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Management control system configuration, business process and company performance: Empirical evidence from the indonesian startup companies

Configuración del sistema de control de gestión, proceso empresarial y desempeño de la empresa: evidencia empírica de las empresas emergentes en Indonesia

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Abstract

The management control system (MCS) is an integrated framework for controlling complex organizational processes, forming distinct control configurations. MCS configuration plays a crucial role in supporting business processes and improving company performance. However, studies on this subject remain limited. This research aims to examine the impact of different MCS configurations on the business processes and performance of startups in Indonesia. Using Partial Least Squares (PLS) analysis and a sample of 209 startup companies across 16 regions in Indonesia, we find that MCS configuration has a positive influence on both business processes and company performance. Based on cluster analysis, we identify several optimal control configurations that support high organizational performance, highlighting the relationship between MCS configuration and company performance through business processes.

JEL Code: L25, M13, M41
Keywords: MCS configuration; business process performance; company performance; Indonesia startup

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Resumen

El sistema de control de gestión (MCS, por sus siglas en inglés) es un marco integrado para controlar procesos organizacionales complejos, conformando configuraciones de control específicas. La configuración del MCS desempeña un papel crucial en el apoyo a los procesos empresariales y en la mejora del desempeño de la empresa. Sin embargo, los estudios sobre este tema siguen siendo limitados. Esta investigación tiene como objetivo analizar el impacto de diferentes configuraciones del MCS en los procesos empresariales y en el desempeño de las startups en Indonesia. Mediante el análisis de Partial Least Squares (PLS) y una muestra de 209 empresas emergentes en 16 regiones de Indonesia, encontramos que la configuración del MCS ejerce una influencia positiva tanto en los procesos empresariales como en el desempeño de la empresa. Con base en un análisis de conglomerados, identificamos varias configuraciones de control óptimas que apoyan un alto desempeño organizacional, destacando la relación entre la configuración del MCS y el desempeño empresarial a través de los procesos empresariales.

Código JEL: L25, M13, M41
Palabras clave: Configuración del MCS; desempeño de los procesos empresariales; desempeño de la empresa; startups en Indonesia

Introduction

Companies are responsible for adaptively responding to the complex changes in business environments to make them sustainable. This responsibility supports the prioritization of many companies on the improvement of company performance through the efficiency of organizational business process. Process-based company management is seen as one of the basic concepts of business competitive advantage, where companies require control and subsequent improvement of relevant procedures (Eldridge et al., 2014). Furthermore, the pattern of realizing and implementing business strategic vision portrays the significance of organizational process in establishing and obtaining value from services and products (Bottani et al., 2025). This implies that business process supports, improves, and reduces cost efficiency, customer/partner relationships, and organizational risks, respectively. In the context of Indonesia environment, it is believed that inefficiencies commonly cause company failure, with high setbacks observed in Indonesian startup. These high setbacks are often caused by business process weaknesses, such as poor marketing, customer ignorance, and disharmonious investor relationships (Sinarasri et al., 2023).

Companies are responsible for adaptively responding to the complex changes in business environments to achieve sustainability. This responsibility underscores the prioritization by many companies of improving performance through enhanced efficiency in organizational business processes. Process-based management is viewed as a fundamental concept for achieving competitive advantage, as companies need to control and continuously improve relevant procedures (Eldridge et al., 2014). Furthermore, the pattern of realizing and implementing a business's strategic vision highlights the

significance of organizational processes in creating and delivering value from services and products (Bottani et al., 2025). This implies that business processes support and enhance cost efficiency, strengthen customer and partner relationships, and mitigate organizational risks.

In the context of Indonesia, inefficiencies are often believed to contribute to company failures, particularly evident among startups. These challenges are frequently attributed to weaknesses in business processes, such as ineffective marketing strategies, a lack of customer engagement, and strained investor relationships (Sinarasri et al., 2023).

Effective business processes frequently impact company performance, prioritizing organizational effectiveness as a key indicator of relevant achievement levels. This perspective aligns with the claim by Caseiro and Coelho (2019) that a broad conceptualization of performance is closely related to organizational effectiveness. Performance measurement is generally based on business structures, units, processes, and workflows to assess the efficiency and effectiveness of managerial actions using variables such as cost, quality, and time (Bititci et al., 2012; Dyczkowski & Dyczkowska, 2018). Moreover, the implementation of effective business process management can positively influence company performance by increasing revenue, reducing costs, improving cycle time, enhancing customer satisfaction, and advancing other metrics deemed important for value creation (Vuksic et al., 2013). Therefore, translating the benefits of various business processes into company performance is crucial for achieving organizational success.

A comprehensive performance evaluation depends on various managerial implementations of effective organizational procedures, which can lead to either improvement or decline. This highlights that business process management prioritizes procedures aligned with strategic goals (Nazaruddin et al., 2026), including architectural design and implementation, measurement system development, and efficient management education and coordination. Consequently, companies are increasingly prioritizing Management Control Systems (MCS) to reduce failure risks and significantly improve performance at both the business process and company levels. The crucial role of MCS in determining business process performance and overall company performance has motivated researchers to explore the relationships among these three concepts. This suggests that while many previous studies have examined business processes using similar variables, they have yielded different and sometimes conflicting findings. For instance, some studies indicate that MCS serves as a vital strategic management tool for startups to enhance performance (Davila et al., 2009), while others argue that MCS implementation can stifle innovation and creativity (Dyczkowski & Dyczkowska, 2018; Lin et al., 2017). Moreover, the relevance of control attributes remains a subject of debate for newly established companies concerning the growth facilitation capabilities of MCS (Simons, 1994). These studies typically focus on the implementation of a single control system, often revealing various limitations. The use of multiple control configurations is

essential for companies to synergize different MCS roles within their business processes; however, inconclusive and mixed results have led to further experimental analyses.

The aforementioned arguments and studies suggest that the implementation of MCS configurations is crucial for companies operating under high uncertainty. This aligns with the findings of Eldridge et al. (2014), which indicate that business process uncertainty influences the systems implemented, leading various enterprises to adopt both formal and informal packages for continuous organizational operations. The use of a balanced formal and informal control system creates MCS configurations that meet the specific needs of companies (Cardinal et al., 2017; Cardinal et al., 2018; Crespo et al., 2019; Ploss, 2018). Furthermore, Mundy (2010) and Malmi and Brown (2008) emphasize the importance of utilizing different combinations of MCS as a control system package, facilitating the establishment of multiple configurations within an ongoing business process. These varied configurations enable dynamic management of organizational tensions and conflicting pressures. However, understanding how MCS configurations are formed and their role in enhancing performance remains challenging. Therefore, further investigation is essential to explore how MCS can improve business process performance.

