RESEARCH ON THE DETERMINANTS AFFECTING THE EFFECTIVENESS OF INTERNAL CONTROL SYSTEMS IN SMALL AND MEDIUM-SIZED ENTERPRISES IN DA NANG CITY

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Abstract

This study aims to evaluate the determinants influencing the effectiveness of internal control systems (ICS) in small and medium-sized enterprises (SMEs) within Da Nang City (Da Nang), based on the COSO 2013 theoretical framework that comprises five components: control environment, risk assessment, control activities, information and communication, and monitoring activities. The author employed a mixed-methods approach by combining qualitative and quantitative research, surveying 245 enterprises with managers and accounting–finance personnel as respondents.

The data were processed using SPSS 27 and SmartPLS 3.0 software. The results reveal that all five factors significantly influence the effectiveness of the ICS, with the monitoring component exerting the strongest effect, followed by information and communication, control environment, control activities, and risk assessment. The study also proposes managerial implications to assist SMEs in enhancing their ICS, thereby improving governance capacity, risk responsiveness, and operational efficiency in a volatile economic environment.

Keywords: Internal Control, Effectiveness, COSO 2013, Small and Medium-sized Enterprises, Da Nang City

1. Introduction

Da Nang, as one of the leading economic, tourism, and technology development centers in Vietnam, is characterized by over 90% SMEs. These SMEs play a vital role in the city's economic structure, contributing significantly to the sustainable development of both the local and national economy.

However, SMEs in Da Nang face numerous risks and challenges, especially in the aftermath of the COVID-19 pandemic. The pandemic has imposed severe financial hardships and demanded rapid adaptation to the changing business environment. Consequently, SMEs require a robust ICS to manage risks, minimize potential issues, and enhance their responsiveness when crises occur.

Yet, many enterprises continue to struggle with the application of the COSO theory and the establishment of an effective ICS. This may stem from a lack of awareness regarding the importance of ICS, as well as limited resources and insufficient time to implement such systems.

For these reasons, the author has investigated the determinants affecting the effectiveness of ICS in SMEs in Da Nang with the purpose of measuring the influence of these factors on the effectiveness of ICS in SMEs. Concurrently, the study proposes managerial solutions to support SMEs in constructing more effective ICS, thereby enhancing their competitiveness and fostering the sustainable development of Da Nang's economy.

2. Theoretical Framework

According to COSO 2013 (i.e., the Committee of Sponsoring Organizations of the Treadway Commission's COSO 2013 framework), the ICS is a process influenced by the Board of Directors, executive management, and employees. It is established to provide reasonable assurance that the organization's operational, reporting, and compliance objectives are achieved. Under COSO 2013, the ICS comprises five components: (1) Control Environment; (2) Risk Assessment; (3) Control Activities; (4) Information and Communication; (5) Monitoring Activities

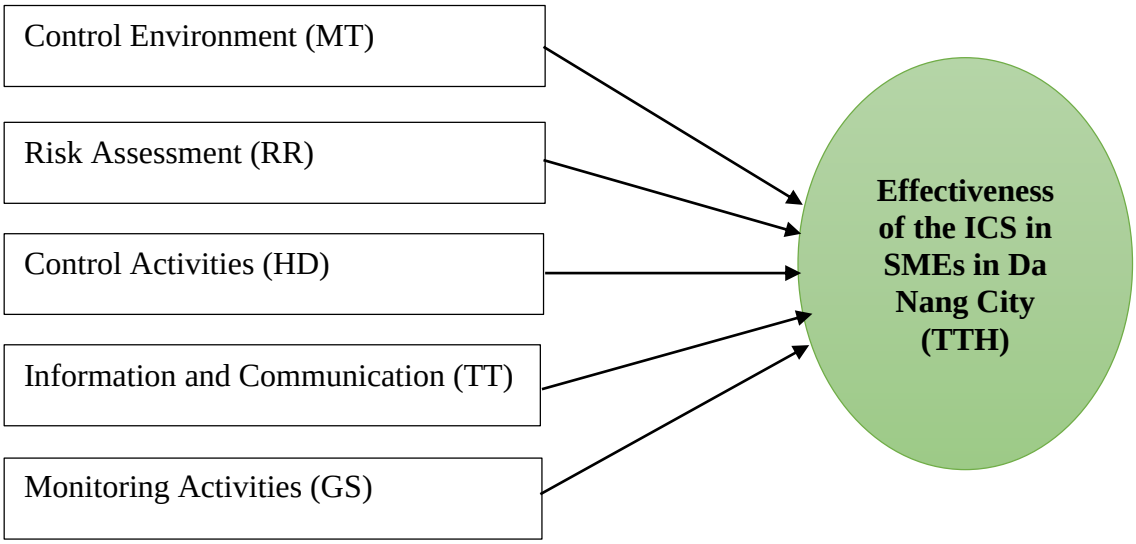
- **Control Environment:** The control environment is influenced by various internal and external factors, including the company's history and development, its core values, market conditions, competition, governmental laws and policies, and organizational regulations. It is defined through standards, procedures, and the organizational structure that directs individuals at various levels to perform their duties. All pertinent information is channeled into the ICS to support decision-making. The control environment establishes a framework that facilitates risk assessment, helps achieve the organization's set objectives, and enables an evaluation of the ICS's effectiveness, the efficient use of information and information systems, and the performance of monitoring activities.

