

# The Impact of Management Control Systems on Performance: Evidence from Vietnamese Enterprises

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## ABSTRACT

The study aimed to evaluate the impact of management control systems (MCS) on the performance of enterprises through the mediated role of learning orientation and entrepreneurial orientation. This study was based on a huge amount of empirical data that was collected from 308 participants, including accountants, CEOs, and business unit managers of Vietnamese firms. Structural equation modeling was used to assess the research model. Our main findings showed that: (1) Both Diagnostic and Interactive MCS uses had a positive impact on performance; (2) Only Interactive MCS use generated a significant, positive, and direct effect on Entrepreneurial Orientation (EO); (3) Learning Orientation (LO) had a direct impact on performance; however, Entrepreneurial Orientation (EO) had not enough evidence to evaluate this effect. This study contributes important proof of the positive impact of MCS on performance. These findings provide precious scientific knowledge for firm managers in Vietnam to improve organizational performance by using MCS, learning orientation, and entrepreneurial orientation.

**Keywords:** Management Control Systems, Diagnostic Control Systems, Interactive Control Systems, Performance, Vietnam.

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## INTRODUCTION

“Management control systems” was introduced in 1965 by Anthony bringing the term to the academic world. Since then, MSC has been constantly changing immensely in different periods, scenarios, and business environments (Otley, 1999). Nowadays, MCS is no longer restricted as a financial analysis tool but widely implemented in other dominant business aspects, such as business metrics and competitive advantages (customer satisfaction and business environment), for which, it has also received huge attention from economists as well as researchers, in terms of both theoretical and practical characteristics, plus becoming a significant part of every company.

A MCS comprises multiple managerial processes that work together, such as the performance targets, strategies, quantitative measurements, information, motivation, and incentives as well as other external events, namely environment, organizational culture, and social and historical institutions (Henri, 2006a).

According to Koufteros et al. (2014), MCS played a vital role in enhancing firm performance. The main purpose of MCS is to help top managers formulate strategies, specify the operation actions required to implement those strategies and make the right decisions to enhance organizational performance. In addition, MSC also ensures that the behaviors and attitudes of their employees are consistent with the organization’s objectives and strategies. MCS can be viewed as an essential part of total control systems, which are designed to plan organizational strategies and make sure that activities are performed according to the strategies to achieve economic values, while minimizing the risk of failure.

The impact of MCS uses on organizational performance has been the center of discussion in numerous academic studies. Nevertheless, in general, these studies have yielded ambiguous, inconclusive, or sometimes contradictory results. We can see a positive (Ittner et al., 2003; Chenhall, 2005; Rehman et al., 2019 & 2021; Rinawiyanti et al., 2021; Ngo, 2021) or negative (Dougherty & Hardy, 1996; Verona, 1999) relationship between MCS and performance or mixed findings (Henri, 2006a; Orozco, 2016). Especially, some researchers claim no evidence of the link between MCS and organizational performance (HassabElnaby et al., 2005; Said et al., 2003).

In Vietnam, small and medium enterprises account for nearly 96 %, but they are less likely concerned about planning long-term strategies or organizational goals (OECD, 2021). There are not many studies on the MCS about organizational capabilities that have an impact on performance in developing countries, including Vietnam. Several recent studies have been conducted in developing countries on the association between MCS and performance (BinNashwan et al., 2017; Rehman et al., 2019, Bhatti et al., 2020). Rui et al. (2016) studied and investigated the interaction between MCS and social capital in Vietnamese social enterprises. The results showed that the excessive dependence on informal MCS leads to poor financial management, threatening the associated capital, cultural capital, and economic capital in Vietnamese social enterprises. Ngo (2021) assessed the impact of marketing orientation on performance in small businesses in Can Tho City Vietnam. With data obtained from 159 small businesses, the results indicated that there was a link between marketing orientation and the performance of enterprises. This study provides exploratory evidence on the important role of MCS in the performance of small businesses in Vietnam.

Thus, MCS in academic and applied research in Vietnamese enterprises have not received much attention. It is necessary to carry out studies on the impact of MCS on Vietnamese companies to provide a strong theoretical support for MCS and how to use MCS in different organizations to enhance their performance. Therefore, this study tried to clarify three issues: (i) The impact of MCS uses on firm performance; (ii) To what extent does MCS have a direct effect on organizational learning and operating? (iii) The relationship between organizational capabilities and performance.

## **THEORETICAL FRAMEWORK AND MODEL**

### **Theoretical Framework**

MCS consists of diagnostic control systems and interactive control systems. The diagnostic control systems focus on organizational competitiveness, whereas interactive control systems offer two-way processes of communication where employee participation is encouraged in a formal process of debate, as a way of sharing information, solving problems keeping track of the strategies (Vandenbosch, 1999).