MCS is a vital instrument designed to assist managers in organizational planning and coordination for effective business decision-making. This system provides strategic guidance on company activities, with appropriate explanations and implementations carried out at the operational phase of business processes. Consequently, MCS plays a crucial role in supporting these processes. In the context of the Fourth Industrial Revolution, characterized by high environmental uncertainty, it is essential for startups to implement MCS effectively. These coordination activities are essential for producing efficient and effective organizational procedures while maximizing the competitive potential of relevant resources and capabilities. The ability to establish an MCS-based business process significantly influences company performance. Therefore, this study aims to investigate the role of MCS configuration in enhancing business processes and overall company performance. Utilizing Malmi and Brown's (2008) control package framework, we also examine the relationship between MCS configuration and performance. Specifically, this study seeks to answer the following research questions: (1) Does MCS configuration affect business process performance? (2) Does business process performance influence company performance? and (3) Does MCS configuration influence company performance? Furthermore, samples are drawn from 209 newly established Indonesian startups operating in high uncertainty environments, focusing on gaining a comprehensive understanding of how appropriate MCS implementation can improve business processes and enhance company performance.

This research contributes in two significant ways: First, it extends previous studies on MCS by emphasizing the importance of testing MCS configurations through cluster analysis to develop more

effective configuration patterns. Second, the findings offer startups valuable insights into the necessity of designing MCS configurations tailored to their specific business processes, ultimately aimed at enhancing overall performance.

Theoretical literature review

Contingency theory

The contingency theory is employed to elucidate the factors that enhance the effectiveness of MCS. This theory posits that MCS facilitates the decision-making process within organizations, indicating that these systems must be tailored to the specific organizational context and business environment in which they operate (Gordon & Narayanan, 1984). The selection of an MCS design is theoretically linked to the necessity for effective decision-making in diverse organizational settings. Consequently, contingency theory asserts that organizations must identify specific aspects of their management control systems to ensure they are clearly defined and can be implemented effectively (Otley, 1980). This suggests that MCS should be adopted to preserve the effectiveness of companies facing particular circumstantial changes (Emmanuel et al., 1990).

MCS configuration

MCS is typically implemented as an integrated system designed for broad and complex organizational coordination, forming a cohesive control configuration. Previous studies indicate that this system operates as a configuration of multiple interdependent attributes (Akroyd et al., 2019; Kristensen & Nielsen, 2020). This perspective aligns with the findings of Abernethy and Brownell (1997), which suggest that various companies rely on a combination of controls tailored to specific contexts. Consequently, organizations utilize a blend of different MCS configurations to achieve their objectives and enhance both individual and organizational performance (Abernethy & Chua, 1996; Simons, 1994). A balanced combination of formal and informal controls results in a harmonious configuration that effectively aligns stakeholder objectives, ultimately contributing to improved company performance.

The identification of stable MCS configurations is crucial for understanding the impact of organizational management controls. This is because evaluating control configurations necessitates balancing the explicitness and flexibility of the MCS scope (Bedford & Malmi, 2015). According to Bedford and Malmi (2015), empirically derived configurations, such as taxonomies, offer a more

comprehensive description of the combinations and identification of alternative control patterns that existing frameworks may not capture or explain adequately. An appropriate management package emphasizes both single and combinative control elements that support specific orientations or philosophies (Cardinal et al., 2018; Kristensen & Nielsen, 2020). The control package framework proposed by Malmi and Brown (2008) is specifically applied to aspects relevant to middle and lower management. This framework is designed to mitigate the risk of under-specification by providing the most comprehensive categories of MCS available (Ploss, 2018).

Business process

The changing economic environment is currently a significant concern for companies striving to improve their organizational business processes and overall performance (Bititci et al., 2012). Many companies prioritize a quality management approach, necessitating appropriate controls and relevant procedural improvements (Eldridge et al., 2014). Additionally, a business process is a comprehensive and dynamically coordinated series of activities implemented to enhance customer value and achieve strategic objectives (Trkman, 2010). Since the onset of the Industrial Revolution, the process has become a critical focus for companies, as change is viewed as a constant aspect of operations. Successful companies are managed through structured and strategic business patterns, employing fact-based decision-making procedures to achieve balanced and sustainable outcomes. Eldridge et al., 2014) assert that business process management is fundamental to organizational excellence. Porter (1991) also argues that processes are a source of competitive advantage, with management systems emphasizing the need to adapt relevant procedures to evolving market requirements. This prioritization is essential due to the dynamic nature of business processes, which enables swift and cost-effective responses to changing market conditions. Consequently, process performance includes enhancements in operational efficiency across various organizational procedures, such as cost reduction and productivity improvement. Furthermore, operational effectiveness is crucial for supporting several value chain activities (Porter, 1991).

Company performance

Companies need a business process management system as a solution for managing and measuring performance, with several relevant benefits expected to be translated into organizational efforts (Aydiner et al., 2019; Elbashir, Sutton, Arnold, et al., 2021). This indicates that company performance describes the achievement level of activities in realizing business objectives, vision, and mission, as outlined in a relevant strategic plan. Neely et al. (2005) suggest that performance measurement is defined as the

assessment of activity efficiency and effectiveness, providing a foundation for company analysis that prioritizes objective achievement, identifies weaknesses, and informs future initiatives. Bititci et al. (2012) assert that performance measures are essential for organizations and significantly relevant in enhancing business efforts. Therefore, performance measurement is considered a vital tool for more effective management.

MCS configuration and business process performance

The use of MCS configuration has been analyzed in several previous studies concerning the improvement of business process performance (Elbashir et al., 2008; Eldridge et al., 2014; Mundy, 2010). This perspective suggests that the configuration is viewed as a combination of various company control systems. MCS is responsible for establishing a balance, where organizational conditions demonstrate the use of harmonious formal and informal controls (Strauss et al., 2013). Eldridge et al. (2014) argue that companies committed to excellence adopt a mix of formal and informal control configurations in uncertain environments to strategically manage critical business processes. Similarly, Mundy (2010) highlights that internal consistency between these configurations is vital for balancing various MCS implementations.

