



Original Article

Digital Work Culture Transformation and Its Effect on Management Control Effectiveness in Medium Sized Enterprises in Indonesia

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Abstract:

Medium-sized companies in Jakarta's buffer area face the complexity of organizational control along with the adoption of a work system based on digital technology. Although various companies have adopted ERP, HRIS, digital accounting systems, and online collaboration applications, management control practices are still in many cases still dominated by traditional SOPs and hierarchical oversight. This study aims to analyze the influence of digital work culture transformation on the effectiveness of management control in medium-sized companies in the manufacturing and service sectors in the Bekasi, Tangerang, and Depok regions. The research uses a mixed methods approach with a sequential explanatory design. The quantitative stage was carried out through a survey of 100 respondents consisting of middle managers, supervisors, and unit heads, with multiple linear regression analysis. The qualitative stage was carried out through semi-structured interviews with 6 key informants, namely operational managers, human resource managers, and digital transformation leaders. The results show that the transformation of digital work culture has a significant effect on the effectiveness of management control, especially through increasing system-based work transparency, real-time performance monitoring, and data-based compliance. Qualitative findings reveal that digital work culture serves as an informal control mechanism that reinforces formal control without relying on direct supervision. This research contributes to the development of the management control literature by affirming the role of digital work culture as a key element in the design of the management control system of mid-sized companies in the digital era.

Keywords: Digital Work Culture, Management Control Systems, Medium-Sized Enterprises, Organizational Control, Indonesia.

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Introduction

Digital transformation has become a global phenomenon that fundamentally changes the way organizations design work processes, manage resources, and control performance (Zhang & Chen, 2024). Technological developments such as Enterprise Resource Planning (ERP), Human Resource Information System (HRIS), cloud

computing, and digital collaboration platforms have prompted organizations to shift from conventional work patterns to systems and data-based work patterns ([M. A. Rahman & Jyoti, 2022](#)). In this context, digital work culture is not only understood as the use of technology, but as a change in work values, norms, and behaviors that emphasize transparency, collaboration, and data-driven decision-making ([Malik, 2024; Anton et al., 2023](#)). These changes require fundamental adjustments in management control systems (MCS) to remain effective in an increasingly flexible and decentralized work environment.

On a global level, research shows that digital transformation has significant implications for the design and effectiveness of MCS. Control systems that previously focused on hierarchical supervision and formal procedures tend to be less responsive to digital work dynamics that demand speed, autonomy, and adaptability (Weber et al., 2022). Recent studies emphasize the importance of integration between formal system-based control and informal control mechanisms that are sourced from organizational culture and shared values ([Worked, 2025](#)). Thus, digital work culture is seen as a key element that mediates the relationship between digital technology and the effectiveness of MCS.

In the Indonesian context, especially in medium-sized companies, digital transformation is taking place non-uniformly and faces various structural limitations. Midsize companies have generally adopted ERP, HRIS, and digital accounting systems, but still maintain traditional management control practices that rely on rigid Standard Operating Procedures (SOPs) and direct supervision by superiors ([Murray, 2023; Mestica, 2024](#)). This creates tension between digital work flexibility and hierarchical control patterns, especially in Jakarta's buffer areas such as Bekasi, Tangerang, and Depok which are centers of industrial and service activities. Therefore, an empirical understanding is needed on the extent to which digital work culture transformation actually contributes to the effectiveness of MCS in the local context.

Although the literature on digital transformation and MCS continues to grow, there is a significant research gap. Most previous studies have placed more emphasis on aspects of technology and information systems, while the digital work culture dimension is often treated as a supporting variable or even ignored ([Abubakre et al., 2022](#)). In addition, empirical research that specifically examines medium-sized companies in developing countries is still relatively limited, even though their organizational characteristics and institutional context are different from large companies in developed countries. This gap shows the need for research that places digital work culture as the main construct in explaining the effectiveness of MCS.

