses from firms with annual revenue of at least MAD 100 million are analysed with reliability assessment, exploratory factor analysis, Pearson correlations, ordinary least squares regression, and bootstrap mediation with 5,000 resamples, and two purposively selected key-informant interviews are then used to explain the statistical pattern. The study contributes by shifting attention from institutional conformity as an outcome to institutional translation as a mechanism, by framing management control systems as the organizational device through which external requirements become measurable managerial action, and by combining mediation evidence with key-informant narratives in a sector that is central to resilient infrastructure and sustainable industrialization in an emerging economy.

The remainder of the paper is organized as follows. The literature review develops the theoretical basis, positions the study among recent institutional and management control research, and formulates the hypotheses. The materials and methods section describes the mixed-methods design, sample, measures, and model specification. The results section reports the descriptive, correlational, regression, and bootstrap mediation findings together with the qualitative explanatory evidence and their integration. The discussion compares the findings with prior studies, and the conclusions summarize the contribution, implications, limitations, and directions for future research.

LITERATURE REVIEW

The theoretical basis of the study draws on three streams of research: neo-institutional theory and the literature on decoupling, the management control literature that treats control systems as a package whose value depends on use, and empirical research on control systems, sustainability practices, and performance in project-based and emerging-economy settings. The review follows the logic of the proposed mediation chain, moving from the antecedents of control adoption to its performance consequences.

Institutional theory holds that organizations seek legitimacy by conforming to the expectations that dominate their field (Scott, 2014; Suchman, 1995). DiMaggio and Powell (1983) distinguish coercive pressures stemming from regulation and resource dependence, normative pressures associated with professional standards, and mimetic pressures arising from imitation under uncertainty. These mechanisms explain why organizations adopt similar structures even when the efficiency gains of convergence are uncertain. Recent quantitative work has refined this picture for control systems. Ruiz-Blanco et al. (2025) find that normative pressure is the strongest driver of sustainability control systems, followed by mimetic pressure, while coercive pressure is the least effective. Alnaim and Metwally (2024) show that all three pressures increase adoption of environmental management accounting in Egyptian manufacturing, with environmental strategy moderating the effects, and Hasan et al. (2024) link environmental management accounting to environmental performance through top management support and institutional pressures. In contrast, Fan et al. (2024) report that mimetic pressure has no significant effect on voluntary environmental disclosure among Chinese manufacturers, while coercive and normative pressures do. Case evidence adds nuance: institutional pressures and contextual factors shape the trade-offs embedded in sustainability performance measurement (León-Bravo & Caniato, 2024), institutional disruptions alter the control systems multinationals impose on subsidiaries (Elango, 2024), and middle managers mobilize controls selectively when they face multiple competing institutional logics (Bui et al., 2025). Together, these studies support a positive association between institutional pressures and the formal adoption of management controls, while showing that the strength of each pressure is context-dependent.

The distinction between formal adoption and practical implementation is central to the present argument. Meyer and Rowan (1977) describe how rationalized formal structures are adopted for legitimacy while operating processes remain buffered from them. Bromley and Powell (2012) separate policy–practice decoupling, in which formal policies are not implemented, from means–ends decoupling, in which implemented practices fail to produce the intended outcomes. Recent studies show that both forms remain common. Antonini and Gomez-Conde (2024) document that environmental management control systems induced by the European non-financial reporting directive produced unintended consequences for environmental innovation. Edirisinghe et al. (2025) identify a symbolic-compliance configuration among Sri Lankan manufacturers in which control systems remain simple and decoupled from sustainability, in contrast to proactive firms with tightly integrated controls. Mat Yusoh et al. (2024) find that environmental management accounting adopted at the policy stage is negatively related to sustainability performance. In contrast, adoption at the commitment stage is positively related, a pattern that mirrors the policy–practice distinction. Can and Turker (2024) show that institutional pressures can lead to greenwashing unless firms possess a hybridisation capability, and Meng et al. (2026) trace greenwashing in engineering firms to configurations of regulative, normative, and cultural-cognitive conditions. Ștefănescu and Suciu (2026) synthesise this literature into four clusters of mechanisms, while Tirado-Valencia et al. (2026) find that aspirational talk and action can remain coupled when national commitments are strong. For management control, the implication is that budgets and reporting routines can be formally installed but applied inconsistently, or applied consistently without yielding financial benefit. Institutional pressure therefore raises the probability that control systems exist without guaranteeing that they acquire operational significance.

