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The Role of Management Control Systems and Automation Implementation Towards Enhancing Indonesian Fintech Company Performance

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ABSTRACT

This study examines the role of Management Control Systems (MCS) in implementing automation within FinTech firms. The study aims to understand how MCS influences and relates to the design of automation systems to enhance overall FinTech performance in the dynamic FinTech environment. Using the quantitative method, the study analyses the relationship between MCS, specifically its dual coercive and enabling formalization aspects, and the design of automation systems. The findings reveal that a well-designed MCS incorporating coercive and enabling formalization can optimize the automation design and improve operational efficiency. This balanced approach enhances the adaptability of automation systems and supports employee performance and innovation, ultimately improving FinTech performance in the fast-paced FinTech industry. The study provides novel insights into the intersection of MCS and automation, offering valuable implications for designing and implementing control systems in technology-driven financial services organizations. It challenges existing assumptions about the rigidity of automated systems. It demonstrates how MCS can introduce a balance between control and flexibility to support the unique needs of the FinTech environment.

Keywords: Management control system; automation; fintech

Introduction

Automation is a transformative tool that facilitates the discovery of new ideas and supports deeper exploration of organizational processes by enabling access to precise and actionable data (Brown et al. 2019; Parasuraman et al. 2000). By enhancing decision-making and operational efficiency, automation empowers firms to implement innovative strategies and maintain competitiveness. Within the FinTech industry, automation is pivotal in optimizing work systems, reducing costs, standardizing practices, and improving control mechanisms, thereby driving overall organizational performance. In embarking on the automation journey, organizations may opt for their system design to be technology or user centered. Technology-centered emphasizes technology's capability, while user-centered focuses on usability and ensuring the technology adapts to organizational users' requirements. Despite the benefits of automation, some challenges are attributed to system design. Technology-centered automation, which primarily enforces standardized processes, can hinder business adaptability and innovation. Whereas user-centered automation prioritizes users' needs by allowing system intervention to ensure greater flexibility limits technological advancement in exploring cutting-edge possibilities (Brown et al. 2019; Parasuraman et al. 2000). This duality underscores the need for a balanced approach to automation design, especially in the fast-paced FinTech sector, where agility and responsiveness are critical for success factors (Brown et al. 2019; Gomber et al. 2017). Yet, limited understanding remains of the implemented automation design among the FinTech firms.

The Indonesian FinTech industry is rapidly expanding, driven by a young, tech-savvy population, and increasing mobile penetration. As of 2023, 159 FinTech firms are registered with the Indonesian Financial Services Authority (OJK) (Otoritas Jasa Keuangan 2023). These firms represent various sectors, including peer-to-peer (P2P) lending, payment systems, crowdfunding, and investment risk management. The regulatory environment, governed by OJK and Bank Indonesia (BI), emphasizes transparency, compliance, and innovation to ensure financial stability. The sector faces regulatory complexities, operational scalability, and robust risk management challenges. This dynamic and regulated environment underscores the criticality of automation implementation and management control systems (MCS) in enhancing FinTech performance. Hence, automation in FinTech enables rapid transaction processing, improves service customization, and enhances customer trust (Antonius Alijoyo et al. 2021). At the same time, these advancements need to be coherent with the firm's dynamic business. Effective integration of automation requires a nuanced approach to balance operational stability and adaptability. To MCS, automation is a mechanism to prevent control issues by standardizing information and enforcing organizational priorities and procedures (Brown et al. 2019; Liew 2019; Parasuraman et al. 2000). This approach, called coercive formalization, minimizes constraints while ensuring stability and

performance. On the other hand, enabling formalization designs automation systems to enhance user capabilities, promoting flexibility, innovation, and human-machine collaboration (Brown et al. 2019; Chapman & Kihn 2009; Free 2007). These dual aspects of MCS are crucial in leveraging automation to meet the dynamic needs of the FinTech industry. The study also investigates to what extent MCS influences the implementation of automation to enhance FinTech performance, particularly in Indonesia's rapidly evolving market. The study examines the impact of coercive and enabling formalization, a concept initially introduced by Adler & Borys (1996), on the automation design and subsequently focuses their the effect towards FinTech performance. By addressing these critical aspects, the research provides insights into designing and implementing control systems optimizing automation processes for dynamic business environments. In addition, this study contributes both theory and practice by integrating perspectives from automation and management control systems. While prior research has primarily characterized automation as rigid and standardized, emphasizing its role in enforcing procedural compliance and reducing human discretion, this paper puts forward a different perspective. Automation is seen as a platform that also allows flexibility and user discretion. Hence, a balance between technology capability and user-centered is a concept to be further discussed. Notwithstanding, such development comes with control requirements. Therefore, an emerging need exists to observe to what extent MCS plays a role in balancing rigidity and flexibility, especially in the present technological-driven businesses. By bridging this gap, this study challenges existing assumptions and demonstrates the extension of the MCS can create a balance between control and adaptability in an automation-driven environment. Meanwhile, from a practical standpoint, findings from this study may offer input and actionable recommendations for FinTech firms to leverage MCS in supporting automation implementation, ensuring responsiveness to market demands while maintaining stability and compliance.