Companies that prioritize strict and flexible MCS implementation often face challenges that can undermine long-term innovation and creativity, ultimately harming performance. These challenges arise from a significant reduction in effective and established business process control (Abernethy & Chua, 1996). Therefore, a balanced approach that incorporates both formal and informal controls in the form of control configurations is necessary for managing relevant organizational procedures (Elbashir et al., 2008; Eldridge et al., 2014).

Contingency theory further suggests that organizational design should select appropriate MCS practices to address the uncertainties faced by companies (Drazin & Van de Ven, 1985). Given these arguments, we expect that MCS configuration will significantly influence business process performance, leading us to propose the following hypothesis

H1: MCS configuration positively influences business process performance

Business process performance and company performance

The overall performance of companies often depends on the implementation patterns of various business process activities, which can influence organizational efforts either positively or negatively (Ray et al., 2004). The ability to establish MCS-based business processes significantly affects performance, particularly in startups. Research by Vuksic et al. (2013) confirms the empirical influence of business

process orientation on company performance. These findings align with studies by Elbashir et al. (2008) and Aydiner et al. (2019), which indicate that business processes positively impact company performance.

Business process performance encompasses operational effectiveness, which is expected to translate into company efficiency. Elbashir et al. (2008) suggest that process performance serves as a diagnostic tool that informs management about ineffective value chain activities, thereby influencing anticipated organizational benefits. Additionally, Aydiner et al. (2019) assert that organizational-level measurement aggregates several outcomes that directly impact company performance due to the strong association between business processes and relevant outputs. Enhanced process capabilities significantly improve both process and company performance. Consequently, investing in business processes is essential for improving performance by enhancing output quality.

According to Ray et al. (2004), resources and capabilities, when translated into activities, routines, or procedures, positively influence company performance. Kim et al. (2011) suggest that information technology impacts company performance indirectly through business processes. This perspective aligns with Chen et al. (2012), who found that the influence of technology capabilities on company performance is fully mediated by process agility. Furthermore, Sharma et al. (2014) establish a connection between enhanced company performance and business process performance, attributing this relationship to superior decision-making procedures facilitated by organizational analytics. Additionally, Torres et al. (2018) assert that business intelligence positively influences organizational agility through the mediation of procedural change capability. Therefore, we propose the following second hypothesis:

H2: Business process positively influences company performance

The relationship between variables can seen on Figure 1.

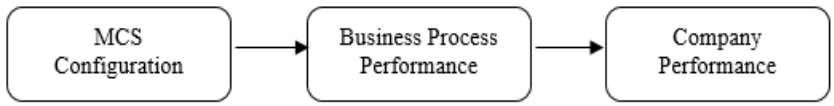

Figure 1. Research model

Methodology

We selected 1,190 startup companies from 16 regions across Indonesia, as listed in the 2023 Ministry of Tourism and Creative Economy directory, as our population. A purposive sampling method was employed to determine the sample size, with the primary criterion being that the startups must be under 10 years old.

Startups are defined as new businesses characterized by original initiatives, a focus on high growth, measurable performance, and a willingness to accept risks or pursue profits.

In this study, we used internal stakeholders of the startups—such as the Chief Executive Officer, Chief Technology Officer, Chief Financial Officer, Chief Marketing Officer, and Chief Operating Officer—as the unit of analysis, as they are deemed representative of the company's perspectives. Data were collected through an online survey conducted via Google Forms, shared through WhatsApp and email. Additionally, interviews were conducted with selected participants through telephone, video calls, or in-person visits to enhance and supplement the questionnaire responses. As a result, a total sample size of 209 startups was analyzed, representing 17.2% of the entire population.

Non-response bias testing was conducted to address the issue of low response rates by comparing data from early and late participants. The results indicated that the indicators related to MCS configuration, business processes, and company performance produced probability values greater than the significance level (alpha = 5%). This finding suggests that no significant differences were found between early and late respondents in completing the questionnaire, confirming the unbiased nature of the data collected.

Furthermore, MCS configuration and business processes (exogenous variables) were integrated with company performance (endogenous variable). In this context, MCS configuration focused on five dimensions: planning, cybernetic controls, rewards and compensation, administrative controls, and cultural controls (Malmi & Brown, 2008). The measurement of the configuration assessed the implementation of the control system within startups using a 5-point Likert scale.

Business process performance is assessed using indicators developed by Bronzo et al. (2013), Eldridge et al. (2014), and Elbashir et al. (2008). These indicators were chosen for their comprehensive coverage of relevant dimensions, including customer management, partnerships, and internal efficiency. Measurement is conducted using nine statements on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Company performance is measured through constructs established Chen et al. (2014), Akter et al. (2016), and Torres et al. (2018). These constructs were selected to provide a thorough representation of performance from both financial and non-financial perspectives. Company performance is also assessed using a 5-point Likert scale, with statements ranging from 1 (very bad) to 5 (very good).

Data analysis is conducted using the Partial Least Squares (PLS) method with Smart PLS software. This process includes evaluating both the measurement model and the path diagram (outer model). The measurement model illustrates how the observed variables represent the latent factors being measured. Additionally, an evaluation of the structural model (inner model) is performed to assess the

strength of the relationships between latent variables (constructs). Hypothesis testing is also carried out to analyze the direct and indirect relationships between exogenous and endogenous variables.

Cluster analysis is subsequently performed to identify MCS configurations, offering a structured approach for grouping similar sample observations based on various variables or characteristics (Sarstedt & Mooi, 2014). This method is particularly useful in the field of MCS research, as it allows for the evaluation of different aspects and contextual variables (Samagaio et al., 2018). Additionally, cluster analysis plays a critical role in establishing taxonomies, configurations, and strategic groups that are formed empirically (Hotho, 2014). Ketchen and Shook (1996) further affirm that this analytical approach is well-suited for studies focused on configurations.

Empirical results and discussion

Descriptive statistics

The descriptive statistics for each variable are presented in Table 1. The Management Control System (MCS) scores reveal that the planning control dimension has an average score of 4.075, with actual minimum and maximum values of 1.43 and 5, respectively. This indicates that the planning control variable among startup participants falls within a high category, reflecting a significant level of implementation. In contrast, the cybernetic, compensation and reward, administrative, and cultural dimensions show average scores ranging from 3.761 to 3.968. These values suggest that the four MCS dimensions are categorized as medium, indicating sufficient control across these indicators in Indonesian startups.