The management control literature explains why operational significance matters. Malmi and Brown (2008) conceptualize control systems as a package of planning, cybernetic, reward, administrative, and cultural controls that translate strategic goals into targets and information flows. Ahrens and Chapman (2004) show that controls can support both efficiency and flexibility when managers embed them in ongoing organizational conversations, and Mundy (2010) demonstrates that the balance between controlling and enabling uses shapes the capacity for adaptation. Bedford (2020) cautions that the co-existence of several practices is not proof of a coherent system, which is why the aggregate measure used here captures documented formalization and integration rather than the separate effects of individual controls. Contingency research indicates that the effectiveness of control design depends on organisational and environmental conditions (Chenhall, 2003), and Dávila et al. (2024) show how increasing external complexity drives the redesign of the control package. Recent studies on the use of controls reinforce the point. Vuorenmaa (2024) describes how balancing forcing and fostering controls moved a hostile post-acquisition integration from distrust to trust; Al-Dhubaibi (2026) finds that boundary and diagnostic controls improve control effectiveness mainly through interactive use; Müller et al. (2025) conclude from 82 empirical studies that combining all levers of control reduces dysfunctional behaviour whereas isolated levers increase it; Bassani et al. (2025) show that a crisis can trigger control development in which levers reinforce one another; and Pan Fagerlin et al. (2026) trace how control packages are adapted during the implementation of sustainability-oriented innovation. Participative budgeting improves performance only under particular managerial mindsets (Macinati & Rizzo, 2025), and the levers of control also shape counterproductive behaviour and work performance in emerging-economy organizations (Rosalina & Jusoh, 2024). Viewed through this lens, management control systems act as internal translation mechanisms: budgets convert resource constraints into spending targets, reporting routines convert regulatory and contractual obligations into measurable indicators, and cost monitoring converts project data into corrective action.

Empirical research increasingly connects control systems to performance through such mechanisms. Phan et al. (2024) link management control systems to organizational capabilities and performance; Hasu et al. (2025) find that the controlling use of control systems mediates the effect of transformation management on sustainability performance in small

and medium-sized enterprises; Wang and Dyball (2026) show that the intensity of lever use improves firm performance indirectly through contextual and supply-chain ambidexterity; and Asiaei et al. (2026) connect green intellectual capital to environmental performance through sustainability control systems. Control systems that integrate risk (Hiebl, 2024) and support resilience (Weber et al., 2024) are better positioned to protect financial outcomes under uncertainty, and Stevens (2024) argues that the theory behind corporate governance and management control needs revision to account for how controls actually shape behaviour. Barros and Ferreira (2023) illustrate, in an institutional-theory case study, how organizational rationalities are expressed in control practices that convey strategic priorities. Evidence from emerging economies using perceptual performance measures points in the same direction. Readiness to change and employee innovativeness are the strongest predictors of perceived financial performance in Bangladeshi private banks (Islam et al., 2023a), transformational leadership and human capital explain a large share of organizational performance in manufacturing (Islam et al., 2023b), internal and external corporate social responsibility raise perceived performance in banking (Islam et al., 2024a), entrepreneurial orientation improves the performance of small and medium-sized enterprises (Islam et al., 2024b), corporate social responsibility rather than green finance improves bank profitability (Hasan et al., 2025), and work attitudes shape perceived organizational performance in public financial institutions (Pandey et al., 2025). Governance quality improves financial returns with stronger effects in emerging than in developed markets (Islam et al., 2026a), environmental, social, and governance investment raises firm value partly through reputation (Islam et al., 2026b), green finance improves bank performance through environmental and social risk management (Siddiquee et al., 2025), and sustainability practices mediate the link between resource capacity and entrepreneurial performance while digital capability works through innovation orientation (Sultana, 2026a, 2026b). Open innovation similarly mediates the effect of knowledge sharing on innovation performance (Zan et al., 2024). These studies share a common structure in which external or strategic antecedents affect performance through internal organizational practices, which is the structure tested here.