Furthermore, methodological approaches in previous studies tended to be dominated by purely quantitative methods, thus being less able to explain the social and behavioral mechanisms underlying the relationships between variables. In fact, the effectiveness of MCS in the digital environment is not only determined by formal systems, but also by how organizational actors interpret and internalize digital values in daily work practices ([Zhong, 2022](#)). Therefore, the use of a mixed methods approach becomes relevant to bridge statistical findings with a deeper contextual understanding. This approach allows for a more comprehensive exploration of the role of digital work culture as an informal control mechanism.

Based on this background, this study aims to analyze the influence of digital work culture transformation on the effectiveness of MCS in medium-sized companies in the manufacturing and service sectors operating in the Jakarta buffer area. In particular, this study seeks to identify the dimensions of digital work culture that are most influential in

improving system-based work transparency, real-time performance monitoring, and compliance with organizational policies. Through a mixed methods design with a sequential explanatory approach, this study not only empirically examines causal relationships, but also explains the mechanisms of their influence from the perspective of key organizational actors.

This research is expected to make a theoretical contribution by expanding the study of MCS through the integration of digital work culture perspectives, especially in the context of medium-sized enterprises in developing countries. In practical terms, the findings of this study can be the basis for the management of mid-sized companies in designing a more adaptive control system, not solely relying on direct supervision, but utilizing a digital work culture as an effective control instrument. Thus, this research contributes to answering the challenges of organizational management in the increasingly complex and dynamic era of digital transformation.

Method

Types, Approaches, and Research Design

This study uses a mixed methods approach with a sequential explanatory design, namely the collection and analysis of quantitative data in the initial stage followed by the collection and analysis of qualitative data in the later stage. This approach was chosen because the relationship between the transformation of digital work culture and the effectiveness of the management control system is not only causal-statistical, but also influenced by social processes, actors' interpretations, and day-to-day control practices in the organization. The quantitative stage aims to empirically test the influence of independent variables on dependent variables, while the qualitative stage serves to explain and deepen the mechanism of influence found statistically. Sequential explanatory design is considered appropriate for management control research in the digital age that demands integration between formal measurement and contextual understanding ([Creswell & Plano Clark, 2023](#)).

Research Variables and Conceptual Models

This research involves two main variables, namely:

1. Digital Work Culture Transformation as an independent variable
2. Effectiveness of the Management Control System as a dependent variable

Digital work culture transformation is positioned as an organizational construct that represents the internalization of digital technology-based values, norms, and work practices, which goes beyond just the adoption of technological systems. The effectiveness of a management control system is understood as the ability of formal and informal systems of an organization to direct the behavior of organizational members to be in line with the company's strategic goals. The relationship between variables is built on the view that digital work culture serves as an informal control mechanism that strengthens the effectiveness of system-based formal control ([Harry & Widjaja, 2025](#)). Based on the conceptual model, this study positions Digital Work Culture Transformation as a multidimensional independent variable consisting of system-based work transparency, digital collaboration, data-driven decision-making orientation, and digital work flexibility. These four dimensions are hypothesized to have a direct and positive effect on the effectiveness of the management control system, as illustrated in Figure 1.

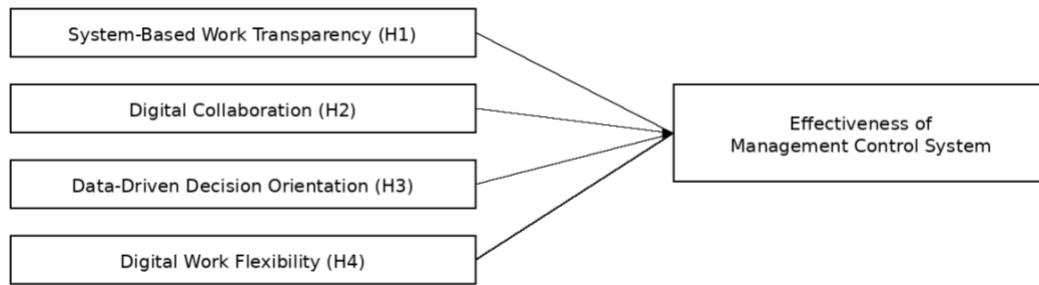


Figure 1. Research Design and Hypotheses Framework

Research Hypothesis

To strengthen the analysis, the transformation of digital work culture is analyzed through several main dimensions, so that the hypothesis can be partially derived as follows:

- H1: System-based work transparency has a positive effect on the effectiveness of the management control system.
- H2: Digital collaboration has a positive effect on the effectiveness of the management control system.
- H3: The orientation of data-based decision-making has a positive effect on the effectiveness of the management control system.
- H4: Digital work flexibility has a positive effect on the effectiveness of the management control system.

This partial hypothesis approach allows the identification of the most dominant digital work culture dimension in strengthening organizational control.

Variable Operational Definition

Digital Work Culture Transformation (Independent Variables)

Digital work culture transformation is defined as the level of internalization of values, norms, and work practices that emphasize transparency, collaboration, flexibility, and data-driven decision-making through the utilization of an organization's digital systems (Bozkus, 2023; Deep, 2023). These variables are measured through four main dimensions:

1. System-Based Work Transparency, which reflects the disclosure of performance information, cross-unit data access, and visibility of work processes through digital systems.
2. Digital Collaboration, which describes the intensity of cross-functional work through digital platforms, online coordination, and real-time communication.
3. Data Orientation and Analytics, which demonstrates the use of system data as the basis for decision-making and performance evaluation.
4. Digital Work Flexibility, which reflects the organization's ability to support flexible working patterns without compromising accountability.

Effectiveness of Management Control System (Dependent Variables)

The effectiveness of a management control system is defined as the level of ability of formal and informal control systems to ensure the achievement of organizational goals

efficiently, consistently, and accountably. These variables are measured through four main dimensions:

1. Clarity of Targets and Performance Standards,
2. System-based real-time performance monitoring,
3. Compliance with Organizational Procedures and Policies,
4. System Support for Managerial Decision Making.

These indicators are adapted from the framework of contemporary management control systems that emphasize the integration of formal and informal control ([Pfister et al., 2023](#)).

Population, Sample, and Research Informant

The study population includes middle managers, supervisors, and heads of work units in medium-sized companies in the manufacturing and service sectors in Bekasi, Tangerang, and Depok. At the quantitative stage, the sample was determined using purposive sampling, with the criteria of active involvement in the organization's digital system and a minimum working period of two years. The number of respondents was set at 100 people, which were considered adequate for multiple linear regression analysis and met the minimum recommendation of the organization's research sample size ([Rahman, 2023](#)).

At the qualitative stage, the research involved 6 key informants, consisting of 2 Operational Managers, 2 Human Resources Managers, and 2 Digital Transformation Leaders. The selection of informants is carried out to capture a variety of strategic, operational, and digital control policy perspectives. This amount is considered sufficient to achieve data saturation and depth of analysis ([Christou, 2025](#)).

Data Collection and Analysis Techniques

Quantitative data was collected through a five-point Likert scale questionnaire. The validity of the instrument was tested using item-total correlation, while the reliability was tested using Cronbach's Alpha with a minimum value of 0.70. Data analysis was performed using multiple linear regression with the help of SPSS software. Qualitative data were analyzed using thematic analysis, which involved the process of open coding, categorization of themes, and interpretation of meaning with the help of NVivo. Integration of results is carried out at the interpretation stage to ensure consistency and reinforcement of quantitative findings by qualitative evidence.

Results

1. System-Based Work Transparency and Management Control Effectiveness

The results of the regression analysis show that System-based work transparency has a positive and significant effect on the effectiveness of the management control system. System-based work transparency reflects the level of disclosure of performance information, cross-unit data access, and visibility of work processes through an integrated digital system.