The following section reviews MCS formalization bureaucracy and the automation concept, then deliberates on the role of MCS formalization in the automation that affects FinTech performance. Thus, subsequently, it introduces the hypothesized relationships. The research method is discussed next. Finally, the findings are presented and discussed with some comments concerning the limitations and direction for future research.

Literature Review And Hypothesis Development

In the context of MCS, automation executes tasks or processes with minimal human involvement through technology and machines that aim to enhance productivity quality and reduce costs. It enhances businesses' consistency, scalability, and output (Brown et al. 2019; Parasuraman et al. 2000). Although automation has many advantages, it can affect the workforce's job security. Automation may replace or transform specific repetitive or routine jobs, resulting in changes to the job market and the need for workers to acquire new skills to adapt to the evolving labor landscape. Nevertheless, automation has the potential to generate new employment opportunities in the fields of technology development, maintenance, and innovation. In addition, it is essential to acknowledge that automation has the potential to not only completely replace human labor but also to collaborate with it partially, thereby facilitating the achievement of organizational objectives by individuals (Brown et al. 2019). The automation design significantly affects managing and controlling the workforce. In addition, the automation falls into two concepts: deskilling and usability of the automation (Brown et al. 2019). The concept of deskilling is associated with technology-centered automation, which entails developing technology to minimize the need for specialized worker skills, instead, increase reliance on automated processes —the concept of deskilling posits that users (i.e., human workforce) are regarded as problematic entities that should be minimized. Given that humans introduce the possibility of error, the design aims to minimize the operator from the control cycle (Brown et al. 2019; Parasuraman et al. 2000). Usability relates to user-centered describes how technology is created to improve reasoning to maximize user capabilities and to take advantage of worker skills and intelligence, which also leads to an improvement in work (Brown et al. 2019; Chapman & Kihn 2009; Parasuraman et al. 2000). The interplay between deskilling and usability is not dichotomous. FinTech firms integrate elements of both concepts, creating hybrid models of automation. For example, specific processes may be fully automated to eliminate repetitive tasks (deskilling), while others are designed to enhance decision-making capabilities (usability). This dual approach enables FinTech firms to optimize efficiency while maintaining the flexibility and creativity to navigate complex challenges.

Extending the context of human-machine interactions from the MCS perspective in the FinTech business, the setting may be facilitated through the formalization of coercive and enabling control approaches. Coercive formalization aligns with the cybernetic control model (Ahrens & Chapman 2004), emphasizing enforcing compliance with predetermined standards and objectives, and thereby coercive is associated with technology-centered automation, which focuses on deskilling by reducing the reliance on human capabilities and minimizing errors through strict protocols and automation systems. From the perspective of MCS, coercive formalization exemplifies a control system that prioritizes conformity and reduces variability by tightly regulating employee behavior and interactions with automated systems. On the contrary, enabling formalization is favored by employees because it facilitates job performance and innovation and enables (supporting) employees to deal with unforeseen circumstances more effectively (Brown et al. 2019).

Consistent with the user-centered design principles where automation is developed to enhance the workforce's cognitive capabilities and promote innovation (Brown et al. 2019). This perspective acknowledges the potential for automation to improve human-machine collaboration, leveraging workers' intelligence and skills rather than sidelining them. MCS theory integrates these two approaches by recognizing the need to balance control and flexibility (Goubko et al. 2015; Hewege 2012). It highlights the dynamic interplay between coercive and enabling formalization, acknowledging that both are essential for achieving organizational goals. In automated environments, MCS theory provides a lens to examine the extent to which these approaches complement each other, with coercive controls ensuring operational consistency and enabling controls fostering engagement and adaptability.

Coercive of MCS and Automation

In MCS, deskilling is associated with coercive formalization, forcing users to follow strict rules and standards, and limiting their decision-making. Management uses standardized behavior management procedures to enforce employee compliance (Brown et al. 2019), which is aligned with MCS theory, which emphasizes the role of formal controls in guiding and regulating employee behavior to achieve organizational objectives. For FinTech firms which operate in highly regulated environments, such as those overseen by the Otoritas Jasa Keuangan (OJK) in Indonesia (Otoritas Jasa Keuangan 2023), coercive formalization is essential. Automation systems implemented at the firms are often designed to comply with strict regulatory requirements, embedding rigid, standardized procedures into workflows to ensure compliance with rules, reduce process variability, and enhance operational efficiency. As automation enforces these predefined rules and decision pathways, employees in FinTech firms often shift from roles requiring judgment and expertise to roles focused on executing automated processes. This transition contributes to deskilling, where employees' responsibilities are limited to monitoring and interacting with systems rather than making strategic decisions. Coercive formalization in FinTech firms is amplified by automation's ability to standardize complex processes, such as credit scoring, fraud detection, and customer onboarding, ensuring consistency and predictability. These systems integrate preprogrammed rules and decision pathways, effectively directing employee actions and leaving minimal room for deviation. While this improves efficiency and regulatory compliance, it often results in a diminished role for human judgment.