Furthermore, business process performance is assessed using nine indicators, yielding an average score of 4.148, with actual minimum and maximum values of 1.29 and 5, respectively. This score exceeds the theoretical value of 3, confirming a high category for this variable. Consequently, participants' perceptions of business process performance are highly rated within Indonesian startups.

Company performance, on the other hand, has an actual average value of 3.680, with minimum and maximum values ranging from 1 to 5. This score also surpasses the theoretical threshold of 3, indicating that the variable is rated as quite high. Thus, participants perceive company performance in Indonesia as being in the medium category.

Table 1
Descriptive Statistics

Variable	Dimension	N	Min	Max	Mean	Standard deviations
MCS configuration	Planning control	209	1.43	5	4.075	0.699
	Cybernetic control	209	1.20	5	3.829	0.778
	Control of Compensation and Rewards	209	1	5	3.761	0.848
	Administrative control	209	1	5	3.804	0.789
	Culture control	209	1.25	5	3.968	0.796
Process business performance		209	1.29	5	4.148	0.703
Company performance		209	1	5	3.680	0.805

Source: Data processed with SPSS (2023)

Cluster analysis

Cluster analysis is employed to evaluate the suitability of MCS by identifying groups that exhibit similar arrangements of elements (Auzair, 2015). This analysis assesses the compatibility of MCS variables by examining relevant relationships, where a favorable arrangement is indicative of improved performance. A combination of hierarchical and non-hierarchical cluster analysis approaches is utilized to provide a comprehensive examination of MCS patterns. This two-stage analysis is a well-established method in statistical literature and has been extensively applied in prior management accounting studies (Hotho, 2014; Samagaio et al., 2018; Sponem & Lambert, 2016).

In the initial step, hierarchical analysis is conducted to determine the number of clusters and their centroids using an agglomerative method. This analysis generates a two-dimensional tree diagram (dendrogram) that illustrates the hierarchical process and supports the formation of an optimally structured four-cluster solution. The results of this analysis are then utilized in the subsequent stage, which involves grouping through non-hierarchical analysis using the k-means method. This grouping method identifies the membership of each cluster, applying the solutions obtained from the hierarchical analysis as the initial calculations (Hotho, 2014; Samagaio et al., 2018). All data are classified into four clusters using the average value centroid as the cluster center. Based on the k-means testing, the membership of the four groups formed in the previous hierarchical analysis is observed, with clusters 1, 4, 2, and 3 comprising 84, 48, 43, and 34 cases, respectively. Table 2 presents the complete outcomes of the cluster analysis.

Table 2
Analysis cluster test result

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Planning control	4.15	3.21	4.13	4.68
Cybernetic control	3.82	2.98	3.89	4.56
Control of Compensation and Rewards	3.81	2.75	3.94	4.44
Administrative control	3.85	2.89	3.87	4.46
Culture control	4.05	3.03	4.05	4.59
Business process performance	4.22	3.36	4.08	4.60
Company performance	3.79	2.92	3.48	4.30
Number of case	84	43	34	48

Source: Data processed with SPSS (2023)

The analysis of variance (ANOVA) is employed to validate the cluster solution, utilizing variables related to the implementation of MCS. This test confirms the necessity of prioritizing the number of clusters and conducting validation steps in cluster analysis (Ploss, 2018). ANOVA is also used to identify significant differences in cluster averages for each clustering variable. The results indicate that the clustering procedure effectively differentiates between clusters based on the implementation of all MCS variables (see Table 3), demonstrating an F-statistical value of less than 0.05 ($p < 0.05$) and highlighting significant differences in the average scores for each grouping factor.

Table 3
Summary of ANOVA Test Results

Variable	F value	Significant	Result
Planning control	69.245	0.000	Valid
Cybernetic control	56.180	0.000	Valid
Control of Compensation and Rewards	56.244	0.000	Valid
Administrative control	55.723	0.000	Valid
Culture control	52.697	0.000	Valid
Business process performance	40.911	0.000	Valid
Company performance	34.993	0.000	Valid

Source: Data processed with SPSS (2023)

The comprehensive analysis reveals a mixed configuration pattern among the various controls, resulting in the categorization of four distinct clusters, as presented in Table 4.

Table 4
MCS Configuration Analysis

Cluster Name	MCS Configuration		Business Process Performance	Company performance
Structured Control (K1)	Planning	4.15	4.22	3.79
	Culture	4.05		
	Administrative	3.85		
	Cybernetic	3.82		

Simple Control (K2)	Compensation and rewards	3.81	3.36	2.92
	Planning	3.21		
	Culture	3.03		
	Cybernetic	2.98		
	Administrative	2.89		
	Compensation and rewards	2.75		
Process Control (K3)	Planning	4.13	4.08	3.48
	Culture	4.05		
	Compensation and rewards	3.94		
	Cybernetic	3.89		
	Administrative	3.87		
Mature Control (K4)	Planning	4.68	4.60	4.30
	Culture	4.59		
	Cybernetic	4.56		
	Administrative	4.46		
	Compensation and rewards	4.44		

Source: Compiled by author (2023)

This categorization is closely linked to the contextual variables influencing each MCS implementation, including company size, age, and funding sources, as detailed in Table 5.

Table 5
Analysis of Context Variables

Cluster	Number of employees (people)			Age (years)			Capital	
	< 5	6-20	>21	<2	2 - 5	5-10	Internal	Exsternal
1	0.39	0.60	0.01	0.37	0.51	0.12	0.75	0.25
2	0.60	0.37	0.02	0.49	0.42	0.09	0.77	0.23
3	0.03	0.62	0.35	0.18	0.56	0.26	0.62	0.38
4	0.04	0.35	0.60	0.15	0.40	0.46	0.52	0.48

Source: Compiled by author (2023)

Additionally, the following explanations focus on the characteristics of the categorized clusters:

1) Structured Control Cluster (K1)

A total of 84 startups are observed in the structured cluster, having average planning, cultural, administrative, cybernetic, and compensation/reward values of 4.15, 4.05, 3.85, 3.82, and 3.81, respectively. According to the results, the context variable shows that 51% of startups using the MCS K1 configuration are in the medium-aged category, namely under 5 years, with 60% having fewer than 20 employees. In this category, 25% of companies significantly have limited external funding. However, the subset of startups is slightly older and larger, possessing previous business experience compared to those in the K2 group.