The construction sector sharpens these arguments. Projects combine interdependence, uncertainty, and multiple stakeholders, increasing the demand for timely information and coordination (Gerald et al., 2011). Construction clients and their professional communities filter institutional pressures for sustainability (de Gier et al., 2025); green procurement adoption in developing-country construction depends on identifiable institutional and organizational drivers (Yap et al., 2026); institutional limitations outrank technical and financial constraints as barriers to sustainable construction in Malawi (Malik et al., 2025), and roughly nine in ten building projects overrun their budgets where bid evaluation, planning, and contractor selection are weak (Alhammadi et al., 2024). In Morocco, the coupling between the renewable-energy transition and sustainable construction has strengthened since 2015, raising the regulatory and client expectations faced by large contractors (Saqib et al., 2026). Said et al. (2026) show that the relationship between control systems and financial performance in large Moroccan construction firms is moderated by the active use of control systems and project complexity. These findings suggest that institutional pressures in construction are strong enough to trigger the adoption of formal controls, but that the financial return on adoption depends on how controls are integrated into project management.

Finally, the mediation logic requires a methodological note. Support for mediation rests on the estimated indirect effect and its uncertainty rather than on the significance of the direct effect (Hayes, 2013; Zhao et al., 2010); bootstrap inference is the standard approach to indirect effects, although robustness to non-normality deserves attention (Alfons & Schley, 2025), and cross-sectional mediation estimates can diverge from longitudinal ones (Maxwell & Cole, 2007). Common method variance remains a widespread and complex threat in single-source survey designs (Podsakoff et al., 2024). However, including several additional variables in the model reduces its bias (Sturman et al., 2025).

In summary, prior research establishes that institutional pressures drive the formal adoption of management controls, that adoption can be decoupled from practice, and that control systems improve performance when they are actively used. What remains unresolved is whether, in a project-based emerging-economy sector, the association between institutional pressures and financial performance is direct or operates only through functioning control systems, and the available evidence is contradictory on which pressures matter and on whether formal adoption yields substantive benefit. The purpose of this study is therefore to test a mediation model in which management control systems transmit the effect of institutional pressures to perceived financial performance in large Moroccan construction firms, and to explain the resulting pattern with key-informant evidence. The following hypotheses are tested:

H₁: Institutional pressures are positively associated with management control systems.

H₂: Management control systems are positively associated with financial performance.

H₃: Management control systems mediate the relationship between institutional pressures and financial performance.

MATERIALS AND METHODS

Research Design

The study employs a quantitatively dominant sequential explanatory mixed-methods design in which a quantitative phase precedes a targeted qualitative explanatory phase (Creswell & Creswell, 2018; Saunders et al., 2019). The quantitative phase tests the hypothesized relationships between institutional pressures, management control systems, and financial performance. Two subsequent key-informant interviews are used to explain the observed statistical pattern by examining how external demands are perceived and enacted in operational settings. The sequence is deliberate: the quantitative findings identify the issues that require explanation, in particular the strong associations involving management control systems and the absence of a statistically significant conditional direct relationship between institutional pressures and financial performance. The two interviews supply complementary managerial and technical perspectives on these issues. Because the qualitative component is intentionally limited, it is treated as explanatory follow-up rather than as evidence of thematic saturation or sector-wide qualitative generalization.

Participants, Sampling and Measures

The empirical setting comprises large construction companies operating in Morocco. A purposive sampling approach targeted firms with annual revenue of at least MAD 100 million, reflecting the study's focus on relatively large and formally organized project-based entities. Questionnaires were administered to key informants directly involved in financial oversight and project management, including chief financial officers, management controllers, and operations or project managers. After data screening, 170 valid enterprise-level responses were retained. The quantitative phase draws on the same underlying survey dataset used by Said et al. (2026) to address a different research question concerning management control systems, active use, project complexity, and financial performance. The present study introduces institutional pressures as the independent variable, estimates a mediation model, and adds a distinct qualitative explanatory phase.