However, automation in FinTech firms is not solely a tool for enforcing control. Its potential extends to supporting employees in achieving organizational objectives, aligning with the usability concept in automation design. Usability enhances user capabilities by leveraging their existing knowledge, experience, and expertise (Adler & Borys 1996; Brown et al. 2019). This approach contrasts with the coercive formalization of MCS but can coexist with it when thoughtfully designed. For example, even though OJK regulations require FinTech firms to maintain standardized systems (Otoritas Jasa Keuangan 2023; Sugeng et al. 2020; Widyastuti & Affan 2022) usability is also being incorporated into these systems to ensuring intuitive interfaces, precise feedback mechanisms, and providing employees access to information that helps them understand the rationale behind automated decisions. Such design enhances user satisfaction, reduces frustration, and improves compliance, as employees are more likely to engage with systems they perceive as logical and supportive, even in environments with limited discretion. FinTech firms can achieve a dual objective: enforcing compliance with standardized regulations while maintaining user engagement and understanding when coercive formalization is balanced with usability design and, therefore, creates a system that not only enforces control but also supports employees, ensuring automation complements human effort rather than merely replacing it. By thoughtfully integrating usability features, FinTech firms can enhance the effectiveness of their automation systems, fostering an environment where technology and human capabilities align to meet organizational goals. Accordingly, the following relationships are hypothesized.

H_1 The coercive of MCS has a positive relationship with the deskilling of automation

H_2 The coercive of MCS has a positive relationship with the usability of automation

ENABLING OF MCS AND AUTOMATION

Enabling formalization creates a system that considers workers' intelligence and capabilities, eliminating the need for rigid, fool-proof procedures in the automation process. Instead, automation should enhance employees' productivity, mainly when dealing with unavoidable uncertainties (Brown et al. 2019; O'Grady 2019). The relationship between enabling formalization and the deskilling concept of automation in FinTech firms is characterized by a dynamic interplay that highlights how enabling practices can mitigate the adverse effects of deskilling. In this light, while often seen as a negative consequence of automation, deskilling can also be leveraged strategically to enhance organizational efficiency and compliance within MCS. For instance, while automation may deskill routine compliance tasks, it can simultaneously free up employees to engage in more strategic, value-added activities where their expertise and insights are crucial. This creates a situation where the organization maintains control over standard processes while encouraging employees to develop their skills in areas that require human judgment and creativity. Moreover, the strategic use of deskilling can also facilitate smoother transitions during periods of technological change. By implementing automation in ways that deskill

specific repetitive tasks, organizations can ensure a higher level of consistency and reliability in operations, which is particularly important in the highly regulated FinTech sector. This approach can create a foundation upon which enabling formalization can thrive, as employees are provided with clear guidelines and expectations while being encouraged to innovate within their roles. In doing so, FinTech firms can effectively leverage automation to streamline processes while still fostering a culture of engagement, adaptability, and continuous improvement. Enabling formalization allows the design of adaptable automation systems to various contingencies, improving employee productivity and addressing inevitable uncertainties (Brown et al. 2019; O'Grady 2019). This approach ties closely to the usability concept of automation, where the design of automation systems incorporates usability and updating considerations to optimize user capabilities and harness their talents and intelligence (Chapman & Kihn 2009; O'Grady 2019). By considering workers' intelligence, enabling formalization makes automation's formal procedures less rigid. Instead, automation helps workers handle inevitable occurrences. This usability rationale makes automation systems easy to use and update to maximize user skills and intelligence. For instance, FinTech firms must improve service quality while staying within budget (Antonius Alijoyo et al. 2021; Widyastuti & Affan 2022). The system may have advanced AI-driven chatbots that handle routine customer enquiries. It also allows human intervention in complex situations. This dual approach improves customer service by answering simple questions quickly and accurately and freeing up human agents to handle more complex issues. Feedback loops and real-time monitoring allow the FinTech company to track system performance and customer satisfaction. This data can be used to iteratively adjust automation processes to maintain high service quality without increasing costs. The company can avoid budget overruns by allowing employees to make system repairs and adjustments based on actual activities. This flexibility lets an automation system adapt to unexpected events, making its data more reliable. Enabling formalization is essential to automation usability. User-friendly and adaptable automation systems can boost employee productivity and improve operations. This relationship emphasizes the importance of human intelligence and capabilities in automated system design and implementation. Thus, the hypotheses are posited:

H_3 The enabling of MCS has a positive relationship with the deskilling of automation

H_4 The enabling of MCS has a positive relationship with the usability of automation