## Diagnostic Control Systems

Diagnostic control systems refer to the use of official data on formal reports and rely heavily on specialists to prepare and interpret information. These systems include behavior control and decision-making (Vandenbosch, 1999; Simons, 2013). The main function of these control systems is identifying “errors” or reasons why companies fail to achieve their strategic goals, based on the connection between the reduction in organizational productivity and the negative thoughts that result from them. However, much of the research shows that Diagnostic control systems have an important role in monitoring and regulating the implementation of organizational strategies. Likewise, there is empirical evidence that diagnostic control systems have a positive impact on the development of strategic capabilities, with which companies can make better decisions (Koufteros et al., 2014).

Previous studies indicate that monitoring or diagnostic use of MCS could result in a negative reaction from people, by developing suspicion and resistance against critical factors of learning orientation, hence using MCS can limit organizational performance. However, there are empirical pieces of evidence that using more information from diagnostics control systems leads to mediating decision-making, showing the important role of MCS in achieving strategic goals, minimizing the risk of failure, providing opportunities for corporate renewal as well as directly enhancing companies’ performance (Simons, 2013; Rehman et al., 2021). In other words, MSC use positively contributes to better performance through planning and monitoring organizational strategies.

Legitimizing MCS use can be seen as decision ratification or decision influencing. In this sense, legitimizing MCS use is a political tool not only to maintain credibility but also to establish authority. There are some pieces of evidence that MCS can be used to exercise power by setting visions, changing operations, and thus creating legitimacy (Pham & Hoang, 2019; Rehman et al., 2021). This use is associated with a control dominant type, centralization of power (Henri, 2006b), and sometimes a strong prevalence of only financial indicators, as a weapon of power. Therefore, legitimizing the use of MCS exerts a negative influence on Learning Orientation (LO) and Entrepreneurial Orientation (EO).

However, on the positive side, MCS can be used to justify past actions or decisions that have been previously made under conditions of uncertainty (Henri, 2006b). This way, MCS acts as the monitoring tool to support managers in making decisions. MCS uses the whole database of the company, which gives them the authority and reliability to claim the legitimacy of their operations. In short, legitimizing is the main reason for using the information to support the decision-making process and providing a competitive advantage for enterprises (Vandenbosch, 1999). Moreover, by legitimizing their previous decisions, managers can ensure the right in their strategies as well as encourage the learning process of the company.

### **Interactive Control Systems**

Interactive control systems, comprise of attention-focusing and strategic decision-making uses, facilitate and guide organizational learning (Pham & Hoang, 2019). Studies report empirical support of the relationship between interactive controls and organizational learning demonstrating that high-performing firms rely on the information provided by frequently updated MCS to drive organizational learning. This has a significant positive impact on staff perceptions of learning capability (Yuan et al., 2008). Interactive MCS use is associated with the signals sent throughout the firm to focus organizational attention, stimulate dialogue (Rui et al., 2016), support the decision-making process, and the emergence of new strategies. Interactive control systems use, composed of attention-focusing and strategic decision-making MCS uses, has a positive impact on capabilities because it promotes participation and involvement of employees, essential elements in both capabilities studied (Shurafa & Mohamed, 2018).

### **Relationship between Capabilities and Performance**

Organizational capacity is an enterprise's ability to deploy its resources to enhance its performance. Organizational capabilities consists of two elements Learning Orientation (LO) and Entrepreneurial Orientation (EO) (Koufteros et al., 2014). Some studies provide evidence showing that both, LO and EO, contribute positively to performance (Obeidat et al., 2017; Rehman et al., 2018; Shurafa and Mohamed, 2018; Khan et al., 2019; Ngo, 2021). Rehman et al. (2019 & 2021), Rinawiyanti et al. (2021), and Bhatti et al. (2020) show that improvements in organizational capabilities

also enhance organizational performance. The literature argues that organizational learning is critical to maintaining competitive advantage and is associated with improved performance (Rehman et al., 2021), and some authors believe that learning is the only way to compete in the long term (Khan et al., 2019; Bhatti et al., 2020). Tippins and Sohi (2003) investigated information technologies competencies and found that firm performance results are better in the presence of organizational learning capability. Entrepreneurial orientation can be identified as a high-level organizational routine, durable and difficult to imitate or transfer (Gómez-Villanueva et al., 2010), an intangible ability of the company's strategic position, difficult to replicate, and related to superior results. Studies suggest that EO enhances the relationship between MCS and performance when used to discover and exploit opportunities (Wiklund & Shepherd, 2003).