Table 1. Multiple Linear Regression Results: System-Based Work Transparency and Management Control Effectiveness

Variable	Unstandardized Coefficient (B)	Standard Error	Standardized Beta (β)	t-value	Sig.
Constant	2.184	0.412	—	5.300	0.000

Variable	Unstandardized Coefficient (B)	Standard Error	Standardized Beta (β)	t-value	Sig.
System-Based Work Transparency	0.436	0.089	0.412	4.876	0.000
R Square	0.312				
Adjusted R Square	0.305				
F-statistic	23.79				0.000
Number of Observations	100				

Source: Processed Survey Data (2025)

The value of the standardized beta coefficient is 0.412 with a level of significance $p < 0.001$. It shows that increased transparency of system-based work is consistently followed by an increase in the effectiveness of management control. Value R Square of 0.312 indicates that 31.2 percent variation in the effectiveness of management control can be explained by system-based work transparency. This figure shows a substantial contribution in the context of organizational research, given that the effectiveness of control is influenced by various structural and behavioral factors. These quantitative findings confirm that information disclosure through digital systems allows control to run in a more objective, standardized manner, and does not depend on the intensity of direct supervision by superiors. To provide a clearer visualization of the strength and direction of the relationship, Figure 2 illustrates the positive effect of system-based work transparency on the effectiveness of the management control system based on the standardized regression coefficient.

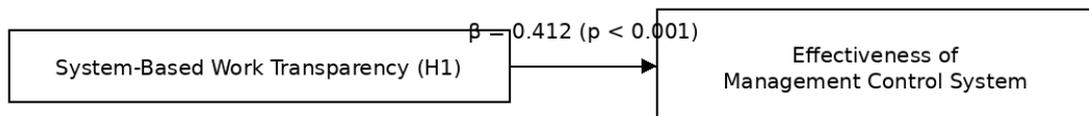


Figure 2. System-Based Work Transparency → Management Control Effectiveness

To deepen understanding of these quantitative findings, interviews were conducted to explore how system-based transparency is perceived and practiced in organizational control. One of the operational managers explained the fundamental changes in the supervisory pattern after the digital system was implemented as follows: "Since all operational reports enter the system, we no longer wait for manual reports. Everyone can see the progress of the work directly, so the control runs on its own." (MO-1, Interview 12 November 2025). This view is reinforced by human resources managers who highlight the impact of transparency on relationships between work units: "In the past, there were often debates because each unit brought its own data. Now everyone refers to the same dashboard, so performance assessment becomes more objective." (MS-1, interview 18 November 2025). Meanwhile, digital transformation leaders emphasized the psychological aspects of data transparency on employee work behavior: "Data transparency makes control not feel pressured. Employees know what is being assessed and how to achieve it, so they are more accountable." (PD-1, Interview 25 November 2025). Overall, system-based work transparency also influences the way employees

regulate their own behavior in daily work practices. When performance information is openly accessible across units, employees tend to take responsibility for monitoring and correcting their work progress without waiting for direct managerial intervention. This condition was reflected by one operational manager who stated that employees become more proactive once their performance is visible in the system: “*When performance data is visible to everyone, employees usually correct their work themselves before being reminded. They realize that their performance can be seen at any time through the system.*” (MO-2, Interview 14 November 2025). This qualitative evidence further explains the relatively strong standardized beta coefficient ($\beta = 0.412$), indicating that transparency-driven self-regulation plays an important role in strengthening management control effectiveness.

2. Real-Time Performance Monitoring and Management Control Effectiveness

Dimensions System-based real-time performance monitoring proven to have a positive and significant influence on the effectiveness of the management control system.