MCS, AUTOMATION THAT AFFECTS FINTECH PERFORMANCE

MCS impacts on the performance of FinTech firms' coercive and enabling formalization is significant in this context, particularly concerning automation concepts such as deskilling and usability. The elements possess distinct interconnected functions that enhance the operational efficiency, adaptability, and overall performance of FinTech firms. Coercive formalization emphasizes strict adherence to standardized procedures and rules (Alec Cram & Wiener 2020; Bisbe et al. 2019; Doornich et al. 2019; O'Grady 2019). This approach to automation leads to deskilling, as routine tasks are automated to reduce human error and improve efficiency. Coercive formalization control may restrict workers from deviating from established processes; however, it can also enable them to utilize their knowledge and skills in areas beyond their usual duties (Brown et al. 2019). This method aligns with the usability concept of automation design, which focuses on enhancing user capabilities through existing knowledge, experience, and expertise (Adler & Borys 1996; Brown et al. 2019). FinTech firms acknowledge the importance of skilled employees by employing automation to streamline routine tasks, reduce administrative burdens, and enable staff to engage in complex problem-solving and client interactions, improving overall performance. Coercive formalization is also related to automation concepts, specifically deskilling and usability, which influence FinTech performance. On the other hand, enabling formalization seeks to leverage employees' existing knowledge, skills, and expertise to enhance productivity and effectiveness (Alec Cram & Wiener 2020; Bisbe et al. 2019; Doornich et al. 2019; O'Grady 2019). This approach aligns with the concept of usability of automation, which focuses on designing systems that assist and improve user abilities instead of completely replacing them (Alec Cram & Wiener 2020; Bisbe et al. 2019). The FinTech company must enhance service quality while keeping costs within the operational budget (Antonius Alijoyo et al. 2021; Widyastuti & Affan 2022). An example of such a system could be characterized by sophisticated AI-powered chatbots adept at efficiently managing routine customer inquiries. Additionally, this system incorporates provisions for human intervention in instances where more intricate problems arise. This dual strategy enhances customer service by delivering prompt and precise answers to straightforward inquiries. It guarantees that human agents can concentrate on more complicated issues requiring advanced proficiency. Enabling formalization entails designing automation systems, restructuring tasks, and providing training and support to assist employees in transitioning to new roles and responsibilities (Brown et al. 2019; O'Grady 2019). FinTech firms with rapid innovation and operational efficiency cannot be overstated. The connection between enabling formalization and the deskilling of automation has significant consequences for the company's overall performance. Through MCS formalization, FinTech firms can ensure that their automation initiatives are specifically designed to support and improve human capabilities, resulting in more efficient and robust processes. This approach can assist organizations in attaining enhanced scalability, uniformity, and excellence in their operations.

By incorporating knowledge of employees' cognitive abilities and adjusting management control systems to accommodate the changing nature of work, the design of automation systems can lead to substantial increases in efficiency and overall performance improvement. In addition to this, a hypothesis arises.

H_5 MCS and Automation relationship affect FinTech performance

Following this, the conceptual framework is pictured below.

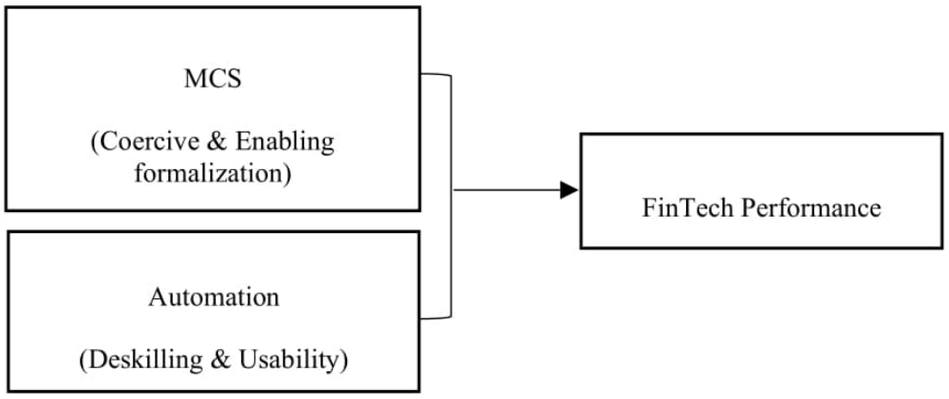

FIGURE 1. Research framework

Methodology

RESPONDENT PROFILE

The survey questionnaires were sent to the population of FinTech firms listed by the Indonesian Financial Services Authority (OJK). As of January 2023, 159 FinTech firms listed with the OJK-Indonesia directory were sent the online questionnaire via email to the top management and the senior operational managers of the FinTech organization. Given the unit of analysis is the Indonesian FinTech company, the responses are limited to one respondent per FinTech firm. A total of 146 respondents were received, with 134 usable responses, equal to an 84% response rate. Details of the respondent profile is provided in Table 1.