All constructs were measured with multi-item perceptual scales on a five-point Likert format (1 = strongly disagree, 5 = strongly agree). Institutional pressures were operationalized as a composite construct covering coercive, normative, and mimetic influences. Management control systems captured the extent to which control processes were formalized, structured, and integrated into organizational activities. Financial performance reflected perceived profitability, cost efficiency, and revenue growth relative to relevant benchmarks. Perceptual measures are appropriate when researchers lack full access to objective financial data (Dess & Robinson, 1984), and they are widely used in comparable studies in emerging economies (Islam et al., 2023a; Pandey et al., 2025). Firm size, firm age, and asset base were included as contextual control variables.

The quantitative analysis comprised descriptive statistics, Cronbach's alpha reliability assessment, exploratory factor analysis (principal component extraction with varimax rotation), Pearson correlations, ordinary least squares regression, and bootstrap mediation with 5,000 resamples and a 95% confidence interval. Exploratory factor analysis was used to verify that the measurement items loaded on their intended constructs prior to inferential testing. Composite reliability and average variance extracted are not reported because the analysis followed a regression-based measurement procedure; values not derived from the underlying item-level results are neither reconstructed nor inferred. Variance inflation factors were used to assess multicollinearity. Harman's single-factor test served only as a limited diagnostic for common method bias and is not treated as conclusive evidence that common method variance is absent, in line with recent warnings about its prevalence (Podsakoff et al., 2024); the inclusion of three control variables in the model offers partial protection (Sturman et al., 2025).

Qualitative Explanatory Phase

The qualitative follow-up involved two purposively selected key informants with complementary roles. Informant 1, a senior project management controller with twelve years of experience, provided the financial and management-control perspective; Informant 2, a senior electrical engineer and technical project manager with seven years of engineering experience, provided the operations and site perspective. This finance–operations pairing was chosen to illuminate the point at which formal control requirements either remain administratively separate or become embedded in project decisions. The interviews addressed three themes: the practical usefulness and internal endorsement of management control tools; the role of institutional demands, formalization, and decoupling; and the processes through which control practices affect cost, margin, and working capital management. The interviews aimed at a focused explanatory contrast rather than thematic saturation, and they should not be read as representing the full range of views in the Moroccan construction sector. Interview data were analysed thematically and integrated with the quantitative findings through a joint display that links each statistical pathway to an explanatory account. These accounts assist interpretation but do not independently confirm the statistical model or establish causality.

Model Specification

The quantitative model was estimated in stages. First, the relationship between institutional pressures (IP) and management control systems (MCS) was estimated:

$$MCS = \alpha_0 + aIP + \gamma_1^T C + \varepsilon_1 \quad (1)$$

Second, financial performance (FP) was modelled as a function of management control systems, institutional pressures, and the control variables:

$$FP = \beta_0 + bMCS + c'IP + \gamma_2^T C + \varepsilon_2 \quad (2)$$

The indirect effect is the product ab , where a denotes the IP–MCS path and b denotes the MCS–FP path conditional on IP and the controls. The direct path is c' ; C denotes the vector of firm size, firm age, and asset base, and γ denotes the corresponding coefficient vector in each equation; ε_1 and ε_2 are model-specific disturbance terms. The indirect effect and its 95% confidence interval were evaluated with 5,000 bootstrap resamples:

$$\text{Indirect effect} = ab; \text{ 95\% bootstrap CI based on 5,000 resamples.} \quad (3)$$

RESULTS

Table 1 presents the descriptive statistics, internal consistency estimates, and Pearson correlations for the focal constructs. All Cronbach's alpha coefficients exceed the conventional threshold of 0.70, indicating satisfactory internal consistency, although reliability alone does not establish the validity or empirical distinctness of the constructs. Institutional pressures are positively correlated with management control systems ($r = 0.54$, $p < 0.01$), and management control systems are

positively correlated with financial performance ($r = 0.47$, $p < 0.01$). The correlation between institutional pressures and financial performance is positive but weaker ($r = 0.29$, $p < 0.01$), a pattern already consistent with an indirect rather than a direct association.

Table 1. Descriptive Statistics, Reliability and Correlation Matrix (N = 170)

Variable	Mean	SD	Cronbach alpha	1	2	3
1. Institutional Pressures	3.91	0.58	0.86	1.00		
2. Management Control Systems	3.88	0.62	0.87	0.54**	1.00	
3. Financial Performance	3.76	0.64	0.85	0.29**	0.47**	1.00

Note: ** $p < 0.01$. Correlations are Pearson coefficients.