- **Risk Assessment:** Every organization, regardless of its size, management structure, nature, or field of operation, faces risks at multiple levels. Risk is defined as the possibility that an event may occur which could negatively affect the organization's set objectives. The risk assessment process involves flexible and repeated procedures to identify and evaluate risks. Risks affecting the organization's objectives, stemming from various parts of the organization, are considered in relation to the entity's risk tolerance.
- **Control Activities:** Control activities consist of the policies and procedures put in place to ensure that management's directives are executed to mitigate risks. They are performed at all levels of the organization, across various stages of the business process, and are often supported by technological systems. Control activities can be preventive or detective in nature and include several manual or automated processes such as authorizations, approvals, verifications, and performance reviews.
- **Information and Communication:** Information and communication refer to the critical data necessary for the organization to carry out its internal control responsibilities. Management is responsible for gathering, processing, and distributing relevant information—originating from both internal and external sources—to support the functions of the internal control components. Communication is an ongoing and repetitive process of providing, sharing, and collecting necessary information.
- **Monitoring Activities:** Monitoring activities encompass the continuous or separate evaluations used to assess whether each of the five components of the ICS is present and functioning properly. Organizations employ ongoing monitoring procedures, periodic separate evaluations, or a combination of both to ensure that the internal control components continue to operate effectively.
- **Effectiveness of the ICS:** According to COSO 2013, the effectiveness of the ICS is assessed by examining the performance of its five constituent components and ensuring that the following three objectives are reasonably achieved:

✓ Operational Objectives: These pertain to the efficiency and effectiveness of operations, including achieving operational and financial goals, safeguarding assets against loss, and ensuring the effective utilization of organizational resources.
✓ Reporting Objectives: These relate to internal and external financial reporting that must be reliable, timely, transparent, and conform to the criteria established by management, standard-setting bodies, or organizational policies.
✓ Compliance Objectives: These involve adherence to applicable laws and regulations that the organization is required to follow.

3. Research Model

Based on the aforementioned theoretical framework and previous studies, the author has developed a proposed research model to examine the determinants affecting the effectiveness of the ICS in SMEs in Da Nang, as shown in Figure 1.



4. Research Methodology

Based on a combination of relevant theories and previous studies, the author developed a research model to identify the determinants affecting the ICS in enterprises in Da Nang. By employing both qualitative and quantitative research methods, the author tested the model and constructed a complete measurement scale to initiate the survey and data collection through a designed questionnaire.

A 5-point Likert scale was used, with the following levels: (1) Strongly Disagree; (2) Disagree; (3) Neutral; (4) Agree; (5) Strongly Agree. The survey was administered to respondents including General Directors, Directors, Department Heads, Chief Accountants, accounting personnel in charge, and other staff in SMEs in Da Nang. Out of 260 questionnaires collected, 15 were deemed invalid, leaving 245 valid responses (conducted in January 2025). The collected data were analyzed using SPSS 27 and SMART PLS 3.0 software to assess the impact of the determinants on the effectiveness of the ICS in SMEs in Da Nang.

5. Research Results

5.1 Cronbach's Alpha Reliability Test

The Cronbach's Alpha reliability test was conducted to evaluate the reliability of the measurement scales. The criteria that must be met include: the Cronbach's Alpha coefficient should be ≥ 0.6 and each measurement item must have a corrected item-total correlation greater than 0.3.