## **Relationships between MCS and Performance**

Based on the facts of prior research, there is evidence of a link between MCS and different levels of performance, such as manufacturing performance, quality performance, customer satisfaction, and other non-financial operations at all levels of an organization. Previous research shows that MCS has diverse influences on organizational performance.

The first group provides empirical evidence supporting the MCS-performance relationship. For example, few research found that interactive uses have positive effects on performance (Ittner et al., 2003; Chenhall, 2005; Henri, 2006b). Pham and Hoang (2019) confirmed that organizational learning capability has a positive effect on business performance. As a result, MCS can be viewed as the most significant resource of a firm, based on the hypothesis that MCS can generate the company's profits as well as facilitate the process of evaluation and decision-making to obtain a positive impact on improving organizational performance (Ittner et al., 2003; Chenhall, 2005, Rehman et al., 2019; Rotzel et al., 2019). Some studies revealed that MCS has a significant but weak relationship with organizational performance (HassabELnaby et al., 2005; Ittner et al., 2003; Said et al., 2003; Duréndez et al., 2016).

The second group gives proof that MSC limits innovation or creativity. Some studies even overlook the potential of MCS as a critical factor in the

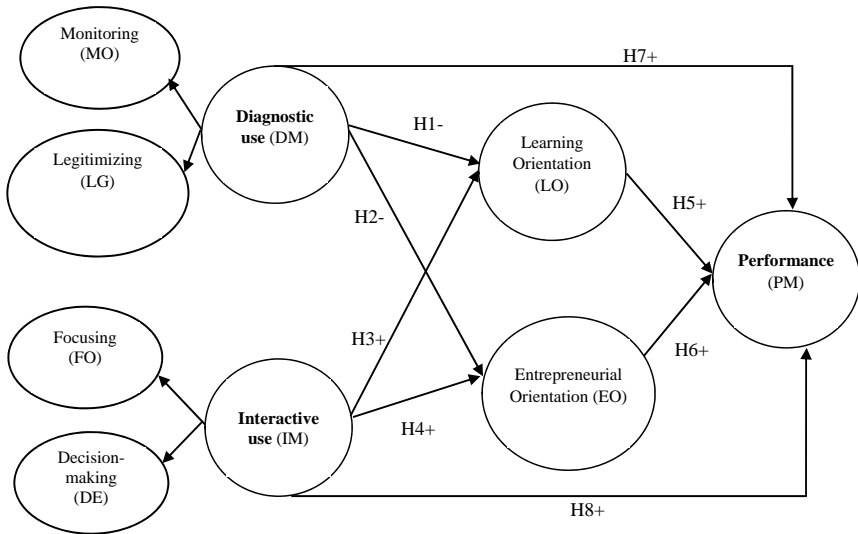
renewal process (Dougherty & Hardy, 1996; Verona, 1999). Accordingly, MSC is considered the factor that inhibits creativity. Therefore, using MCS exerts a negative effect on organizational performance, since they do not influence the renewal process of the company.

The third group insists that no evidence of a relationship between MCS and Performance, or mixed findings (Orozco, 2016; Henri, 2006). Some empirical studies did not find evidence supporting a direct relationship between MCS and performance because neither previous theoretical development nor empirical research can clarify the direct impact of both Diagnostic or Interactive use of MCS on performance (Bisbe & Otley, 2004). Therefore, the use of MCS may not directly contribute to performance. Some others attributed several interrelated factors contributing to performance, arguing it is difficult to attribute a direct causal relationship to MCS performance.

From the literature review, many studies on the impact of MCS on the ability of enterprises, or MCS on the performance of enterprises have been carried out. Research on the impact of MCS on performance in which the capabilities of firms play a mediating role has not been explored much in previous studies in developing countries (Pham & Hoang, 2019), especially in Vietnamese enterprises. On the other hand, the impact of MCS on firm performance is controversial (Rehman et al., 2021). Therefore, there is a gap for this study to evaluate the impact of MCS on enterprise performance with the mediating role of the capabilities of enterprises, the case in Vietnamese enterprises.

## **Theoretical Model**

Based on a theoretical framework, we adopted classifications of MCS use to examine the impact of MCS (including Diagnostic use and Interactive use) on organizational performance. The proposed research model is shown in Figure 1.