Table 2. Multiple Linear Regression Results: Real-Time Performance Monitoring and Management Control Effectiveness

Variable	Unstandardized Coefficient (B)	Standard Error	Standardized Beta (β)	t-value	Sig.
Constant	2.067	0.395	—	5.234	0.000
Real-Time Performance Monitoring	0.389	0.092	0.367	4.214	0.000
R Square	0.284				
Adjusted R Square	0.276				
F-statistic	17.76				0.000
Number of Observations	100				

Source: Processed Survey Data (2025)

The beta coefficient is 0.367. It shows that the ability of organizations to monitor performance in real-time through digital systems contributes significantly to the effectiveness of control. Value R Square of 0.284 indicates that 28.4 percent variation in the effectiveness of management control can be explained by this real-time monitoring mechanism. These results show that digital systems allow management to make corrections and decision-making quickly, so that control is no longer reactive, but proactive and preventive. Figure 3 presents the graphical representation of the positive relationship between real-time performance monitoring and management control effectiveness, highlighting the magnitude of the standardized regression coefficient.

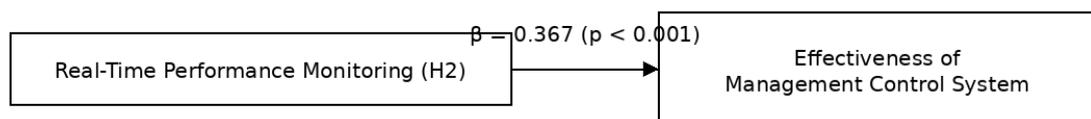


Figure 3. Real-Time Performance Monitoring → Management Control Effectiveness

These quantitative findings were reinforced by interviews with informants who described concrete changes in performance control practices. An operations manager said: "Now if there is a deviation in performance, we can find out on the same day. There is no need to wait for the month-end report like before." (MO-2, Interview November 14, 2025). From the perspective of the human resources manager, real-time monitoring improves fairness in performance evaluations: "Performance data is more objective. Employee assessment is based on numbers and achievements, not just the perception of superiors." (MS-2, interview 20 November 2025). The digital transformation leader added that the monitoring system serves as a preventive mechanism: "The control is now more preventive. Because the process is monitored by the system, employees tend to be more careful and compliant from the start." (PD-2, Interview 27 November 2025). Beyond supporting early detection of performance deviations, real-time performance monitoring also enhances coordination and communication between work units. Informants emphasized that immediate access to performance data enables faster alignment and joint problem-solving across departments. One human resources manager explained that real-time monitoring reduces delays in coordination processes: "Because the data is updated in real time, coordination between units becomes quicker. Problems can be discussed and resolved on the same day without waiting for formal reports." (MS-1, Interview 18 November 2025). These qualitative insights help explain the positive and significant relationship observed quantitatively ($\beta = 0.367$), suggesting that real-time monitoring supports a shift toward more proactive and preventive control practices.

3. Data-Driven Compliance and Digital Work Culture as Informal Control Imitations

Regression analysis shows that Data-driven compliance has a positive and significant influence on the effectiveness of the management control system.

Table 3. Multiple Linear Regression Results: Data-Driven Compliance and Management Control Effectiveness

Variable	Unstandardized Coefficient (B)	Standard Error	Standardized Beta (β)	t-value	Sig.
Constant	2.115	0.404	—	5.236	0.000
Data-Driven Compliance	0.421	0.092	0.389	4.563	0.000
R Square	0.301				
Adjusted R Square	0.294				
F-statistic	20.82				0.000
Number of Observations	100				

Source: Processed Survey Data (2025)

The beta coefficient is 0.389 Demonstrated that compliance built through digital systems and integrated data contributes strongly to the effectiveness of controls. These findings indicate that compliance is no longer solely enforced through formal rules, but is shaped through the design of digital work systems. To visually reinforce the statistical

findings, Figure 4 depicts the positive relationship between data-driven compliance and the effectiveness of the management control system.