The regression and mediation results are reported in Table 2. Institutional pressures are positively associated with management control systems ($\beta = 0.52$, $t = 7.45$, $p < 0.001$), supporting H1. Management control systems are positively associated with financial performance in the mediation model ($\beta = 0.44$, $t = 6.12$, $p < 0.001$), supporting H2. This coefficient is estimated conditional on institutional pressures and the control variables and is therefore not directly comparable to the simpler MCS coefficient reported by Said et al. (2026). Once management control systems are included in the financial performance model, the direct effect of institutional pressures is not statistically significant ($\beta = 0.09$, $t = 1.21$, $p = 0.228$). The bootstrap indirect effect is 0.23 with a 95% confidence interval of [0.14, 0.35], which excludes zero and supports H3. The indirect effect accounts for about 72% of the total association between institutional pressures and financial performance (0.23/0.32), and the mediation model explains 28% of the variance in financial performance (adjusted $R^2 = 0.24$, $F = 12.50$, $p < 0.001$). The pattern corresponds to indirect-only mediation in the typology of Zhao et al. (2010); this statistical classification does not by itself establish a causal mechanism. The maximum variance inflation factor is below 2.00, and the first factor in Harman's test accounts for 34.2% of variance, a diagnostic that does not rule out common method bias.

Table 2. OLS Regression and Bootstrap Mediation Results

Relationship / Estimate	Standardised β / indirect effect	t-value	p-value	Conclusion
H ₁ : Institutional Pressures $\rightarrow$ MCS	0.52	7.45	< 0.001	Supported
H ₂ : MCS $\rightarrow$ Financial Performance	0.44	6.12	< 0.001	Supported
Direct: Institutional Pressures $\rightarrow$ Financial Performance	0.09	1.21	0.228	Not significant
H ₃ : Indirect effect via MCS	0.23	-	See bootstrap CI	Supported

Note: Bootstrap indirect effect 0.23; 95% bootstrap CI [0.14, 0.35]; 5,000 resamples. Model fit reported for the mediation analysis: $R^2 = 0.28$, adjusted $R^2 = 0.24$, $F = 12.50$, $p < 0.001$. Firm size, firm age and asset base were included as contextual control variables. Maximum VIF < 2.00 . The first factor in Harman's analysis accounted for 34.2% of variance; this diagnostic does not rule out common method bias.

The two interview narratives offer operational explanations for the statistical pattern. Thematic analysis of the two accounts identified three recurring themes, presented solely as informant perspectives rather than as comprehensive or sector-wide qualitative findings.

Institutional triggers and ritual disconnection. Both informants identified public procurement obligations, large institutional clients, bank requirements, and technical certifications as the main external drivers of formal control structures. At the same time, they indicated that externally imposed systems can remain largely administrative when operational relevance and training are weak. In such cases, staff rely on local spreadsheets or informal records alongside the formal enterprise resource planning system. The qualitative evidence suggests that external pressure can prompt structural adoption without guaranteeing immediate financial improvement, which is consistent with the non-significant conditional direct effect.

Internal legitimacy and active managerial use. The informants reported that control mechanisms become valuable when engineers and site managers regard the information as credible, timely, and directly applicable to project decisions. Budget tracking, rapid reporting, and progress monitoring were described as useful when they allow managers to anticipate cost overruns, shortages, or delays. This account proposes internal appropriation, rather than formal compliance alone, as a plausible explanation for the strong MCS–performance association.

Mechanisms of financial value in operation. The interviews identified several ways in which management control systems protect project performance: early detection of cost variances, continual revision of cost-to-completion forecasts, and disciplined oversight of working capital. The informants also stressed that rigid procedures can become counterproductive in complex projects. They described the need for documented flexibility, meaning the structured authorisation of urgent measures, combined with adequate ex post traceability. Control systems, in this account, need not be inflexible, but they must be usable and adaptable while preserving financial accountability.