**Figure 1: The Proposed Research Model**

(Source: Prepared by the authors, 2023)

Previous theoretical studies show that the Diagnostic use of MCS has an impact on organizational strategies, both negative and positive but not clear enough. In this study, we chose negative effects to evaluate and examine the direct impact through the research using hypotheses H1 and H2. MCS has a positive impact on the strategic direction of the enterprise, while the incremental innovations resulting from knowledge gained in LO and business innovation as a result of EO will support the growth of the enterprise. The following hypotheses are proposed:

- H1: Using Diagnostic control systems negatively affects the learning orientation of enterprises.
- H2: Using Diagnostic control systems negatively affects the entrepreneurial orientation of enterprises.
- H3: Using interactive control systems positively affects the learning orientation of enterprises.
- H4: Using interactive control systems positively affects the entrepreneurial orientation of enterprises.
- H5: Learning orientation has a positive impact on the performance of enterprises.



- H6: Entrepreneurial orientation has a positive impact on the performance of enterprises.
- H7: Using Diagnostic control systems has a positive impact on the performance of enterprises.
- H8: Using Interactive control systems has a positive impact on the performance of enterprises.

## RESEARCH METHOD

### Implementation Process

The implementation stages from data collection and processing to analysis are as follows:

First, based on the literature review of the impact of MCS on firms performance through the mediating role of enterprise capabilities, we outlined the scale and built a draft questionnaire. Then, we discussed with experts, including 2 directors, 2 chief accountants of enterprises, and 2 scientists who were lecturers at universities in Vietnam to ensure clarity and easy understanding of the survey subjects. Last, we adjusted the observed variable to build the official survey.

Next, the official questionnaire was made on Google Forms and sent to accountants and business managers via email using the convenient sampling method. Then, 315 answers were collected, corresponding to 315 businesses. After coding and cleaning the data, 308 valid votes were obtained to perform the analysis. Last, data was analyzed on SPSS-Amos 20 software with the following tools: (1) Assessing the reliability of the scale by Cronbach's Alpha; (2) Exploratory factor analysis (EFA). (3) Confirmatory factor analysis (CFA); (4) Verify the structural equation modeling analysis (SEM).

## Research Scale

**Table 1: Scale Descriptions**

No.	Scale	Cod	No. of items	Sources
1	Diagnostic control systems	DM	13	Henri (2006a); Vandenbosch (1999); Shurafa and Mohamed, (2016)
	Monitoring	MO	04	
	Legitimizing	LG	09	
2	Interactive control systems	IM	14	Henri (2006a); Shurafa and Mohamed (2016)
	Attention-focusing	FO	07	
	Strategic decision-making	DE	07	
3	Learning Orientation	LO	04	Rehman et al. (2019)
4	Entrepreneurial Orientation	EO	08	Lumpkin et al. (2009); Rehman et al. (2021)
			06	Gómez-Villanueva (2010); Orozco (2016); Rehman et al. (2021)
5	Performance	PM	06	

(Source: Prepared by the authors, 2023)

The scales of MCS (Table 1) consisted of Diagnostic control systems (DM) and Interaction control systems (IM), in which, Legalization and Monitoring measures of DM were inherited from Henri (2006a), Vandenbosch (1999), Shurafa and Mohamed (2016). Focusing and Decision-Making measures of IM were taken from Henri (2006a); and Shurafa and Mohamed (2016). The 5-level Likert scale was applied, from 1- Never used to 5- Always used.

Measures of strategic capabilities of enterprises include Learning Orientation (LO) inherited by Rehman et al. (2019) and Entrepreneurial Orientation (EO) according to Lumpkin et al. (2009), and Rehman et al. (2021). These factors applied a 5-level Likert scale: 1- Strongly disagree to 5- Strongly Agree.

Business performance measurement (PM) used the scale of Gómez-Villanueva (2010) and the adjusted variables of Orozco (2016), Rehman et al. (2021) evaluated by the 5-level Likert scale to evaluate the achieved results compared to the objectives, from 1-Very poor performance to 5-outstanding performance above targets.

## Research Sample

Description of the survey subjects, in 308 enterprises, in terms of size by several employees, the majority of enterprises were small-sized with fewer than 100 employees (168; 54.5%), followed by medium-sized with 100 up to 200 people (94; 30.5%), the rest were over 200 people. In terms of years of operation, enterprises from 5 to 10 years were the highest (151; 49%), next was under 5 years and over 10 years firms. In terms of ownership, the majority of enterprises were privately owned (269; 87.3%); followed by state ownership (35; 11.4%), Non-profit enterprises were insignificant. In terms of business industries, enterprises mainly operating in the field of trade and service (167; 54.2%); manufacturing enterprises (92; 29.9%), and construction enterprises (18; 5.8%), enterprises in other insignificant sectors. The above characteristics were typical for Vietnamese enterprises where the majority of firms were small and medium-sized, young age, private ownership, and in trading and services (OECD, 2021). Therefore, the survey object was suitable for analysis.

