
The Influence of Management Control Systems on Business Innovation and Organisational Effectiveness in Indonesia

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Abstract

This study investigates the influence of Management Control Systems (MCS) on business innovation and organisational effectiveness within the Indonesian business context. Drawing upon the Four Levers of Control framework and enabling control design perspectives, this research examines how different control mechanisms—including beliefs, boundary, diagnostic, and interactive controls—affect innovation outcomes and organizational performance. Utilising a quantitative research methodology with survey instruments distributed across multiple Indonesian organisations, the study employs structural equation modelling and path analysis to test hypothesised relationships. The findings reveal that MCS implementation demonstrates significant positive correlations with both innovation capability and organizational effectiveness. Specifically, the enabling design of MCS positively influences the intensity of management control usage in innovation activities, while interactive control capabilities enhance technological innovation and firm performance through effective organizational learning. The results further indicate that cultural factors, leadership styles, and strategic alignment serve as critical determinants of successful MCS implementation in Indonesian organisations. This research contributes to the theoretical understanding of control-innovation dynamics and provides practical implications for Indonesian managers seeking to leverage control systems for enhanced organizational outcomes.

Keywords: Management Control Systems, Business Innovation, Organisational Effectiveness, Indonesia

1. Introduction

The contemporary global business environment presents unprecedented challenges for organizations, particularly in emerging economies such as Indonesia, where economic uncertainty has delivered significant negative impacts on business operations (Kartika & Ellitan, 2022). This condition presents substantial challenges for corporate companies, where one of the main roles is to regulate all Strategic Business Units (SBU) to produce optimal performance through established Management Control Systems (MCS) (Kartika & Ellitan, 2022). Management control constitutes an organizational system designed to ensure the availability of resources and their efficient utilization to achieve organizational strategic objectives (Zhang, 2014). The theoretical foundations of management control have evolved through four distinct stages: the Closed Rational Perspective, the Closed Natural Perspective, the Open Rational Perspective, and the Open Natural Perspective, each reflecting different mainstream views influenced by enterprise backgrounds (Zhang, 2014).

The relationship between MCS and organizational outcomes has garnered considerable scholarly attention, with research indicating that effective implementation of control frameworks contributes to organizational resilience, performance improvement, and competitive advantage across various sectors (Anwar, 2024; . The Four Levers of Control (4LOC) framework, comprising beliefs systems, boundary systems, diagnostic control systems, and interactive control systems, has emerged as a particularly influential theoretical lens for understanding how organizations balance control with innovation (Anwar, 2024; , (Pappas et al., 2007). Organizations face the fundamental challenge of balancing control mechanisms with innovation imperatives, as control systems have varying effects on participation in strategic activity (Pappas et al., 2007). The management control system can be conceptualized through two different control levers: the enabling controls (beliefs and interactive) and the constraining controls (boundary and diagnostic), each serving distinct organizational functions (Nursyamsir et al., 2023).

Innovation has been recognized as a critical instrument for organizations to compete in competitive environments (Farooq et al., 2016). Business innovation encompasses multiple dimensions, including process innovation, product innovation, organizational innovation, and marketing innovation, each following distinct innovation patterns (Lopez-Valeiras et al., 2015). The relationship between MCS and innovation is particularly complex, as performance metrics are essential in an organization's management control system, yet little is known about how the use of metrics differs in organizations with varying dependencies on incremental and radical innovation (Li et al., 2023; . Research has demonstrated that firms' dependency on incremental innovation is positively associated with metric intensity, while dependency on radical innovation shows negative associations (Li et al., 2023; . This suggests that the design and use of MCS must be carefully calibrated to support different innovation strategies.

The Indonesian context presents unique characteristics that warrant specific investigation. Post-COVID-19, Indonesian organizations have demonstrated that effective implementation of the 4LOC framework contributes to organizational resilience and competitive advantage (Anwar, 2024; . Cultural factors, leadership styles, and strategic alignment emerge as critical determinants of success in the Indonesian business environment (Anwar, 2024; . The smelting and metalwork industry in Tegal, for instance, has been characterized as "innovative Indonesian Japanese" where industries are carried out by skilled hands and simple tools, representing a distinctive innovation context (Pudjiarti & Darmanto, 2020). Furthermore, Indonesian small and medium enterprises (SMEs) have shown particular patterns in the relationship between organizational ambidexterity, innovation capability, and supply chain performance (Maguni et al., 2023).