TABLE 1. Profile respondent

Type of FinTech	Frequency	Percentage
Peer to Peer (P2P)	68	50.7
Crowdfunding	6	4.5
Investment Risk Management	10	7.5
Payment, Clearing & Settlement	34	25.4
Market Aggregator	16	11.9
FinTech - Establishment		
Less than 2 Years	17	12.7
2 to 5 Years	87	64.9
6 to 10 Years	20	14.9
More than 10 Years	10	7.5
Position		
Director	3	2.2
Vice Director	1	0.7
Manager	89	66.4
Supervisor	41	30.6
Working Tenure		
Less than 2 years	58	43.3
2 to 5 Years	57	42.5
6 to 10 Years	17	12.7
More than 10 years	2	1.5

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Education Background		
PhD	1	0.7
Master	38	28.4
Undergraduate	92	68.7
Diploma	3	2.2

Fifty point seven per cent of the respondents are in the Peer-to-Peer (P2P) platform, underscoring the prominence of P2P in lending in Indonesia's financial ecosystem. Similar to the distribution of the Indonesian type of FinTech, most responses signify the popularity of P2P in providing accessible credit solutions via online platforms, considering the dispersion of the Indonesian population. Payment, Clearing, and Settlement services also hold a notable share (25.4%), reflecting the growing trend toward cashless transactions and digital payments. Furthermore, most FinTech firms have been operational for 2 to 5 years (64.9%). This observation aligns with the recent surge in FinTech activities following the proliferation of digital technologies and supportive regulations. A smaller proportion of companies have been established for less than 2 years (12.7%), indicating continued new entries into the market. However, the limited presence of firms with more than 10 years of operation (7.5%) suggests the nascent nature of the industry in Indonesia. In the hierarchical structure of FinTech firms, the manager managers (66.4%) and supervisors (30.6%) dominate the respondent pool. It shows that mid-level management is crucial to the industry's daily operations and decision-making processes. The limited representation of directors and vice directors (2.9% combined) may reflect the targeted focus of the study on operational roles rather than strategic leadership. With working tenure duration of employment as, 43.3% have been with their current employer for less than 2 years, and another 42.5% for 2 to 5 years. This trend could indicate high industry dynamism, frequent employee turnover, or the firms' novelty. The low representation of individuals over 10 years of tenure (1.5%) aligns with the earlier observation of the industry's youthfulness (Santoso et al. 2020). Furthermore, most respondents possess undergraduate degrees (68.7%), followed by master's (28.4%). This distribution highlights a well-educated workforce, reflective of the skill-intensive nature of FinTech operations. The minimal representation of diploma holders (2.2%) and PhD holders (0.7%) further emphasizes practical skills and managerial expertise rather than advanced research qualifications.

MEASUREMENT OF VARIABLES

Management control systems comprise two formalization bureaucracies, namely, coercive formalization and enabling formalization, measured by items adapted from previous literature, i.e., Brown et al. (2019), Chapman & Kihn (2009), Chapman (2007). Nine indicators measure coercive formalization, and thirteen indicators measure enabling formalization. The respondents were asked to indicate the extent of MCS formalization (coercive and enabling) adopted in their firms based on five Likert scales ranging from 1 to a small extent and 5 to a large extent. Meanwhile, automation consists of two concepts, i.e., deskilling and usability, which were measured by adapted instruments from Brown et al. (2019) and Parasuraman et al. (2000). Deskilling of automation consists of five indicators, while usability of automation also consists of five items. The extent of deskilling and usability of automation agreement is measured based on five Likert scales ranging from 1 to disagree strongly and 5 to agree strongly. The FinTech performance is a dependent variable was measured by items adapted from Chen et al. (2021), Suzianti et al. (2021), Putri et al. (2019), and Adiputra et al. (2020) has seven indicators and used five Likert scales ranging from 1 as significant lower to 5 as a significantly higher.

Results

The statistical software packages SPSS and PLS-SEM were employed to conduct data analysis in this study. Before testing a hypothesis, the study typically takes many necessary steps, including data screening, assessing validity and reliability, and conducting factor analysis. These preliminary procedures are essential in ensuring the quality and integrity of the data before hypothesis testing can take place. The study employed a hierarchical testing model, a higher-order construct due to the complex interrelationships between observed and latent variables (Sarstedt et al. 2019). Hair et al. (2018) stated the model represents a construct on a more general dimension (the lower-order component) and its more specific subdimensions (the higher-order components). Using higher-order constructs in the study enables greater theoretical parsimony and reduced model complexity compared to models with only lower-order constructs. This hierarchical modelling technique provides a more nuanced and comprehensive representation of the relationships among the variables of interest, accounting for the complex interplay between the general and specific dimensions of the key constructs under investigation.

MEASUREMENT MODEL ANALYSIS - LOWER ORDER

Multiple tests were performed to confirm the low-order measurement model. The test examined the coercive

formalization and enabling formalization (Brown et al. 2019; Chapman & Kihn 2009; Free 2007; O'Grady 2019; Wiesche et al. 2015) and automation concept, i.e., deskilling and usability (Brown et al. 2019) components. Factor analysis was performed, and the final results show that enabling formalization is divided into components, namely, internal transparency, global transparency, and flexibility, whilst coercive formalization is loaded into one component. The data analysis also involves assessing reliability. In addition, no measured items were eliminated cause the value of the variable meets the reliability and validity threshold, which is that the Average Variance Extracted (AVE) should be larger than 0.5 and the CR value is more significant than 0.7 (Hair et al. 2018; Sarstedt et al. 2019). Table 2 shows the summary of convergent validity and reliability.