Characteristics of respondents, out of a total of 308 people, most of them were female (250; 81.2%); The age group was under 30 (223; 72.4%), followed by from 30 to 40 (55; 17.9%). Regarding job positions, accountants were the main ones (172; 55.8%); followed by General Director and Director (45; 14.6%); The rest were pretty much the same. In terms of experience, respondents with less than 5 years were the most (201; 65.3%); the remaining 5-10 years and over 10 years were almost equivalent. Most of the respondents had a bachelor's degree (244; 79.2%) and majoring in accounting and auditing (276; 89.6%). The characteristics of the sample were suitable for the survey on accounting information because the majority of accountants answered. The percentage of female accountants was the majority, the common training level was a bachelor's degree and the special major was in accounting and auditing.

## RESEARCH RESULTS

### Reliability Analysis

Table 2 shows the results of Cronbach’s Alpha of the scale from 0.9 to 0.983, both greater than 0.6. The correlation coefficients of the total variables of the observed variables in the scales were all greater than 0.3 and there was no case of excluding the observed variables that could make the Cronbach’s Alpha of this scale larger than the Cronbach’s Alpha coefficient total. Therefore, all the observed variables were accepted and were used in the factor analysis (Hair et al., 2022).

**Table 2: Cronbach’s Alpha Statistics**

No.	Scale	Cod	Cronbach’s Alpha
1	Performance	PM	0.983
2	Monitoring	MO	0.900
3	Legitimizing	LG	0.961
4	Strategic decision-making	DE	0.955
5	Attention-focusing	FO	0.942
6	Learning Orientation	LO	0.950
7	Entrepreneurial Orientation	EO	0.948

(Source: Prepared by the authors, 2023)

### Exploratory factor analysis (EFA)

After analyzing the reliability, the appropriate observed variables form the scale according to the proposed model. the exploratory factor review to evaluate the convergence and distinction of the factor groups, reaffirming the structure of the scales was carried out. KMO and Bartlett’s test results gave a Sig results. = 0.000 < 0.05; high KMO coefficient (0.956 > 0.5). This result indicated that the observed variables in the population were correlated with each other and the EFA factor analysis was very appropriate. The Eigenvalues wasre greater than 1 and with the Principal Axis Factoring extraction method with Promax rotation, factor analysis extracted 6 factors from the observed variables and with the extracted variance of 78.329% (greater than 50%). qualified. The results of exploratory factor analysis showed that observed variables combined into 6 factors. The groups of factors did not change and the observed variables showed a cohesion in the same factor, consistent with the proposed model.

### **Confirmatory factor analysis (CFA)**

The results of CFA analysis showed that, after considering the correlation between the observed variable errors, the model had 671 degrees of freedom, the Chi-squared was 1556,239 ( $p = 0.000$ ); GFI = 0.801 (GFI > 0.8); TLI = 0.933; CFI = 0.940 (TLI, CFI > 0.9); Chi-squared/df = 2.319; RMSEA = 0.066 (CMIN/df < 3, RMSEA < 0.08) and all indicators were satisfactory. Thus, the model fit the data (Hair et al., 2022).

After evaluating the fit of the model and data, unidirectionality and convergence value of the scales were reviewed. As shown in Table 3 all the CFA load weights of the observed variables were greater than 0.5, confirming the unidirectionality and convergence value of the scales used in the model.

### **Composite reliability (CR) and Average Variance Extracted (AVE)**

In addition to Cronbach's Alpha coefficient, the overall reliability of the scale was also expressed through the composite reliability coefficient and the extracted variance. The composite reliability (CR) must be greater than 0.7 and the Average Variance Extracted (AVE) must be greater than 0.5 for the new scale to meet the requirements (Hair et al., 2022).

**Table 3: Summary of Results**

Scale	Code	No. of items	CR	AVE
1. Learning Orientation	LO	4	0.948	0.819
2. Legitimizing	LG	7	0.950	0.732
3. Entrepreneurial Orientation	EO	6	0.933	0.701
4. Performance	PM	6	0.982	0.900
5. Attention-focusing	FO	6	0.936	0.708
6. Strategic decision-making	DE	5	0.953	0.773
7. Monitoring	MO	4	0.902	0.698

(Source: Prepared by the authors, 2023)

As shown in Table 3 all scales met the requirements of Average Variance Extracted ( $AVE \geq 0.5$ ), and Composite Reliability coefficient ( $CR \geq 0.7$ ). On the other hand, Cronbach's Alpha coefficient was greater than 0.5, P value < 0.05, so the correlation coefficient of each concept pair was different from 1 at the 90% confidence level. Therefore, the scales had

discriminant validity and could be trusted. After performing confirmatory factor analysis CFA, the scales completely satisfied the conditions to conduct the SEM linear structural model analysis.