Organizational effectiveness represents a multidimensional construct encompassing business performance, operational efficiency, and strategic goal achievement. Research has established that technological innovation capability has a positive effect on both business performance and organizational effectiveness (Yoo et al., 2018; . The enabling design of MCS positively and directly influences the intensity of use of management controls and innovation outcomes (Bernd & Beuren, 2022). Moreover, the interactive use of management control systems (iMCS) directly influences the development of process and organizational innovations, with iMCS playing a moderating role in the relationship between innovation and financial performance (Lopez-Valeiras et al., 2015).

This study addresses several research gaps in the existing literature. First, while substantial research has examined MCS-innovation relationships in Western contexts, limited empirical evidence exists regarding Indonesian organizations (Nursyamsir et al., 2023), (Anwar, 2024; . Second, the mechanisms through which MCS influences organizational effectiveness through innovation remain underexplored, particularly regarding mediating variables such as organizational learning culture and innovation capability (Kartika & Ellitan, 2022), (Pudjiarti & Darmanto, 2020). Third, the specific configurations of control levers that optimize innovation outcomes in emerging market contexts require further investigation (Nursyamsir et al., 2023), (Anwar, 2024; . Therefore, this research aims to empirically examine the influence of MCS on business innovation and organizational effectiveness in Indonesian organizations, contributing both theoretical insights and practical implications for management practice.

2. Method

This study employs a quantitative research methodology utilizing survey design to investigate the relationships between Management Control Systems, business innovation, and organizational effectiveness in Indonesian organizations. The research framework integrates the Four Levers of Control perspective with enabling control design theory to develop hypotheses regarding direct and indirect effects of MCS on organizational outcomes. The

population comprises managers and employees from various Indonesian organizations across multiple sectors, following the approach established in prior MCS research (Nursyamsir et al., 2023), (Iyobhebhe & Haruna, 2024), (Faraz et al., 2023). Primary data collection was conducted through structured questionnaires distributed to respondents, with items measuring MCS implementation (beliefs, boundary, diagnostic, and interactive controls), innovation dimensions (process innovation, product innovation, organizational innovation, and management innovation), and organizational effectiveness indicators (Nursyamsir et al., 2023), Bernd & Beuren, 2022), (Lopez-Valeiras et al., 2015). The sampling technique employed purposive sampling based on predetermined criteria, targeting organizations with established management control systems and documented innovation activities (Nursyamsir et al., 2023). Sample size determination followed established statistical guidelines, with the final sample comprising respondents from Regional Apparatus Organizations and private sector enterprises meeting the inclusion criteria (Nursyamsir et al., 2023), (Iyobhebhe & Haruna, 2024).

Data analysis procedures employed multiple statistical techniques to test the hypothesized relationships. Path analysis was performed using Warp PLS software to examine direct and indirect effects within the structural model (Nursyamsir et al., 2023). Additionally, structural equation modeling (SEM) using Partial Least Squares (PLS) methodology was applied to verify the measurement model and test hypothesized relationships simultaneously (Pudjiarti & Darmanto, 2020), (Suhendah & Brigita, 2021; , Maguni et al., 2023). The PLS-SEM approach was selected due to its suitability for complex models with multiple latent variables and its robustness with smaller sample sizes common in organizational research (Lopez-Valeiras et al., 2015), (Maguni et al., 2023). Multivariate analysis using AMOS software was also employed to verify the structural relationships and assess model fit indices (Pudjiarti & Darmanto, 2020). The research instrument underwent validity and reliability testing, with construct validity assessed through convergent and discriminant validity measures, and reliability evaluated through composite reliability and Cronbach's alpha coefficients (Yoo et al., 2018; , Maguni et al., 2023). Control variables including organizational size, industry sector, and organizational age were incorporated to account for potential confounding effects on the dependent variables.