TABLE 2. Factor loading & indicator reliability for MCS and Automation

Variable	Item	Outer loading	CR value	AVE value
Coercive formalization	Coer1	.856	.767	.528
	Coer2	.632		
	Coer6	.672		
Internal transparency feature	Enab6	.546	.658	0.501
	Enab7	.839		
Global transparency feature	Enab8	.761	.754	.605
	Enab9	.794		
Flexibility feature	Enab11	.908	.768	.630
	Enab13	.659		
Deskilling of automation	Desk1	.946	.865	.763
	Desk4	.795		
Usability of automation	Usab2	.722	.815	.692
	Usab4	.929		

Subsequent analysis is conducted to identify the study model. Thus, the result shows that the R-square value for automation-deskilling is 13.5%, indicating the coercive formalization and enabling formalization with its feature, i.e., internal transparency, global transparency, and flexibility collectively account for 13.5 % of variance to automation deskilling; thus, This level of association can be considered low Meanwhile, value for automation-usability is 0.155 (15.5%) indicating the MCS factors, i.e., coercive formalization and enabling formalization with its feature, i.e., internal transparency, global transparency and flexibility collectively account for 13.5 of variance to automation usability thus, This level of association can be considered low (Hair et al. 2018; Sarstedt et al. 2019) in the context FinTech company in Indonesia.

TABLE 3. Determination of the model

Variable	R. Square
Deskilling	.135
Usability	.155

HYPOTHESIS TESTING

Structural analysis is conducted in the lower order to examine H_1-H_4. Thus, bootstrapping is used to assess the significant relationship of the variable. The result finds that H_1 has a positive relationship with a p-value of 0.031 ($p<0.05$), which means there is a positive relationship between coercive formalization and automation deskilling. H_2 has a negative relationship with a p-value of 0.223 ($p<0.05$), which means there is a negative relationship between coercive formalization and the usability of automation. On the other hand, H_3 enabling formalization, is divided into three features examined, and the result shows that internal transparency has a negative relationship with deskilling at p-value 0.581 ($p<0.05$), flexibility has a negative relationship with deskilling of automation at p-value 0.238 ($p<0.05$). However, global transparency has a positive relationship with the deskilling of automation at a p-value of 0.010 ($p<0.05$). Two features have a negative relationship, and one feature has a positive relationship; thus, H_3 is partially supported. A similar test with H_3, H_4 examines three features of enabling formalization with the usability of automation, and the result shows that internal transparency has a significant relationship with the usability of automation at a p-value of 0.012 ($p<0.05$). In comparison, the other two enabling features have a negative relationship with the usability of automation and therefore, H_4 is partially supported.

TABLE 5. Summary of hypothesis testing

	p-value	Result	Hypothesis
H_1: Coercive formalization □ Deskilling of automation	0.041	+	Supported
H_2: Coercive formalization □ Usability of automation	0.225	-	Not Supported
H_3: Enabling formalization □Deskilling of automation			
Internal transparency □ Deskilling of automation	0.599	-	Not supported
Global transparency □ Deskilling of automation	0.007	+	Supported
Flexibility □ Deskilling of automation	0.275	-	Not supported
H_4: Enabling formalization □ Usability of automation			
Internal transparency □ Usability of automation	0.012	+	Supported
Global transparency □ Usability of automation	0.185	-	Not supported
Flexibility □ Usability of automation	0.084	-	Not Supported