Dependent Variable

Table 1. Cronbach's Alpha Reliability Test for the Effectiveness Scale

Measurement Item	Mean if Item Deleted	Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
THH1	13.11	4.664	0.903	0.937
THH2	13.14	4.557	0.871	0.948
THH3	13.10	4.736	0.898	0.939
THH4	13.11	4.735	0.892	0.941

Since Cronbach's Alpha is 0.837 (which is > 0.6) and the corrected item-total correlations range from 0.871 to 0.903 (all > 0.3), the scale meets the required reliability.

Independent Variables

First Round Reliability Test

Table 2. Cronbach's Alpha Reliability Test for Independent Variable Scales (Round 1)

Measurement Item	Mean if Item Deleted	Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Control Environment (MT): 0.936				
MT1	29.30	35.113	0.774	0.928
MT2	29.27	35.462	0.746	0.930
MT3	29.22	35.927	0.819	0.925
MT4	29.13	35.084	0.823	0.925
MT5	29.20	35.884	0.714	0.933
MT6	29.20	35.273	0.802	0.926
MT7	29.11	35.372	0.794	0.927
MT8	29.18	35.962	0.737	0.931
Risk Assessment (RR): 0.766				
RR1	13.20	6.420	0.725	0.650
RR2	13.20	6.456	0.599	0.639
RR3	13.23	6.540	0.699	0.661
RR4	13.16	6.733	0.705	0.662
RR5	15.85	10.899	-0.133	0.893
Control activities (HD): 0.924				
HD 1	11.37	8.857	0.889	0.889
HD 2	11.37	8.979	0.887	0.887
HD 3	11.28	9.513	0.921	0.921

HD 4	11.34	9.184	0.905	0.905
Information and communication systems (TT): 0.789				
TT1	11.02	6.311	0.837	0.610
TT2	11.05	6.416	0.778	0.641
TT3	11.18	9.122	0.122	0.950
TT4	11.00	6.802	0.802	0.632
Monitoring Activities (GS): 0.932				
GS1	10.79	11.670	0.840	0.912
GS2	10.88	11.703	0.929	0.915
GS3	10.84	11.850	0.807	0.922
GS4	10.84	11.271	0.886	0.896

Round 2 Reliability Test

After the first round. items with corrected item-total correlations below 0.3 (i.e. RR5 and TT3) were removed. The revised reliability test yields:

Table 3. Cronbach's Alpha Reliability Test for Independent Variable Scales (Round 2)

Measurement Item	**Mean if Item Deleted**	**Variance if Item Deleted**	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
Control Environment (MT): 0.936				
MT1	29.30	35.113	0.774	0.928
MT2	29.27	35.462	0.746	0.930
MT3	29.22	35.927	0.819	0.925
MT4	29.13	35.084	0.823	0.925
MT5	29.20	35.884	0.714	0.933
MT6	29.20	35.273	0.802	0.926
MT7	29.11	35.372	0.794	0.927
MT8	29.18	35.962	0.737	0.931
Risk Assessment (RR): 0.893				
RR1	11.89	6.920	0.751	0.866
RR2	11.89	6.221	0.815	0.843
RR3	11.92	6.310	0.751	0.866
RR4	11.85	6.580	0.737	0.871
Control activities (HD): 0.924				
HD 1	11.37	8.857	0.889	0.889
HD 2	11.37	8.979	0.887	0.887
HD 3	11.28	9.513	0.921	0.921
HD 4	11.34	9.184	0.905	0.905
Information and communication systems (TT): 0.950				

TT1	7.45	4.470	0.921	0.908
TT2	7.48	4.431	0.892	0.931
TT4	7.44	4.690	0.875	0.943
Monitoring Activities (GS): 0.932				
GS1	10.79	11.670	0.840	0.912
GS2	10.88	11.703	0.929	0.915
GS3	10.84	11.850	0.807	0.922
GS4	10.84	11.271	0.886	0.896

After the second analysis round. all items exhibit Cronbach's Alpha coefficients greater than 0.6 and corrected item-total correlations above 0.3. Hence. all remaining items are retained for the subsequent Exploratory Factor Analysis (EFA).