Table 3 brings the statistical results and the informant explanations together in a joint display. The display identifies points of conceptual convergence between the two phases; it does not establish that the interview accounts caused, independently confirmed, or exhaustively explained the quantitative relationships.

Table 3. Sequential Explanatory Integration Matrix

Conceptual link	Quantitative evidence	Qualitative explanatory mechanism	Integrated interpretation
Pressures → MCS	$\beta = 0.52, p < 0.001$	Procurement, client mandates, banking requirements and technical standards encourage formal budgeting, reporting and scheduling systems.	Institutional pressures primarily serve as catalysts for the adoption of structured control.
Pressures → Performance	$\beta = 0.09, p = 0.228$	Externally imposed systems may be treated as administrative requirements, with shadow spreadsheets and weak operational appropriation.	No statistically significant conditional direct association was detected in this sample.
MCS → Performance	$\beta = 0.44, p < 0.001$	Early variance detection, cost-to-completion updates and working capital monitoring support corrective action.	Control systems translate operational information into financial protection mechanisms.
Indirect path	Effect = 0.23; 95% CI [0.14, 0.35]	Internal legitimacy, practical usefulness, and active deployment connect head office controls with site-level decisions.	The statistical indirect association is consistent with the proposed pathway; causality has not been established.

DISCUSSIONS

The results support all three hypotheses and indicate a positive indirect-only relationship between institutional pressures and perceived financial performance through management control systems. The positive IP–MCS path (H_1) is consistent with institutional theory and with recent evidence that coercive, normative, and mimetic pressures drive the adoption of control and accounting systems (Alnaim & Metwally, 2024; Ruiz-Blanco et al., 2025). Because institutional pressures were measured as a composite, the present study cannot adjudicate between Ruiz-Blanco et al. (2025), who find normative pressure most influential, and Fan et al. (2024), who find mimetic pressure insignificant; in Moroccan construction, the informants emphasized coercive drivers such as procurement rules and bank requirements, which suggests that the relative weight of the pressures is sector-specific.

The non-significant conditional direct effect of institutional pressures on financial performance indicates a failure to detect a direct association in this sample; it does not demonstrate that the direct relationship is zero or that institutional conformity cannot generate economic value. The qualitative evidence explains the pattern by distinguishing between formal adoption and actual use. When systems are installed primarily to satisfy external stakeholders, operational staff may rely on other tools and feed data into the formal system only for reporting purposes. This reading aligns with the decoupling literature (Bromley & Powell, 2012; Meyer & Rowan, 1977) and with recent findings that policy-stage adoption of environmental management accounting is unrelated or negatively related to performance while commitment-stage adoption is beneficial (Mat Yusoh et al., 2024), that symbolic-compliance configurations keep control systems decoupled from substantive practice (Edirisinghe et al., 2025), and that regulation-induced control systems can have unintended consequences (Antonini & Gomez-Conde, 2024). The study, however, did not measure decoupling independently, so it documents a pattern consistent with decoupling rather than its occurrence or financial cost.

The strong MCS–performance association (H_2) is consistent with the view of control systems as packages that integrate planning, information, and administrative processes (Malmi & Brown, 2008) and with recent evidence that controls improve performance through capabilities and ambidexterity (Phan et al., 2024; Wang & Dyball, 2026) and that their effectiveness depends on how levers are combined and used (Al-Dhubaibi, 2025; Müller et al., 2025). The informants located the financial contribution in early variance detection, cost-to-completion re-estimation, and working capital oversight, mechanisms that matter most where interdependence and uncertainty are high (Geraldi et al., 2011) and where cost overruns are endemic (Alhammedi et al., 2024). The emphasis on documented flexibility echoes the balance between controlling and enabling uses described by Mundy (2010) and the finding that the controlling use of controls, rather than the enabling use, mediates performance effects in smaller firms (Hasu et al., 2025); it also corroborates the moderating role of active use and project complexity found by Said et al. (2026) in the same setting.