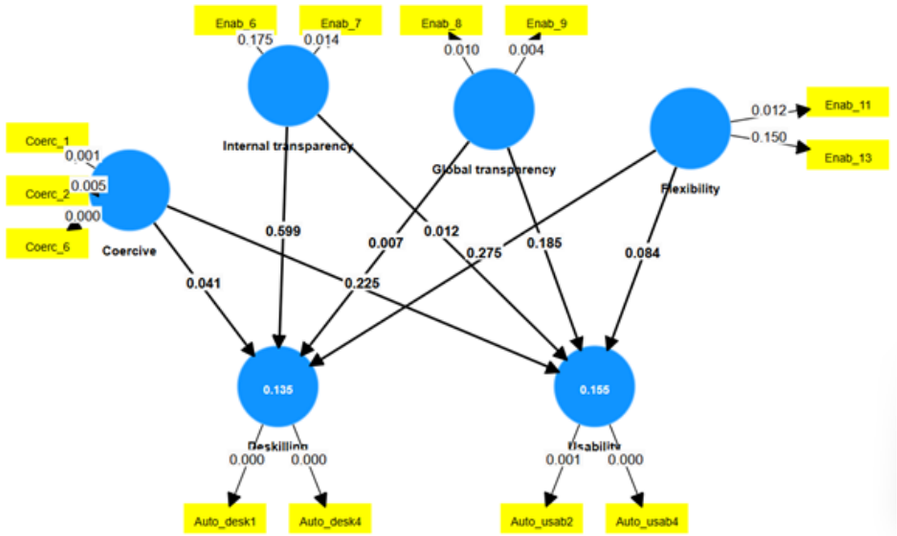

FIGURE 2. Lower order hypothesis testing

HIGHER ORDER ANALYSIS

The higher-order analysis investigates the integration of automation and MCS that affect FinTech performance. Thus, a latent variable scored at a lower order was used in the higher-order analysis (Becker et al. 2012; Hair et al. 2018; Sarstedt et al. 2019). thus, some study in the measurement test was conducted, such as the collinearity test, evaluation of R^2, evaluation of f^2 value, and path coefficient testing (Hair et al. 2018; Sarstedt et al. 2019; Tsai et al. 2021). This approach is essential for accurately interpreting data and drawing meaningful conclusions, particularly in studies exploring the MCS and automation affecting FinTech performance. These practices guarantee that research outcomes are reliable. Table 7 shows the result that there is no collinearity between the variables. All seven variables are less than 0.5 (Sarstedt et al. 2019). Furthermore, the R^2 value of the model is 0.149 (14.9%), indicating that MCS and automation variables collectively account for 14.9% of the variance in FinTech performance. Thus, this association level is considered weak (Becker et al. 2012; Roni et al. 2015; Sarstedt et al. 2019). The f^2 value of 0.174, means there is a medium effect of MCS and automation on FinTech performance. Meanwhile, the relationship of the variable MCS-automation to FinTech performance has a path coefficient value of 0.385, meaning that MCS and automation are significantly associated with FinTech performance.

TABLE 7. Higher order measurement analysis

Variable		(VIF)	R^2	f^2	Path coef.
Coercive formalization		1.130			
Enabling formalization	Internal transparency	1.134			
	Global transparency	1.210			
	Flexibility	1.171			
		1.125			
Auto-Deskilling		1.160			
Auto-Usability		1.159			
FinTech performance		1.000			
MCS - Automation					
FinTech performance			0.149		
MCS-Automation □ F. Performance				0.174	0.385

Like lower order analysis, hypothesis testing was conducted in the higher order; thus, bootstrapping is employed to evaluate the statistical significance of the variable's association, and the result of H_5 shows that positive significance at p-value <0.03,0 which means there is significant relationship between MCS, and Automation altogether led to FinTech performance.

TABLE 8. Higher order hypothesis testing

	p-Value	Result	Hypothesis
H_5: MCS - Automation □ FinTech performance	0.030	+	Supported

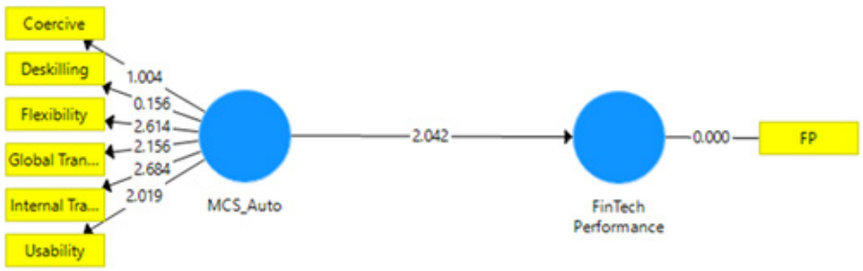

FIGURE 3. Higher order structural model

Discussion And Conclusion

This research examined the extent of MCS, i.e., coercive formalization and enabling formalization, which influences the automation design and subsequently identifies the effect on FinTech performance. Using Indonesian FinTech firms results in new findings. The study finds that enabling formalization should not be viewed in a single variable; instead, enabling formalization views independently according to the four features, namely repair, internal transparency, global transparency, and flexibility (Brown et al. 2019; Chapman & Kihn 2009; O'Grady 2019) and this is aligned with MCS literature. However, in the context of Indonesian FinTech firms, repair is less relevant due to the characteristics and strategic priorities of the Indonesian FinTech company landscape (Muthukannan et al. 2021).

Secondly, coercive formalization has a relationship with the deskilling of automation but lacks a relationship with the usability of automation in FinTech firms in Indonesia. This is because it minimizes the need for employees to develop or use complex skills. Instead, employees' roles become more about following predefined procedures dictated by the automation system (Brown et al. 2019; Parasuraman et al. 2000). The coercive formalization plays a significant role due to the regulatory environment and the need for consistency and compliance with OJK's (Otoritas Jasa Keuangan) and BI's (Indonesian Central Bank) regulations. For Indonesian FinTech firms, deskilling of automation aims for high efficiency and reduced variability in task execution alignment of coercive and deskilling leads to a reduction in the complexity of skills required from employees, as their primary function shifts to managing

and overseeing automated systems rather than engaging in decision-making or problem-solving tasks (Alec Cram & Wiener 2020; Canada 2013; Schermann et al. 2012; Wiesche et al. 2015). Coercive formalization with the usability of automation is less pronounced. While coercive formalization influences the complexity of tasks and skill requirements, it does not directly determine how user-friendly or effective the automation systems are in meeting operational needs. The usability of automation remains a separate consideration, focusing more on the design and functionality of the systems rather than the regulatory-driven formalization of processes.