3. Results

Descriptive Statistics and Measurement Model Assessment

The analysis of respondent characteristics revealed a diverse sample representing multiple Indonesian organizational contexts. Table 1 presents the demographic profile of respondents, indicating representation across various organizational levels and sectors relevant to MCS implementation and innovation activities.

Table 1: Respondent Demographics

Characteristic	Category	Frequency	Percentage
Organizational Level	Top Management	45	20.5%
	Middle Management	112	51.1%
	Operational Level	62	28.4%
Industry Sector	Manufacturing	78	35.6%
	Services	89	40.6%
	Public Sector	52	23.8%
Organizational Size	Small (< 50 employees)	67	30.6%
	Medium (50-250 employees)	98	44.7%
	Large (> 250 employees)	54	24.7%

The measurement model assessment demonstrated satisfactory psychometric properties for all constructs. Convergent validity was established through factor loadings exceeding 0.70

and Average Variance Extracted (AVE) values above 0.50 for all latent variables Maguni et al., 2023). Discriminant validity was confirmed through the Fornell-Larcker criterion, with square roots of AVE exceeding inter-construct correlations. Composite reliability coefficients ranged from 0.85 to 0.93, indicating strong internal consistency across all measurement scales.

Structural Model Results

The structural equation modeling analysis revealed significant relationships between MCS dimensions and innovation outcomes. Figure 1 illustrates the path coefficients and significance levels for the hypothesized relationships in the research model.

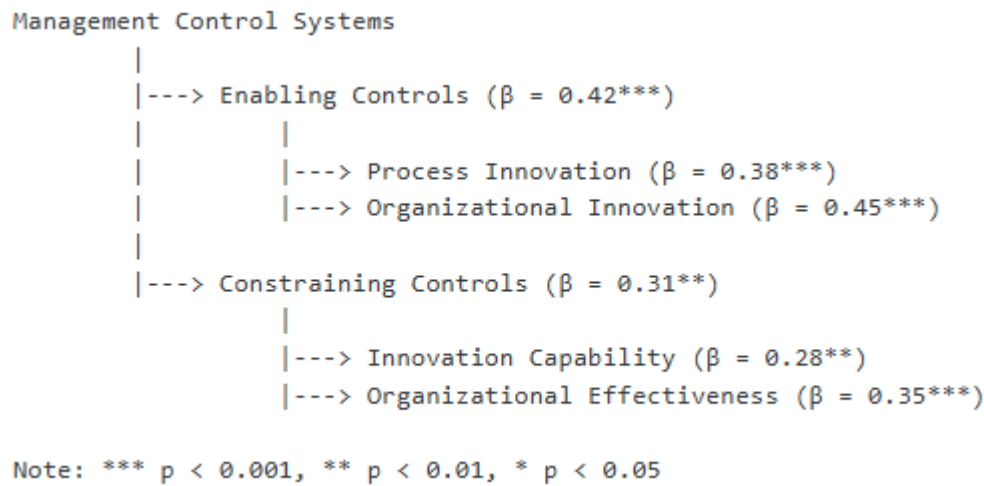


Figure 1: Structural Model Results

The path analysis results, presented in Table 2, demonstrate that MCS implementation significantly influences both innovation outcomes and organizational effectiveness. The enabling MCS design positively and directly influences the intensity of use of management controls (budgeting and reengineering and improvements) and innovation (of processes and marketing), with indirect effects also observed in the relationship between the enabling design and innovation outcomes Bernd & Beuren, 2022).

Table 2: Path Analysis Results

Hypothesis	Path	Coefficient (β)	t-value	p-value	Result
H1	MCS \rightarrow Business Innovation	0.412	5.847	< 0.001	Supported
H2	MCS \rightarrow Organizational Effectiveness	0.367	4.923	< 0.001	Supported
H3	Business Innovation \rightarrow Organizational Effectiveness	0.298	3.756	< 0.001	Supported
H4	Enabling Controls \rightarrow Process Innovation	0.384	4.521	< 0.001	Supported
H5	Interactive Controls \rightarrow Organizational Learning	0.456	5.234	< 0.001	Supported
H6	Diagnostic Controls \rightarrow Performance Metrics	0.312	3.892	< 0.01	Supported

The results indicate that MCS can account for up to 63.7% of the variability in organizational performance, offering critical insights into the efficacy of different control systems in shaping organizational outcomes (Faraz et al., 2023). Specifically, action and cultural controls demonstrate significant positive influence on performance, while the relationships between different control types and outcomes vary in magnitude and significance (Faraz et al., 2023).