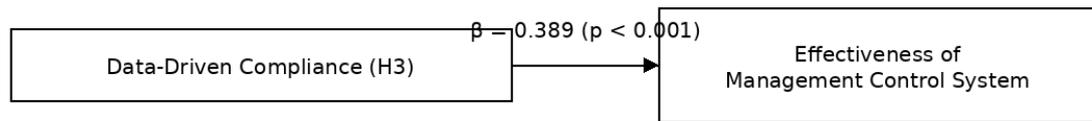


Figure 4. Data-Driven Compliance → Management Control Effectiveness

The qualitative findings clarify the changing meaning of compliance in organizations that have internalized digital work culture. An operations manager explained: *"Now employees are compliant not because they are afraid of being monitored, but because the workflow in the system does direct them to work according to procedures."* (MO-1, Interview 12 November 2025). Human resource managers emphasize system-based compliance sustainability: *"The rules do not need to be explained repeatedly. The system has limited and directed the work process."* (MS-1, Interview 18 November 2025). Digital transformation leaders affirm the role of digital work culture as informal control: *"Digital work culture makes control feel natural. The values of discipline and accountability are embedded through the system, not through pressure from superiors."* (PD-1, Interview 25 November 2025). Furthermore, compliance supported by digital systems is perceived as more consistent because work procedures are embedded directly into routine operational processes. Informants highlighted that this integration minimizes resistance to control mechanisms, as employees follow system-guided workflows as part of their everyday activities. A digital transformation leader emphasized that system-based procedures encourage stable compliance over time: *"Employees follow the system flow as part of their routine work. Because the procedures are already built into the system, compliance happens naturally and consistently."* (PD-2, Interview 27 November 2025). This finding reinforces the quantitative result ($\beta = 0.389$), indicating that data-driven compliance functions as an informal control mechanism that strengthens management control effectiveness. Overall, these findings suggest that Digital Work Culture Serves as an Informal Control Mechanism which reinforces system-based formal control. Thus, the effectiveness of management control no longer depends on direct supervision, but on the internalization of digital value and work practices within the organization.

Discussion

The results of this study consistently show that digital work culture transformation has a positive and significant effect on the effectiveness of management control systems in medium-sized companies in Indonesia. Nevertheless, the implementation of digital-based management control is not without limitations. In the context of medium-sized enterprises, challenges such as uneven digital literacy among employees, resistance to changes in established work routines, and limitations in the integration of digital systems across organizational units may constrain the full effectiveness of digital work culture transformation (Rupeika-Apoga & Petrovska, 2022). These constraints suggest that the impact of digital work culture on management control effectiveness is contingent upon organizational readiness and the alignment between technological adoption and human resource capabilities.

These findings confirm the research hypothesis and reinforce the view that contemporary management control systems cannot be separated from the context of work

digitalization that reshapes organizational structures, processes, and behaviors. Theoretically, these results are in line with the contingency approach in management control systems, which emphasizes that the effectiveness of control is strongly influenced by the fit between the control system and the organizational environment ([Einhorn et al., 2024](#); [Akinola & Okundalaiye, 2022](#)). In this context, digital work culture plays a role as a new organizational environment that demands a more flexible, data-driven, and systemically integrated control design. Consequently, management control can no longer be understood solely as a set of formal procedures, but rather as a dynamic combination of formal and informal control mechanisms embedded in digital work practices.

The results of the study show that system-based work transparency has a positive effect on the effectiveness of the management control system, as formulated in Hypothesis 1 (H1). Theoretically, transparency built through digital systems strengthens the control function by increasing performance visibility and reducing information asymmetry, which has been a major challenge in organizational control ([Khan et al., 2023](#)). Previous research has also confirmed that technology-based transparency drives objectivity in performance evaluations and increases the accountability of individuals and work units ([Judijanto & Oktari, 2025](#)). The findings of this study expand the literature by showing that systemic transparency not only strengthens formal control, but also establishes informal control mechanisms through shared awareness of measurable and accessible performance. Thus, system-based work transparency can be seen as the main foundation in designing an effective management control system in the digital era.