The structured control environment indicates a well-defined approach to management control, allowing for systematic planning and operational efficiency. The high average scores in planning and cultural controls suggest that these startups prioritize strategic alignment and employee engagement, which contribute to their overall effectiveness.

Subsequent results also reveal the average performance values categorized as high and medium for business process and company performance at 4.22 and 3.79, respectively. This reflects the positive impact of structured control mechanisms on operational outcomes, showcasing a solid understanding of the importance of both formal and informal control systems in enhancing performance.

2) Simple Control Cluster (K2)

Based on the results, 43 companies are members of the Simple Control Cluster, exhibiting average values of moderate MCS intensity in planning, cultural, cybernetic, administrative, and compensation/reward at 3.21, 3.03, 2.98, 2.89, and 2.75, respectively. This cluster indicates a more straightforward approach to management control, characterized by lower intensity across all MCS dimensions.

In this cluster, 49% of startups have an average age below 2 years, highlighting that many companies are in their early stages of development. Additionally, 60% of the startups have fewer than 5 employees, reflecting a lean organizational structure. The limited size and experience of these startups may contribute to the simplicity of their MCS configurations.

Moreover, 23% of companies in this cluster report having very limited external funding, which may restrict their ability to implement more comprehensive control systems. As a result, the implemented MCS package portrays a straightforward configuration pattern with low intensity, which may not fully support the complex needs of growing businesses.

This simplistic control configuration influences startup agility, leading to medium and low average values for business process and company performance at 3.36 and 2.92, respectively. These performance metrics suggest that while the startups are operational, their lack of robust management controls may hinder their ability to effectively adapt to changing market conditions or to optimize their processes for higher efficiency and effectiveness.

In summary, startups in the Simple Control Cluster exhibit a basic MCS configuration that may be suitable for their current stage of development but could benefit from more sophisticated control mechanisms as they grow and seek to enhance their performance and competitive edge in the marketplace.

3) Moderate Control Cluster (K3)

A total of 34 startups are included in the Moderate Control Cluster, which exhibits average values of 4.13, 4.05, 3.94, 3.89, and 3.87 across the planning, cultural, cybernetic, compensation/reward,

and administrative dimensions, respectively. This indicates a balanced implementation of management control systems, reflecting a higher intensity than that observed in the Simple Control Cluster.

In this cluster, startups tend to be medium-sized, with 56% having an average age of under 5 years and 62% employing fewer than 20 individuals. This suggests that the companies in this cluster are relatively young but are beginning to establish more structured processes and controls. The context variables show a similar profile to the Structured Control Cluster (K1), indicating a comparable capacity for growth and adaptation.

Interestingly, only 38% of the companies in this cluster are characterized by having external funding, which suggests that while they are implementing a moderate control framework, they may still be navigating financial constraints that limit their access to additional resources. This context can influence their ability to invest further in enhancing their MCS configurations.

Despite the moderate intensity of their MCS, the average agility scores for this cluster are lower than those in K1, specifically 4.08 for business process performance and 3.08 for company performance. These scores imply that while the companies in K3 have established some effective control mechanisms, there remains room for improvement in both their operational efficiency and overall performance outcomes.

In conclusion, the Moderate Control Cluster represents startups that are beginning to implement more structured management control systems, which align with their growth trajectory. However, to achieve higher levels of performance and agility, these companies may need to further refine their control configurations and explore opportunities for external funding or resources.

4) Mature Control Cluster (K4)

The Mature Control Cluster comprises 48 startups, which demonstrate robust management control system (MCS) implementations characterized by average values of 4.68, 4.59, 4.56, 4.46, and 4.44 across the planning, cultural, cybernetic, administrative, and compensation/reward dimensions, respectively. These high scores indicate a strong commitment to structured and effective control mechanisms, reflecting a sophisticated approach to management.

This cluster represents the largest and most established group among the studied startups, with 60% of the companies employing more than 20 individuals. Additionally, 40% of the startups fall within the age range of 5 to 10 years, suggesting that these companies have had sufficient time to develop their organizational structures and refine their operational processes.

A noteworthy characteristic of the Mature Control Cluster is that 48% of these startups have secured significant external funding. This financial backing likely facilitates their ability to invest in advanced management practices and technology, enhancing their operational capabilities and market competitiveness.

The high levels of MCS implementation in this cluster contribute to improved organizational agility and resilience, enabling these companies to respond effectively to market dynamics and strategic challenges. As a result, startups within the Mature Control Cluster are positioned to achieve superior business process performance and overall company performance, showcasing the value of a comprehensive and well-implemented control system.

In conclusion, the Mature Control Cluster signifies a group of startups that have successfully integrated advanced management control systems into their operations, allowing them to thrive in competitive environments while fostering innovation and sustained growth.

Hypothesis testing; PLS results

Prior to conducting hypothesis testing, comprehensive evaluation tests were performed on both the measurement (outer) and structural (inner) models using Partial Least Squares (PLS) methodology. This process included assessments of validity and reliability to ensure the robustness of the model.

The validity analysis confirmed that all indicators met the required thresholds, demonstrating that they are valid measures of the underlying constructs. Specifically, factor loadings for all indicators were above 0.70 (appendix 1), and the Average Variance Extracted (AVE) values exceeded the minimum acceptable level of 0.50 (appendix 2). These findings indicate that the constructs effectively capture the intended dimensions and provide a strong foundation for further analysis.

Reliability testing was conducted to ensure the consistency of the measurement scales used in the study. Results revealed that all dimensions and variables exhibited strong reliability, with both the Cronbach's Alpha and Composite Reliability values surpassing the threshold of 0.70 (appendix 3). This indicates a high level of internal consistency among the items within each construct. With the validity and reliability of the measurement model established, the next phase involved hypothesis testing to examine the proposed relationships among the constructs.

The evaluation of the structural model indicates that the relationships among the variables have a moderate strength of association, with R-squared values ranging from 0.375 to 0.486. This suggests that the model accounts for a substantial portion of the variance in the dependent variables, demonstrating a robust framework for understanding the impact of MCS configurations and business process performance on overall company performance.