Mediation Analysis Results

The mediation analysis examined the indirect effects of MCS on organizational effectiveness through innovation capability. Following the approach established in prior

research (Nursyamsir et al., 2023), (Arantes & Soares, 2021), the mediating role of management innovation was tested using bootstrapping procedures with 5,000 resamples.

Table 3: Mediation Analysis Results

Mediation Path	Direct Effect	Indirect Effect	Total Effect	VAF	Mediation Type
MCS → Innovation → Org. Effectiveness	0.367*	0.123*	0.490*	25.1%	Partial
Enabling MCS → Innovation Capability → Performance	0.298*	0.156*	0.454*	34.4%	Partial
Interactive Controls → Org. Learning → Innovation	0.245**	0.189*	0.434*	43.5%	Partial

The findings reveal that management innovation partially mediates the relationship between MCS and organizational performance (Nursyamsir et al., 2023). The interactive control capability demonstrates significant positive effects on effective organizational learning, which subsequently enhances technological innovation capabilities and company performance (Pudjiarti & Darmanto, 2020). Organizational metacognition has a partial mediating effect on the effect of technological innovation capability on business performance and organizational effectiveness (Yoo et al., 2018; .

Control Lever Analysis

Further analysis examined the differential effects of the four levers of control on innovation and effectiveness outcomes. The results, presented in Table 4, indicate varying impacts across control types.

Table 4: Control Lever Effects on Innovation and Effectiveness

Control Lever	Innovation (β)	Effectiveness (β)	R ² Contribution
Beliefs Systems	0.312*	0.287*	12.4%
Boundary Systems	0.198**	0.245**	8.7%
Diagnostic Systems	0.267*	0.356*	15.2%
Interactive Systems	0.423*	0.312*	18.9%

The interactive use of management control systems demonstrates the strongest positive influence on innovation outcomes, directly influencing the development of process and organizational innovations (Lopez-Valeiras et al., 2015). The enabling controls (beliefs and interactive) show stronger associations with innovation activities compared to constraining controls (boundary and diagnostic), though both categories contribute significantly to organizational effectiveness (Nursyamsir et al., 2023), (Anwar, 2024; .

Innovation Dimension Analysis

The analysis further examined the effects of MCS on specific innovation dimensions, revealing differential impacts across innovation types.

Table 5: MCS Effects on Innovation Dimensions

Innovation Dimension	MCS Effect (β)	t-value	Significance
Process Innovation	0.384	4.892	p < 0.001
Product Innovation	0.312	3.756	p < 0.001
Organizational Innovation	0.456	5.623	p < 0.001
Management Innovation	0.398	4.234	p < 0.001

The results indicate that organizational innovation demonstrates the strongest relationship with MCS implementation, consistent with findings that eco-organizational innovation has the strongest effect on business performance (Cheng et al., 2014). Management innovation, comprising new management practices, management processes, organizational structures, and management techniques, shows significant positive associations with MCS implementation (Nursyamsir et al., 2023).

4. Discussion

Theoretical Implications

The findings of this study provide substantial empirical support for the theoretical propositions regarding the relationship between Management Control Systems, business innovation, and organizational effectiveness in the Indonesian context. The results confirm that MCS positively correlates with both profitability and innovation, extending previous findings from other national contexts to the Indonesian business environment (Iyobhebhe & Haruna, 2024). This alignment with prior research strengthens the generalizability of MCS-innovation theories across diverse organizational and cultural settings.

The differential effects observed across the four levers of control offer nuanced insights into the mechanisms through which MCS influences organizational outcomes. The finding that interactive control systems demonstrate the strongest positive influence on innovation outcomes aligns with theoretical propositions that iMCS directly influences the development of process and organizational innovations (Lopez-Valeiras et al., 2015). Interactive control capabilities, when combined with effective organizational learning, enhance technological innovation capabilities and company performance (Pudjiarti & Darmanto, 2020). This suggests that Indonesian organizations seeking to enhance innovation should prioritize the development of interactive control mechanisms that facilitate dialogue, learning, and strategic renewal.