### ***The Structural Equation Modelling (SEM)***

The proposed research model had 7 concepts, which: Monitoring (MO), Legitimizing of Decisions (LG) (aggregated into DM Diagnostic control); Decision Making (DE), Focus on Focus (FO) (combined into IM Interactive control); Learning Orientation (LO), entrepreneurial Orientation (EO) and Performance Orientation (PM). The results of the SEM analysis are shown in Figure 2.

The results of SEM analysis (Figure 2) showed that the model had 678 degrees of freedom with a Chi-square statistical value of 1573,632;  $p=000$ . When adjusting by dividing the Chi-square value by degrees of freedom, this indicator achieved a suitable level ( $2,321 < 3$ ). Other conformity assessment criteria were met: GFI = 0.8 ( $> = 0.8$ ); TLI = 0.933, CFI = 0.939 ( $> 0.9$ ), RMSEA = 0.066 ( $< 0.08$ ). Thus, the research model was consistent with the collected data.

Chi-square=1573.632 ;  
 df=678 ; P=.000;  
 Chi-square/df=2.321 ;  
 GFI=.800 ;  
 TLI=.933 ;  
 CFI=.939 ;  
 RMSEA=.066

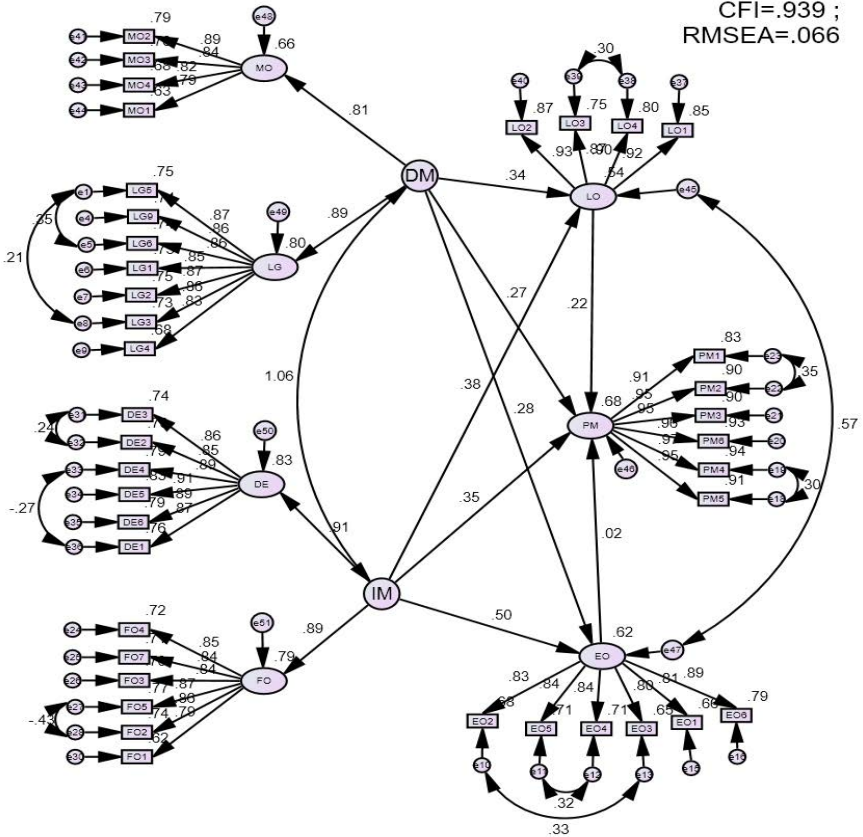


Figure 2: Structural Equation Modelling (SEM) Analysis  
 (Source: Prepared by the authors, 2023)

**Table 4: Results of Testing the Causality in the Model**

Causal path			Unstandardized Coefficients	Standardized Coefficients	Std. Error	t	P
LO	<---	DM	.180	.340	.095	1.898	.058*
EO	<---	DM	.146	.277	.090	1.609	.108
PM	<---	DM	.199	.271	.109	1.829	.067*
LO	<---	IM	.202	.382	.096	2.095	.036**
EO	<---	IM	.262	.498	.093	2.828	.005**
PM	<---	IM	.254	.347	.112	2.260	.024**
PM	<---	EO	.025	.018	.116	.219	.827
PM	<---	LO	.311	.224	.101	3.091	.002**