Furthermore, the results of the study support Hypothesis 2 (H2) which states that digital collaboration has a positive effect on the effectiveness of the management control system. Digital collaboration facilitated by a real-time performance monitoring system allows cross-unit coordination to take place more intensively and based on the same information. Conceptually, real-time performance monitoring allows organizations to detect deviations early and take corrective actions quickly, reducing the risk of delayed decision-making ([Adepoju et al., 2022](#)). These findings are consistent with research that emphasizes that digitalization improves control capabilities through speed, accuracy, and continuity of information flow ([Jum'a et al., 2025](#)). In the context of medium-sized enterprises, digital collaboration has proven to be able to compensate for the limitations of hierarchical supervision through a more participatory and coordinated system-based control mechanism.

The results of the study also provide empirical support for Hypothesis 3 (H3) regarding the influence of data-based decision-making orientation on the effectiveness of management control systems. Compliance built through the use of data and digital systems shows a more sustainable character than compliance that relies on formal rules alone ([Balboni & Francis, 2025](#)). When workflows and decision-making are directed by data integrated in the system, control becomes an inherent part of the daily work routine and is no longer perceived as an external pressure ([Reynolds, 2025](#)). At the same time, these findings also corroborate Hypothesis 4 (H4), where digital work flexibility allows employees to customize the way they work without compromising discipline and accountability. Thus, digital work culture serves as an informal control mechanism that allows for a balance between organizational flexibility and compliance.

Although all research hypotheses are empirically supported, the results of this study need to be understood in the context of the supporting factors that influence the success of digital work culture transformation. Digital system adoption rates, human resource readiness, and top management commitment are key factors that strengthen the relationship between system transparency, digital collaboration, data-driven orientation, and work flexibility with

management control effectiveness (Poulose et al., 2025). In addition, differences in company characteristics, such as business sectors and operational complexity, have the potential to affect the intensity of influence of each dimension of digital work culture. This research also has limitations on the use of cross-sectional designs, which have not fully captured the dynamics of digital work culture change in the long term. Therefore, advanced research is recommended using longitudinal design or an in-depth case study approach to gain a more comprehensive understanding.

Overall, this discussion confirms that the transformation of digital work culture is not just a technological phenomenon, but a fundamental change in the way organizations control behavior and performance. The main contribution of this research lies in the integration of the dimensions of system transparency, digital collaboration, data-based orientation, and work flexibility into the study of management control systems, especially in the context of medium-sized enterprises in developing countries. These findings provide theoretical implications by broadening the understanding of the role of digital culture-based informal control mechanisms, as well as practical implications for management in designing adaptive and sustainable control systems. Thus, this research not only fills the literature gap, but also provides strategic direction for the development of a management control system in the midst of the ever-growing complexity of digital transformation.

Conclusion

This study concludes that the transformation of digital work culture has a positive and significant effect on the effectiveness of management control systems in medium-sized companies in Indonesia. System-based work transparency, digital collaboration, data-driven decision-making orientation, and digital work flexibility have been shown to strengthen management control through enhanced performance visibility, real-time monitoring, and the internalization of compliance within digital work systems. These findings indicate that digital work culture not only supports formal control mechanisms based on procedures and systems, but also functions as an informal control mechanism that reduces dependence on direct hierarchical supervision. Accordingly, the effectiveness of management control in medium-sized companies in the digital era is largely determined by the organization's ability to integrate digital work culture transformation into the design of adaptive, data-based, and sustainable control systems.

To extend the scope of these findings, future studies are encouraged to examine broader geographical areas and industrial contexts, particularly industrial ecosystems that integrate manufacturing and service sectors. Expanding the research context would allow for comparative analysis of digital work culture paradigms across different industrial environments, as well as provide a more comprehensive mapping of how digital technologies are utilized to enhance organizational performance and management control systems within more diverse and complex industry ecosystems.

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