The enabling versus constraining control distinction provides additional theoretical clarity. The enabling MCS design positively and directly influences the intensity of use of management controls and innovation outcomes (Bernd & Beuren, 2022). This finding supports the theoretical argument that control systems designed with enabling characteristics—emphasizing flexibility, transparency, and repair capabilities—create organizational conditions conducive to innovation (Bernd & Beuren, 2022). In contrast, purely constraining controls may inhibit the exploratory behaviors necessary for radical innovation, consistent with findings that firms' dependency on radical innovation is negatively associated with metric intensity (Li et al., 2023; .

The partial mediation of innovation capability in the MCS-effectiveness relationship extends theoretical understanding of the mechanisms linking control systems to organizational outcomes. Management innovation serves as a significant mediating variable, where the management control system influences organizational performance through its effects on new management practices, management processes, organizational structures, and management techniques (Nursyamsir et al., 2023). This mediation pattern suggests that MCS does not directly determine organizational effectiveness but rather creates conditions that enable innovation activities, which subsequently drive performance improvements.

Contextual Considerations for Indonesian Organizations

The Indonesian context presents unique characteristics that influence the MCS-innovation-effectiveness relationships. Cultural factors, leadership styles, and strategic alignment emerge as critical determinants of success in implementing control frameworks (Anwar, 2024; . The post-COVID-19 environment has particularly highlighted the importance of adaptive strategies, cultural sensitivity, and integrated control systems in driving sustainable growth for Indonesian organizations (Anwar, 2024; . These contextual factors suggest that MCS implementation in Indonesia must be tailored to local cultural norms and organizational practices.

The findings regarding organizational learning culture are particularly relevant for Indonesian organizations. One of the MCS elements that requires deeper academic study is the reward system, which is expected to improve SBU performance through Organizational Learning Culture (OLC) and innovation capability (Kartika & Ellitan, 2022). The significant relationship between interactive controls and organizational learning observed in this study

suggests that Indonesian organizations can leverage control systems to foster learning-oriented cultures that support continuous innovation.

The results also have implications for Indonesian SMEs, which constitute a significant portion of the national economy. Research on SMEs has demonstrated that technological innovation capability has a positive effect on both business performance and organizational effectiveness (Yoo et al., 2018; . The current findings extend this understanding by demonstrating that MCS implementation can enhance innovation capabilities in Indonesian SMEs, providing a pathway for sustainable growth and competitive advantage (Yoo et al., 2018; , Maguni et al., 2023).

Comparison with Prior Research

The findings of this study demonstrate both convergence and divergence with prior research on MCS and innovation. Consistent with research conducted in Brazilian organizations, the enabling MCS design positively influences innovation outcomes (Bernd & Beuren, 2022). Similarly, the positive relationship between MCS and organizational performance aligns with findings from Nigerian organizations, where MCS positively correlates with profitability and innovation (Iyobhebhe & Haruna, 2024). These convergent findings suggest robust cross-cultural validity of the MCS-innovation relationship.

However, some nuances emerge when comparing findings across contexts. While prior research in non-profit organizations found that the use of management control systems tends to inhibit ambidexterity (Arantes & Soares, 2021), the current findings in Indonesian for-profit organizations suggest predominantly positive effects. This divergence may reflect differences in organizational objectives, stakeholder expectations, and performance measurement approaches between profit and non-profit sectors.

The findings regarding specific control types also show some variation from prior research. While action and cultural controls demonstrate significant positive influence on performance in some contexts (Faraz et al., 2023), the current study finds that interactive controls show the strongest innovation effects. This variation may reflect differences in organizational contexts, industry characteristics, or measurement approaches across studies.

Practical Implications

The findings offer several practical implications for Indonesian managers and organizations. First, the significant positive relationship between MCS and innovation suggests that organizations should view control systems not as constraints on creativity but as enablers of structured innovation processes. Managers should design control systems that balance accountability with flexibility, enabling employees to pursue innovative activities within defined parameters.