Legend: \*  $p < 0.1$ ; \*\*  $p < 0.05$   
 (Source: Prepared by the authors, 2023)

The results of testing the causality in the model (Table 4) showed that the relationships were significant with a 90% and 95% confidence level, except DM and EO, EO, and PM. The normalization results of the SEM structure model showed that:

1. Diagnostic control systems (DM) had an impact on performance and learning orientation but had no impact on entrepreneurial orientation.
2. Interactive control systems (IM) had an impact on all performance, learning orientation, and entrepreneurial orientation.
3. Learning orientation had an impact on performance, but entrepreneurial orientation had no impact on performance.
4. The strongest impact level was the interactive control systems on entrepreneurial orientation, learning orientation, and performance (normalized regression coefficients were 0.498; 0.382, and 0.347). After that, it was controlled for the impact on learning orientation and performance (normalized regression coefficients are 0.34 and 0.271). The lowest impact was learning orientation on performance.
4. The strongest impact level was the interactive control systems on entrepreneurial orientation, learning orientation, and performance



(normalized regression coefficients were 0.498; 0.382, and 0.347). Next was the control for the impact on learning orientation and performance (normalized regression coefficients wre 0.34 and 0.271). The lowest impact was learning orientation on performance.

**Table 5: Summary of Hypothesis Tests**

	<b>Hypothesis</b>	<b>Conclusion</b>
H1	Using Diagnostic control systems negatively affects the learning orientation of enterprises.	Accepted, reverse
H2	Using Diagnostic control systems negatively affects the entrepreneurial orientation of enterprises.	Unaccepted
H3	Using interactive control systems positively affects the learning orientation of enterprises.	Accepted
H4	Using interactive control systems positively affects the entrepreneurial orientation of enterprises	Accepted
H5	Learning orientation has a positive impact on the performance of enterprises.	Accepted
H6	Entrepreneurial orientation has a positive impact on the performance of enterprises.	Unaccepted
H7	Using Diagnostic control systems has a positive impact on the performance of enterprises.	Accepted
H8	Using Interactive control systems has a positive impact on the performance of enterprises.	Accepted

(Source: Prepared by the authors, 2023)

Table 5 summarizes the results of testing the hypotheses, in which, hypothesis H2 “Using target MCS negatively affects entrepreneurial “ and H6 “entrepreneurial orientation positively affects performance” were not accepted. The remaining hypotheses were accepted, however, hypothesis H1 was opposite to the original, that is, the diagnostic control systems positively affect the learning orientation of enterprises.

## DISCUSSION

### The Effect of MCS on Strategic Orientation (Learning Orientation and Entrepreneurial Orientation)

The results showed that the use of MCS had a significant, positive impact on learning orientation LO (accepting hypothesis H1 but contrary to prediction) and rejecting H2 when it showed that DM did not affect

entrepreneurial orientation (EO). The result of DM having a positive effect on LO was consistent with previous studies of Simons (2013), Koufteros et al. (2014), Orozco (2016), Shurafa and Mohamed (2016), Pham and Hoang (2019), Rehman et al. (2021) but contrary to the report of Henri (2006a) when no association was found. The results of the study cast doubt on the previous literature on the use of MCS that inhibited the development of organizational competencies. Therefore, the research results once again support the school that MCS has a positive effect on the development of enterprises to help enterprises make better decisions, and operate the learning process. The use of MCS acts as a lever to facilitate enterprise learning.

As for hypothesis H2, the study showed no basis for the impact of DM on EO, consistent with the conclusion of Henri (2006a), and was in contrast to Koufteros et al. (2014), Orozco (2016), Shurafa and Mohamed (2016), Pham and Hoang (2019), Rehman et al. (2021). Entrepreneurial orientation is a concept related to the control systems of the enterprise. The impact of this relationship can be influenced by how a company uses its information systems when combined with strategic resources such as competitiveness and corporate culture (Rehman et al., 2021). Therefore, in this study, the impact of objective control on entrepreneurial orientation was not confirmed, proving that it was still influenced by other potential factors such as business environment, scarcity of resources, and other factors or objective impacts of the Covid-19 epidemic on the business environment. Hypothesis H3 and H4 were both accepted in this study, demonstrating a positive effect of Interactive control systems (IM) on LO and EO. This result is consistent with previous studies that suggested that the use of interactive MCS had an impact on the development of both LO and EO (Henri, 2006a; Koufteros et al., 2014; Orozco, 2016; Rui et al., 2016; Pham & Hoang, 2019; Shurafa & Mohamed, 2016). Explaining this issue, scholars believe that, promoting dialogue and interaction in enterprises, will stimulate creativity and focus the attention of people in enterprises. Therefore, the impact of members in the enterprise through control activities will be meaningful and positive for the learning orientation and exchanges about business strategies.