The Q^2 value of 0.813 signifies strong predictive relevance, indicating that approximately 81.3% of the variance in company performance can be explained by the model. This high percentage supports the idea that the factors included in the analysis are significantly relevant to understanding company performance outcomes.

For the goodness of fit assessment, the application of three parameters—Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), and RMS Theta—reveals values that align with the commonly accepted thresholds, reinforcing the model's validity and providing a solid basis for the subsequent hypothesis testing.

The hypothesis testing is also carried out through each cluster, to prove the causal relationship and moderating relationship between exogenous and endogenous variables. Specifically, the findings as described in Table 6 indicate:

a) Hypothesis 1: The analysis confirms a significant and positive influence of Management Control Systems (MCS) on business performance. The t-statistic score being greater than or equal to 1.96 and the p-value being less than or equal to 0.05 provide strong statistical evidence to support this hypothesis. This suggests that effective MCS configurations contribute to improved business performance among the startups analyzed.

b) Hypothesis 2: Similarly, the second hypothesis, which posits that business processes positively influence company performance, is also supported by the results. Again, the t-statistic score and p-value meet the necessary thresholds for significance, validating the assertion that enhanced business process performance correlates with better overall company performance.

These findings suggest that both MCS and business process orientation play crucial roles in driving performance within startups. They also highlight the importance of implementing appropriate management control frameworks and optimizing business processes to achieve desired performance outcomes.

Table 6
hypothesis test results

Cluster	Hypothesis	Coefisien	Standard Deviation	T Statistics	P Values
K1	H1: MCS configuration → business process performance	0.344	0.104	3.3	0.001
	H2: business process performance → company performance	0.405	0.096	4.22	0
K2	H1: MCS configuration → business process performance	0.605	0.178	3.401	0.001
	H2: business process performance → company performance	0.478	0.147	3.249	0.001
K3	H1: MCS configuration → business process performance	0.924	0.052	17.687	0
	H2: business process performance → company performance	0.507	0.144	3.524	0
K4	H1: MCS configuration → business process performance	0.618	0.101	6.111	0

H2: business process performance → company performance	0.295	0.106	2.794	0.005

Source: Compiled by author (2023)

Discussion

Management Control System (MCS) configuration

The cluster analysis showed 4 MCS configuration clusters, namely Structured (K1), Simple (K2), Moderate (K3), and Mature (K4) Controls. In this context, planning and cultural controls were the only elements with high intensity in all cluster solutions. Furthermore, configuration analysis significantly portrayed planning and cultural controls as indispensable elements in all package forms, due to the consistent highest average values and first-second rankings of both components in each setup.

The consistent presence of cultural control in all forms of MCS configuration prioritized the dynamics of new startups commonly encountering difficulties during the adoption of other relevant elements among employees (Akroyd et al., 2019). Cultural control is also implemented through regular meetings and training, playing a significant role in strengthening startup enthusiasm and stimulating employee motivation. According to Malmi and Brown (2008), the element is used to communicate the basic values of company, influencing employee motivation and behavior (Heinicke et al., 2016), as well as acting as a driver of organizational change (Davila et al., 2009). Cultural control is also considered a specific socialization mechanism for achieving objectives (Akroyd & Maguire, 2011). However, the presence of planning control across all MCS configurations showed that startups guided employee behavior toward predetermined objectives, to significantly achieve high performance (Malmi & Brown, 2008). The cluster analysis subsequently prioritized the complementary nature of planning and cultural controls, which collectively stimulated company performance (Bedford & Sandelin, 2015). The results are in line with Frare et al. (2021) and Einhorn et al. (2021), where the significance of shared values, norms, and employee interactions are observed in achieving company objectives and causing high performance. Since planning and cultural controls are primary factors for startups, the support of other control elements is required to achieve an optimal configuration. The primary factors also work effectively with other elements in MCS package (Akroyd et al., 2019; Carraro et al., 2020), supporting the concept that planning and cultural controls significantly guide MCS and are reinforced by the adoption of external components (Akroyd & Kober, 2020).

Based on the results, the configuration pattern in K1 cluster is characterized by the adoption of MCS for administrative control elements with medium intensity. This configuration prioritizes startups

with most medium age and size during a growing situation. Although the configuration moderately applies administrative controls, the implementation of cybernetic and compensation/reward elements is still lower. K1 cluster also focus on administrative control issues, proving that governance/organizational structures and policy/procedure formalization are very important activities handling business risks (Rikhardsson et al., 2021). Several enterprises subsequently possess good planning and moderate performance because the average values for administrative, cybernetic, and compensation/reward controls remained in the medium category.

The results prove that the configuration in cluster K2 is the simplest pattern of the 4 clusters, having the lowest average value. This group shows the general conditions at the start of startup operations, regarding both young and small enterprises. From the description, a mix of MCS is adopted with moderate intensity for planning and cultural controls, as low strength is observed for other specific components. The mix is feasible because relevant startups are in the initial stages of incorporating various controls into organizational operations (Strauss et al., 2013). Low MCS implementation strength also suggested that companies in the early phases required time to design similar mechanisms according to the evolving needs at different growth stages. Furthermore, cybernetic control assumes significance with planning and cultural dimensions in K2 cluster, as the implementation at early establishment stage focused on the short-term financial performance measurements of startups in competitive environments. Accounting and financial controls are also monitoring tools to assess task implementation, functioning as feedback mechanisms to refine role specifications and procedures (Bedford & Malmi, 2015). These results are consistent with Bedford and Malmi (2015) and Ploss (2018), where the accountability system internalizes efficiency and productivity as dominant organizational norms, as well as provided an ideological foundation for individual actions. Although empirical facts showed the lowest performance outcomes, similarities remained closely related to company size factor, where smaller startups adopted fewer MCS (Al-Swidi et al., 2026; Speckbacher & Wentges, 2012). The results are also supported by Einhorn et al. (2021), where the use of MCS in a very tight competitive environment influenced low company performance at a decreased level.