The mediation result (H_3) places the study among a growing set of emerging-economy studies in which external or strategic antecedents reach performance through internal practices: sustainability practices and innovation orientation mediate the effects of resources and digital capability on entrepreneurial performance in Bangladesh (Sultana, 2026a, 2026b), open innovation mediates the effect of knowledge sharing on innovation performance in Chinese small and medium-sized enterprises (Zan et al., 2024), risk management transmits the effect of green finance to bank performance (Siddikee et al., 2025), and reputation transmits part of the effect of environmental, social, and governance investment on firm value (Islam et al., 2026b). It also parallels evidence that the performance effects of governance are stronger in emerging than in developed markets (Islam et al., 2026a). Internal organisational factors, such as readiness to change and leadership, are the main predictors of perceived financial performance in emerging-economy firms (Islam et al., 2023a, 2023b). The construction context adds a sustainability dimension: institutional pressures for sustainable construction are filtered by clients and professional communities before reaching practice (de Gier et al., 2025), and institutional limitations are the leading barrier to sustainable construction in developing countries (Malik et al., 2025). The present findings suggest that functioning control systems are one organizational channel through which such pressures can become financially sustainable.

Several qualifications apply. The cross-sectional design cannot establish temporal order, and statistical mediation does not prove that the hypothesized causal sequence occurred; cross-sectional mediation estimates may differ from longitudinal ones (Maxwell & Cole, 2007), and robustness to non-normal measurement deserves attention (Alfons & Schley, 2025). Common method variance remains a plausible alternative explanation for part of the observed associations (Podsakoff et al., 2024), even though the inclusion of several control variables reduces its bias (Sturman et al., 2025). Internal

legitimacy, perceived usefulness, and active managerial use emerged as explanations from the two interviews but were not tested as additional mediators or moderators. A broader qualitative study could examine additional cases, including firms that operate structured controls yet continue to perform poorly, and could measure decoupling directly.

CONCLUSIONS

The purpose of this study was to estimate and explain whether management control systems mediate the relationship between institutional pressures and perceived financial performance in large construction companies in Morocco. The quantitative results show a significant positive association between institutional pressures and management control systems, a significant positive association between management control systems and financial performance, and a non-significant direct association between institutional pressures and financial performance once the mediator and firm-level controls are included. The bootstrap indirect effect is significant and accounts for roughly 70% of the total association, consistent with an indirect-only mediation pattern. The interview evidence indicates that external demands prompt the installation of formal controls. In contrast, internal acceptance, practical usefulness, and active managerial use connect those controls to financial decisions, and that financial traceability must be reconciled with flexibility in complex projects.

The study makes three contributions. Theoretically, it shifts the focus of neo-institutional analysis of management control from conformity as an outcome to translation as a mechanism, showing that, in a project-based emerging-economy sector, the financial relevance of institutional pressure is realised through functioning control systems. Empirically, it provides evidence of mediation from a sector and country that are rarely studied in the management control literature yet are central to resilient infrastructure and sustainable industrialisation. Methodologically, it demonstrates how a limited qualitative follow-up can explain a statistical pattern without overstating its representativeness.

For managers of construction firms, the findings imply that control systems should be designed not merely to satisfy procurement authorities, clients, and banks, but also to support operational decisions, communication, timely corrective action, and disciplined cash management; documented flexibility that authorises urgent measures while preserving traceability appears more valuable than rigid procedures. For regulators and institutional clients, the results suggest that mandating formal controls is unlikely to improve sector performance unless the mandated systems are usable at project level, and that promoting training and managerial engagement may matter as much as imposing requirements for sustainable construction.

The findings are subject to limitations. The cross-sectional design does not establish temporal ordering and cannot rule out reverse causality or omitted-variable bias. The purposive sample of large Moroccan construction firms does not permit generalization to smaller firms, to the whole population, or across countries. Perceptual measures collected through a single survey raise the risk of response bias and common method variance, and the Harman test used here is an insufficient safeguard. Cronbach's alpha and exploratory factor analysis indicate internal consistency and item clustering, but composite reliability, average variance extracted, and a confirmatory measurement model were not estimated. The two interviews provide focused contextual insight but do not achieve thematic saturation. Future research should use longitudinal designs, independently collected financial indicators, confirmatory factor analysis or structural equation modelling to establish convergent and discriminant validity, separate measures of coercive, normative, and mimetic pressures, direct measures of decoupling and of active use as additional mediators or moderators, and wider qualitative sampling that includes disconfirming cases.

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