5.2 Exploratory Factor Analysis (EFA)

The criteria for conducting the Exploratory Factor Analysis (EFA) include:

- Kaiser-Meyer-Olkin (KMO) test > 0.5
- Bartlett's test of sphericity: Sig value < 0.05
- Number of extracted factors equals 1 (for each grouping)
- Total Variance Extracted (TVE) > 50%
- Factor loadings of the items greater than 0.5

Table 4. EFA Results

Variable name	**Factor Loading**				
	MT	**RR**	**GS**	**HD**	**TT**
MT4	0.870				
MT3	0.868				
MT6	0.856				
MT7	0.847				
MT1	0.832				
MT2	0.806				
MT8	0.795				
MT5	0.779				
GS4		0.934			
GS1		0.903			
GS2		0.901			
GS3		0.884			
HD 2			0.920		

HD 1			0.916		
HD 4			0.894		
HD 3			0.859		
RR2				0.898	
RR3				0.864	
RR1				0.859	
RR4				0.847	
TT1					0.959
TT2					0.946
TT4					0.934
Eigenvalues	5.623	4.197	2.921	2.838	2.366
% of variance extracted	24.163 %	38.662 %	52.892 %	66 155 %	78.021 %
Cumulative variance	24.163 %	38.662 %	52.892 %	66.155 %	78.021 %
KMO = 0.820					
Bartlett's test	Chi square ($\chi 2$) = 4729.221				
	Degrees of freedom (df) = 253				
	Significance level = < 0.00 1				

The analysis results reveal that five factors were extracted from 23 observed items. All factor loadings exceed 0.5. each factor explains more than 50% of the variance. and the Eigenvalues of all factors are greater than 1.

5.3 Measurement Evaluation

Testing for Multicollinearity (VIF)

According to Hair et al (2014). the Variance Inflation Factor (VIF) is used to assess multicollinearity. A VIF value below 5 confirms that multicollinearity is not a concern and that it is appropriate to proceed with further testing.

Table 5. VIF Test Results

	GS	**HD**	**MT**	**RR**	**THH**	**TT**
GS					1.054	
HD					1.038	
MT					1.010	

RR					1.019	
THH						
TT					1.049	

Reliability and Convergent Validity Test

As per Hair et al. (2014). to confirm the reliability of the scales. the study uses the Composite Reliability (CR) coefficient and requires CR > 0.7. Additionally. an Average Variance Extracted (AVE) > 0.5 indicates acceptable convergent validity (Fornell & Larcker. 1981).

Table 6. Reliability and Convergent Validity Test Results

	Cronbach's Alpha	**rho_A**	**Composite Reliability**	**Average Variance Extracted (AVE)**
GS	0.932	0.941	0.952	0.831
HD	0.924	0.931	0.946	0.814
MT	0.937	0.975	0.944	0.677
RR	0.893	0.926	0.914	0.728
THH	0.956	0.963	0.968	0.882
TT	0.950	0.955	0.968	0.910

Testing for Model Fit

According to Hu and Bentler (1999). the Standardized Root Mean Square Residual (SRMR) is employed to assess model fit. An SRMR value below 0.08 is acceptable. Henseler et al. (2015) consider SRMR as a goodness-of-fit indicator in PLS-SEM. to evaluate the deviation of model estimates.

Table 7. PLS-SEM Model Fit Test Results

	Saturated Model	**Estimated Model**
SRMR	0.067	0.067
d_ULS	1.445	1.445
d_G	0.607	0.607
Chi-Square	835.741	835.741
NFI	0.675	0.675

Discriminant Validity Test (Fornell-Larcker/HTMT)

Table 8. Fornell-Larcker (HTMT) Discriminant Validity Test Results

	GS	HD	MT	RR	THH	TT
GS						
HD	0.136					
MT	0.035	0.063				
RR	0.113	0.092	0.087			
THH	0.253	0.046	0.093	0.064		
TT	0.191	0.149	0.038	0.042	0.235	