K3 cluster comprises startups of moderate age and size, encountering a phase of high growth. This cluster shows that the application of compensation and reward control portrayed a moderate intensity, exceeding cybernetic and administrative elements. From the description, the acquisition of benefits from the adoption of MCS compensation and reward controls is prioritized, forming the foundation for future employee development. The results are supported by Ploss's (2018), where the positive influence of controlling rewards and compensation are observed on the performance of startups in competitive environments. Since high performance outcomes are not observed in the cluster, planning and cultural controls are then implemented at a high level. Garonne and Davidsson (2016) also claim that planning

control is an analytical tool assisting strategic thinking toward obtaining opportunities and avoiding mistakes.

The final cluster, portrays the configuration pattern predominantly implemented by mature and large startups is K4. This cluster empirically presents a high level of MCS implementation across all control elements. The configuration pattern is also similar to K2 group, prioritizing cybernetic control following planning and cultural elements. However, the presence of cybernetic control serves as a signaling mechanism for investors and correlated positively with the amount of external funding. This analysis is observed in the significant external funding secured by closely half of the cluster startups. The implementation of cybernetic control also become important for attracting additional funds and strengthening company growth. Based on the results, the adoption of MCS configurations with high average scores across various aspects suggests that companies incorporated a mix of controls with higher intensity during the mature stage, regarding relevant needs and underlying contextual factors (Davila et al., 2015). The incorporated factors contribute to high performance achievement, as comprehensive insights are provided into the role of each element to enhance operation during the analysis of MCS configuration with measurable variables. A comprehensive understanding is also important in achieving high performance, specifically in mature startups.

According to the configuration analysis, startups simultaneously adopt multiple MCS elements to optimize performance. This is in line with contingency theory, where organizational design selects MCS practices constructed to the uncertainties encountered by companies (Drazin & Van de Ven, 1985). The results are also supported by Otley (2016), Kreutzer et al. (2016), and Crespo et al. (2019), presenting a correlation between company performance and the implementation of MCS configurations. Moreover, cluster analysis specifically identifies 4 consistent alternative configurations, proving that MCS contributed to optimal performance across all categories. High company performance is also achieved through various similar combinations of different system applications.

The MCS configuration and business process performance

The positive influence of MCS configuration on business process performance is the first hypothesis (H1) to be analyzed. In this context, the Partial Least Squares (PLS) test supports the hypothetical statement and is consistent across four startup clusters with different configuration patterns. Descriptive analysis of the K1 cluster shows that the intensity of MCS configuration usage falls within the medium category, resulting in high business process performance. Clusters K2 and K3 demonstrate that implementing low and moderate intensity configurations produces moderate and very high process performance, respectively. Meanwhile, the high-level implementation of MCS configuration in the K4 cluster results in

exceptional procedural agility. These findings indicate that the configuration comprises various packages, including planning, cybernetic, compensation/rewards, administrative, and cultural controls, all aimed at enhancing business process performance.

Overall, the implementation of several control elements within the MCS configuration significantly influences process performance in Indonesian startups. MCS configuration is a collection of strategies initially observed and continuously integrated into business processes at both company and operational levels (Szutowski, 2019). This configuration provides guidance on strategic activities that enhance organizational agility, leading to operational effectiveness and valuable outcomes. Additionally, MCS plays a crucial role in coordinating the deployment of corporate objectives through the planning and measurement systems essential for effective business process management. The process itself represents the main organizational procedure that encapsulates sustainability complexities and challenges (Elbashir, Sutton, Arnold, et al., 2021). This underscores the importance of the business process as a strategic component in guiding companies toward organizational effectiveness.

The configuration analysis reveals that the strategic component encompasses various conflicting needs for innovation and efficiency (Szutowski, 2019). This aligns with the findings of Zarzycka et al. (2019), which highlight the important influence of Management Control Systems (MCS) on business processes as a balance between control and innovation interests. As a driver of innovation, management control can establish the necessary conditions for fostering innovative behavior (Davila et al., 2009). Furthermore, MCS configuration enhances a company's ability to respond to and adapt to the environment in startups, allowing for the identification of market opportunities and the analysis of the competitive landscape to determine the company's trading position. This increased adaptability enables startups to develop unique capabilities, promote dialogue and new ideas, strengthen internal and external information flows, and stimulate creativity while directing managers toward opportunity-seeking behaviors (Lopez-Valeiras et al., 2016).

These activities reinforce the role of MCS in intervening and designing the development of company innovation activities, ultimately driving business growth, profitability, and productivity. MCS configuration elements also facilitate innovative needs, such as cultural and planning controls. However, MCS serves as a control tool in the operational monitoring process, indicating that enterprises focusing heavily on innovation may encounter significant risks of dysfunctional behavior related to employee creativity, leading to ineffective mandatory requirements (Davila et al., 2009; Eldridge et al., 2014; Zarzycka et al., 2019). Additionally, MCS supports efficiency by reducing unnecessary procedures while prioritizing process regularity and strict bureaucracy. Relevant elements, such as strategic planning and cybernetic controls, further facilitate efficiency needs.

Based on the results, organizational management embodies values of predictability, stability, formality, rigidity, and conformity, while innovation and flexibility express values of spontaneity, change, openness, adaptability, and responsiveness. To accommodate these diverse interests, the implementation of Management Control Systems (MCS) generally guides the synchronization and adaptation of all procedures related to innovation and efficiency (Ho et al., 2026; Eldridge et al., 2014; Zarzycka et al., 2019). This aligns with the contingency theory proposed by Otley (1980), which suggests that MCS implementation is highly flexible and adaptable to meet the needs and development of startups. The configuration of MCS verifies the control capacity to focus, integrate, and optimize various operations, positively influencing business process performance. Furthermore, developing appropriate combinations of MCS elements enhances an organization's ability to learn, grow, and improve agility. These findings contribute to the work of Eldridge et al. (2014), Lopez-Valeiras et al. (2016), and Zarzycka et al. (2019), demonstrating that a mixture of MCS elements effectively bridges the needs for innovation and efficiency. The argument regarding the importance of MCS in enhancing performance is clarified, countering the assumption that configuration weakens innovation and reduces performance. Thus, the use of control configurations is mutually reinforcing, limiting activity while stimulating creativity. Additionally, the combination of MCS allows for the assessment of existing organizational knowledge in management innovations, improving internal procedures without disregarding more radical ideas. Overall, the results confirm that MCS configuration in startups empirically influences business process performance through the simultaneous implementation of several elements.