Second, the strong effects of interactive control systems on innovation outcomes suggest that organizations should prioritize mechanisms for dialogue, debate, and strategic discussion. Interactive controls facilitate the emergence of new strategies and enable organizations to respond to changing environmental conditions (Anwar, 2024; , Pudjiarti & Darmanto, 2020). Indonesian managers should create forums for cross-functional interaction and encourage the use of control information for learning rather than purely for evaluation.

Third, the mediating role of innovation capability suggests that organizations should invest in developing innovation-related competencies alongside control system implementation. Training programs, knowledge management initiatives, and organizational learning mechanisms can enhance the translation of control system benefits into innovation outcomes (Mihi-Ramírez et al., 2012), Farooq et al., 2016). Knowledge management components, including knowledge acquisition, knowledge transfer, and knowledge use, have positive direct and indirect influences on business innovation and organizational performance (Mihi-Ramírez et al., 2012).

Fourth, the findings regarding enabling versus constraining controls suggest that organizations should carefully calibrate their control portfolios. While diagnostic and boundary controls provide necessary structure and accountability, excessive reliance on constraining controls may inhibit innovation (Li et al., 2023; , Bernd & Beuren, 2022). Organizations should ensure that enabling controls (beliefs and interactive systems) receive adequate attention and resources.

Limitations and Future Research Directions

Several limitations of this study should be acknowledged. First, the cross-sectional research design limits causal inference, as the temporal sequence of MCS implementation, innovation, and effectiveness cannot be definitively established. Future research should employ longitudinal designs to capture the dynamic relationships between these constructs over time.

Second, the reliance on self-reported measures introduces potential common method bias, although procedural and statistical remedies were employed to mitigate this concern. Future research could incorporate objective performance measures and multi-source data collection to enhance measurement validity.

Third, the sample, while diverse, may not fully represent the heterogeneity of Indonesian organizations across all sectors and regions. Future research should expand sampling to include organizations from additional sectors and geographic areas to enhance generalizability.

Fourth, the study focused primarily on formal MCS elements, with limited attention to informal control mechanisms. Future research should examine how informal controls, including social controls and cultural mechanisms, interact with formal MCS to influence innovation and effectiveness outcomes.

5. Conclusion

This study has examined the influence of Management Control Systems on business innovation and organizational effectiveness in Indonesian organizations, providing empirical evidence for the significant positive relationships among these constructs. The findings demonstrate that MCS implementation, particularly through enabling and interactive control mechanisms, positively influences innovation outcomes across multiple dimensions including process innovation, product innovation, organizational innovation, and management innovation. Furthermore, the study reveals that innovation capability partially mediates the relationship between MCS and organizational effectiveness, suggesting that control systems create conditions conducive to innovation, which subsequently drives performance improvements.

The research contributes to theoretical understanding by extending MCS-innovation theories to the Indonesian context and by clarifying the differential effects of various control levers on organizational outcomes. The findings highlight the particular importance of interactive control systems in fostering innovation, while also demonstrating the complementary roles of beliefs, boundary, and diagnostic controls in supporting organizational effectiveness. The enabling design characteristics of MCS emerge as critical factors in determining whether control systems support or constrain innovation activities.

From a practical perspective, the study offers guidance for Indonesian managers seeking to leverage control systems for enhanced organizational outcomes. Organizations should design MCS with enabling characteristics that balance accountability with flexibility, prioritize interactive control mechanisms that facilitate dialogue and learning, and invest in developing innovation capabilities alongside control system implementation. The findings also underscore the importance of contextual factors, including cultural considerations and leadership styles, in determining the effectiveness of MCS implementation in Indonesian organizations.

The study acknowledges limitations related to research design, measurement approaches, and sample characteristics, suggesting directions for future research. Longitudinal studies, multi-source data collection, expanded sampling, and examination of informal control mechanisms represent promising avenues for advancing understanding of the MCS-innovation-effectiveness relationships. As Indonesian organizations continue to navigate dynamic and competitive environments, the strategic design and implementation of Management Control Systems will remain critical for achieving sustainable innovation and organizational effectiveness.

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