## **The Impact of MCS on Performance**

Considering the impact of factors on performance, the study showed that there were 3 factors affecting performance, which were diagnostic

control systems (DM), interactive control systems (IM), and learning orientation (LO). Interactive control systems affect the firm's performance the most (normalized regression coefficient is 0.347), followed by objective control (normalized regression coefficient is 0.271) and finally learning orientation (normalized regression coefficient is 0.224). As for entrepreneurial orientation, there was no conclusive basis for the impact on performance. Thus, hypotheses H7, H8, and H5 were accepted, while Hypothesis H6 was rejected.

Learning orientation (LO) had a direct impact on the performance of Vietnamese enterprises (Pham & Hoang, 2019). For enterprises, awareness of training towards sustainable development was appropriate. Previous studies have argued that through the use of MCS, managers seeking understanding, and establishing programs and action plans as well as new initiatives to implement business strategies, thereby guiding enterprises to study. The results of this study agree with the previous studies of Khan et al., (2019), and Bhatti et al., (2020) but were in contrast with the study of Orozco (2016) when no basis was found to support the impact of learning orientation on performance. While small businesses aim for short-term and unsustainable development, they do not invest in human training.

Entrepreneurial orientation (EO) acted as a mediator for the relationship between MCS usage and firm performance. In this study, the results showed that there was no basis for assessing the impact of EO on performance (PM). Hypothesis H6 was rejected. This result is similar to Orozco's (2016) study for large enterprises and vice versa for small enterprises. Several studies emphasized the importance of EO as a determinant of business performance (Ripolles & Blesa, 2005; Obeidat et al., 2017; Rehman et al., 2018; Shurafa and Mohamed, 2016; Khan et al., 2019; Bhatti et al., 2020; Ngo, 2021). However, many studies suggested that the relationship between EO and corporate performance was also influenced by the internal characteristics of the company. Wiklund and Shepherd (2003) also indicated that the relationship between EO and performance can be more complex than considered alone; therefore, it is important to assess the changing effects of a company's internal characteristics, such as access to human resources or external factors (uncertainty or technology). In addition, there are systematic differences in MCS between firms with different competitive positions. These are also hidden variables that can affect a business orientation, thereby affecting the performance of enterprises.

Previous studies have shown that MCS is important not only for strategy implementation but also for strategy formulation. The MCS can be the catalyst for all stages of a firm's strategic process and provides the information needed to execute the strategy (Ittner et al., 2003; Rehman et al., 2019; Rotzel et al., 2019). However, Orozco (2016) showed that interactive control had no direct impact on firm performance. This is partly explained by the indirect effect of using interaction control and objective control to increase training and business orientation (LO and EO), which, in turn, increases performance. Thus, this result is also consistent when analyzing the impact of the mediation of strategic orientation (LO & EO) between different uses of MCS on the performance of enterprises.

## CONCLUSION

The research model was set up to evaluate the impact of MCS (Diagnostic control systems and Interactive control systems) on strategic orientation (learning and entrepreneur) and performance. This model was implemented with a sample of 308 valid answer sheets from accountants, managers, general directors, and directors of enterprises. With the obtained results, this study has positive contributions for practice. Both Diagnostic and Interactive MCS uses had a positive impact on performance. Only Interactive MCS use generated a significant, positive, and direct effect on Entrepreneurial Orientation. Learning Orientation had a direct impact on performance but Entrepreneurial Orientation showed not enough evidence to evaluate the effect.

In terms of academics, this study complements the contribution of the MCS Theory 's for firm performance as well as the mediating role of a firm's capabilities to performance. It is also a useful reference for related studies on the scale of MCS, capabilities, and firm performance. It provides further evidence for the positive impact of MCS on performance, including the mediating role of firm capabilities. This research fills a gap on this issue in developing countries.

In terms of managerial implications, the results generate important points for managers on the relationship between MCS, capabilities, and performance. These results can be useful for Vietnamese enterprises

to improve their performance by using MCS, learning orientation, and entrepreneurial orientation. Focusing on MCS will promote the performance of enterprises, towards achieving strategic goals. Efforts in building capabilities are critical to improving performance. Senior managers should further pay attention to ensuring strategies that enhance the learning and entrepreneurial orientation of the enterprise. Implementing a strategy to improve the capabilities of the business will help the business achieve sustainable performance.

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