The business process performance and company performance

The second hypothesis (H2) posits a positive influence of business processes on company performance, and the test across the four clusters supports this, showing that improved operations lead to greater efficiency. However, the descriptive statistical analysis reveals that the average business process value is slightly lower than the company performance score. This suggests that company performance is influenced by business processes and other unexamined factors. The relationship between these variables highlights a strong association between business processes and relevant outputs, where operational-level performance measures provide managers with diagnostic information about the efficiency and effectiveness of procedures (Bronzo et al., 2013; Chen et al., 2014; Elbashir, Sutton, Mahama, et al., 2021; Kim et al., 2011; Sharma et al., 2014). Meanwhile, company-level performance measures act as evaluative instruments that inform the overall realization of company performance. Therefore, managing performance at both the operational and company levels is crucial, as the effective conversion of procedural benefits has a positive impact on organizational agility (Aydiner et al., 2019).

Properly processing critical business knowledge and information into strategic decisions has a significant impact on company performance at the process level. This demonstrates that several strategic steps, such as optimizing business operations, improving efficiency, innovating new products or services, and identifying new market opportunities, contribute to gaining a competitive advantage over competitors. Business activities, routines, and processes serve as mechanisms that expose a company's resources and capabilities to market operations, thereby maximizing value and enhancing the company's ability to achieve competitive advantage. Conversely, resources and capabilities that are not translated into these mechanisms are unlikely to positively influence company performance (Ray et al., 2004).

Based on the results, the importance of dynamic business process capabilities in startups is evident in enhancing performance at the company level. This aligns with contingency theory, which posits that performance stems from the synchronization between company characteristics and uncertainty factors. Additional support is observed in the benefits at the business process level, particularly in areas such as customer service, supplier relationships, and internal process efficiency, all of which translate into improved company performance. Therefore, the harmonious improvement of organizational procedures positively impacts overall agility (Elbashir et al., 2008). These results are consistent with findings from Elbashir, Sutton, Mahama, et al. (2021), Kim et al. (2011), and Aydiner et al. (2019), which show that companies with a competitive advantage at the process level reflect this in their overall performance. From these observations, it is empirically evident that startup operations improve organizational agility.

Summary and conclusion

In conclusion, this study identifies four distinct MCS configuration clusters, each presenting unique patterns that reveal new insights into the relationship between MCS and company performance. These clusters demonstrate the varying intensities and elements of MCS required to optimize performance, particularly in mature startups with greater age and size, where well-established configurations guide organizational agility. Conversely, in younger and smaller startups, MCS plays a less significant role, suggesting that MCS elements are primarily adopted to meet mandatory requirements during early growth stages.

The findings show that MCS configurations have a statistically significant positive effect on business processes, highlighting how better MCS application enhances operational efficiency. Moreover, these configurations help synchronize and adapt operations related to innovation and efficiency, supporting contingency theory. The theory suggests that MCS provides a control mechanism to focus, integrate, and refine operations, which positively impacts business process performance. Improved processes, in turn, boost overall company performance, aligning with the uncertainty principle, which

posits that organizational agility results from the interaction between business characteristics and contingency factors.

This study also contributes new knowledge by applying cluster analysis to test MCS configurations, creating patterns suited to startup conditions. The use of cluster analysis for MCS configurations is rare in accounting and business literature, making this study particularly valuable. Understanding these clusters is crucial for early-stage startups, as it offers guidance for implementing MCS configurations that match their developmental needs. Startup founders should consider MCS a key factor, as its proper implementation is essential to avoid business failure.

Despite its contributions, this study has limitations. The participants came from diverse business fields with different business processes and performance measurement methods, which could introduce bias when measuring the indicators. For example, the business processes of e-commerce startups differ significantly from those of social startups. Future research should therefore focus on more homogeneous sample groups, such as social startups, to provide stronger empirical evidence. Further studies could also extend MCS configuration studies to different business environments across various countries, as risk levels may vary between organizational fields. External factors, such as government regulations and market pressures, should also be considered as potential moderating variables in the relationship between MCS configuration, business processes, and company performance.

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Annex

Table A1
Summary of Results of First Order and Second Order Convergent Validity Analysis

Variable	Dimensions	Indicator	Loading factor	Conclusion
Management Control System	Planning control	PC1	0.775	Valid
		PC2	0.830	Valid
		PC3	0.811	Valid
		PC4	0.743	Valid
		PC6	0.815	Valid
		PC7	0.786	Valid
	Cybernetic control	CYC1	0.821	Valid
		CYC2	0.837	Valid
		CYC3	0.885	Valid

		CYC4	0.855	Valid
		CYC5	0.860	Valid
	Control of Compensation and Rewards	CCR1	0.832	Valid
		CCR2	0.879	Valid
		CCR3	0.889	Valid
	Administrative control	AC1	0.834	Valid
		AC2	0.873	Valid
		AC3	0.838	Valid
		AC4	0.808	Valid
		AC5	0.896	Valid
	Culture control	CC1	0.827	Valid
		CC2	0.856	Valid
		CC3	0.861	Valid
		CC4	0.849	Valid
Business process performance		BPP1	0.745	Valid
		BPP2	0.805	Valid
		BPP3	0.795	Valid
		BPP5	0.747	Valid
		BPP6	0.769	Valid
		BPP7	0.816	Valid
		BPP8	0.732	Valid
Company performance		CP1	0.784	Valid
		CP2	0.849	Valid
		CP3	0.843	Valid
		CP4	0.835	Valid
		CP5	0.790	Valid

Table A2
Convergent Validity based on Average Variance Extracted (AVE) Value

Variable	Dimension	AVE	Conclusion
Management Control System	Planning control	0.630	Valid
	Cybernetic control	0.726	Valid
	Control of Compensation and Rewards	0.751	Valid
	Administrative control	0.723	Valid
	Culture control	0.719	Valid
Business process performance		0.598	Valid
Company performance		0.674	Valid

Table A3
Composite Reliability Calculation Results of Dimensions and Latent Variables

Variable and Dimension	Cronbach's Alpha	Composite Reliability	Conclusion
Management Control System	0.956	0.960	Reliable
Planning control	0.882	0.911	Reliable
Cybernetic control	0.905	0.930	Reliable
Control of Compensation and Rewards	0.835	0.901	Reliable
Administrative control	0.904	0.929	Reliable
Culture control	0.87	0.911	Reliable
Business process performance	0.888	0.912	Reliable
Company performance	0.912	0.880	Reliable