Thirdly, enabling formalization with three features, i.e., internal transparency, global transparency, and flexibility, are examined for the deskilling of automation, and the results show variances in relationships in the context of Indonesian FinTech firms. Global transparency aligns with the deskilling of automation because it simplifies the work process (Brown et al. 2019; O'Grady 2019). This is because the management of FinTech gives their employees clear overarching guidelines and objectives. For instance, the management of a FinTech company implements a company-wide dashboard that shows real-time data on transaction volumes, customer acquisition rates, and regulatory compliance status (Wang et al. 2021). This transparency helps employees understand the broader context of their work and how their tasks contribute to the company's overall objectives. However, because the automation systems are designed to operate within these parameters, employees' roles become more about monitoring and ensuring adherence to these guidelines rather than engaging in complex problem-solving. While this ensures consistency and efficiency, it reduces the need for the representative to develop more profound problem-solving skills or to make nuanced decisions, leading to deskilling. Oppositely, internal transparency and flexibility are not valuable in Indonesian FinTech firms. Although these features theoretically enhance employee empowerment by providing detailed information and decision-making autonomy (O'Grady 2019; Wiesche et al. 2015). The primary focus in this sector is to minimize process variations and ensure strict compliance with regulatory requirements. This regulatory environment, shaped by OJK (Otoritas Jasa Keuangan) and BI (Indonesian Central Bank) institutions, emphasizes standardization and compliance (Abdillah 2019; Sugeng et al. 2020) which can limit the extent to which flexibility and transparency are leveraged within these firms. The focus on minimizing variations is critical in ensuring that operations align with the stringent regulatory frameworks designed to protect consumer interests and maintain market stability. In addition, this finding is supported by the MCS theory that control systems are not merely about enforcing rules but also about aligning organizational practices with strategic priorities (Goubko et al. 2015; Silva et al. 2021)

On the other hand, the relationship between the features of enabling formalization and the usability of automation is only internal transparency has a relationship with usability of automation due to unique operational environment and strategic imperatives of Indonesian FinTech firms shape this relationship. For instance, the FinTech firms often handle large volumes of transactions, manage extensive data, and must adhere to stringent regulatory requirements from OJK (Otoritas Jasa Keuangan-Indonesia) and BI (Indonesian Central Bank) (Batunanggar 2019; Safitri 2020; Sugeng et al. 2020). Having well-documented and transparent internal processes ensures that employees of FinTech understand how automated systems integrate with existing workflows and what information these systems process. This clarity is essential for practical training, troubleshooting, and optimizing system performance. Global transparency, which entails sharing information about organizational performance and operations with external stakeholders such as customers and regulatory bodies (Bisbe et al. 2019; Milian et al. 2019), does not directly influence the usability of automation. Flexibility, referring to an organization's ability to adapt and innovate, also does not inherently affect the usability of automation. Flexibility is crucial for long-term adaptability and competitiveness, allowing FinTech firms to respond to Indonesian market changes and innovate over time (Adler & Borys 1996; Bisbe et al. 2019; Milian et al. 2019; Muthukannan et al. 2021). However, the day-to-day usability of automation depends more on maintaining clear and stable internal processes.

Finally, the relationship between MCS formalization, i.e., coercive and enabling with automation design concepts, i.e., deskilling and usability, together affect FinTech performance. In Indonesia, where market conditions and regulatory environments are volatile (Muthukannan et al. 2021), coercive formalization plays a significant role in ensuring stability and compliance. MCS theory emphasizes the need for control systems to enforce predictability and alignment with external constraints, particularly in industries where regulatory oversight by institutions like OJK and BI is stringent. Thus, integrating coercive controls into automation design reinforces consistency, reduces variability, and enhances the organization's ability to navigate a dynamic regulatory environment. This stability is crucial for sustaining performance in a rapidly evolving market. Meanwhile, enabling formalization improves usability by providing employees with clear information about processes and fostering an understanding of how automation integrates into workflows. While allowing controls to do not always directly influence deskilling, their presence aligns with the broader goals of fostering an agile and informed workforce, which is critical for maintaining competitiveness in a fast-paced industry. The relationship between coercive and enabling formalization shapes automation design concepts such as deskilling and usability, significantly impacting FinTech performance. As influenced by coercive formalization, deskilling reflects the shift towards predefined roles and reduced reliance on complex

problem-solving, ensuring efficiency and compliance. Usability, facilitated by enabling formalization, enhances the effective adoption of automation tools by aligning them with transparent and flexible processes. It is aligned with the MCS theory that control systems are designed to balance standardization for compliance with flexibility for innovation. By embedding these control mechanisms into automation design, Indonesian FinTech firms can align their operational capabilities with the demands of a volatile market and regulatory environment. In addition, the study's implications provide insights into designing MCSs that balance coerciveness and enable formalization to optimize automation implementation. Emphasizing internal and global transparency and flexibility can foster a more collaborative and innovative workplace, essential for maintaining competitive advantage. However, tailoring these features to the specific regulatory and market context is crucial to ensure compliance and operational efficiency. Hence, understanding the impact of regulatory frameworks on Indonesian FinTech operations is essential. The current regulations promote compliance, provide flexibility, and encourage innovation. It may create a more robust and dynamic FinTech sector in Indonesia.

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