5.4 Structural Model Evaluation

Figure 2. PLS-SEM Structural Model

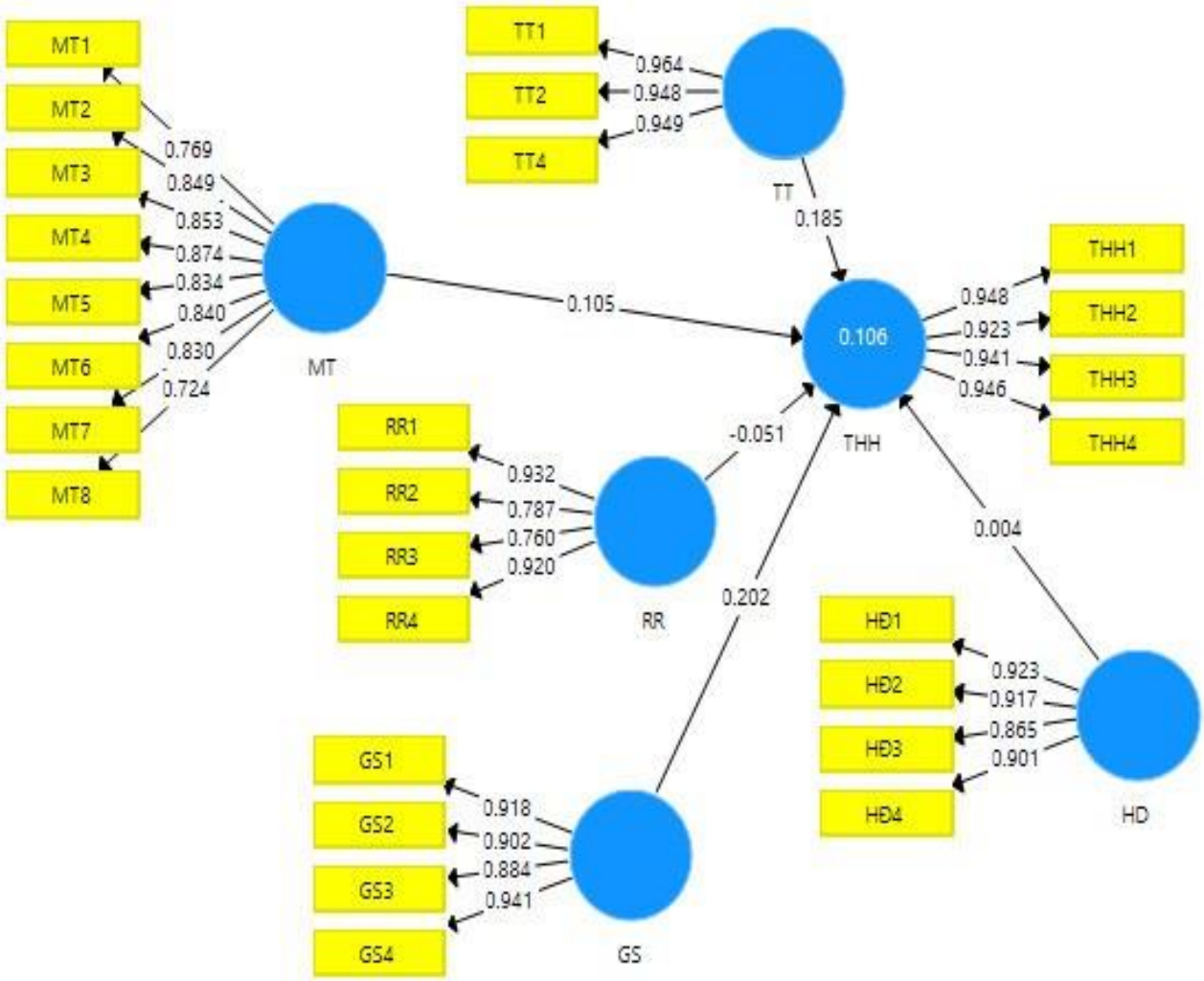


Table 9. Structural Model Estimation Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
GS -> THH	0.202	0.204	0.055	3.663	0.000
HD -> THH	0.004	0.098	0.063	2.112	0.026
MT -> THH	0.105	0.159	0.067	2.162	0.031
RR -> THH	-0.051	-0.076	0.091	3.149	0.021
TT -> THH	0.185	0.217	0.064	5.003	0.000

Based on the above results. all independent variables significantly affect the effectiveness of the ICS (all p-values are less than 0.05).

Thus. all research hypotheses are supported.

Table 10. Hypothesis Testing Results

Hypothesis	Hypothesized Relationship	Result
H1	The internal control environment has a positive effect on the effectiveness of the internal control system in SMEs.	Accepted
H2	Risk assessment has a positive effect on the effectiveness of the internal control system in SMEs.	Accepted
H3	Control activities have a positive effect on the effectiveness of the internal control system in SMEs.	Accepted
H4	The information and communication system has a positive effect on the effectiveness of the internal control system in SMEs.	Accepted
H5	Monitoring activities has a positive effect on the effectiveness of the internal control system in SMEs.	Accepted

6. Conclusion and Managerial Implications

Based on the research results regarding the determinants affecting the effectiveness of the ICS in SMEs in Da Nang, the following conclusions are drawn:

Using a 5-point Likert scale (with response values ranging from 1 to 5), the study captured the objective opinions of the survey respondents on the factors impacting the effectiveness of the ICS in Da Nang's SMEs, thereby providing the foundation for the quantitative analysis.

The Cronbach's Alpha coefficients obtained indicate that the reliability of the measurement scales used to assess the components of the five constructs is greater than 0.6. This confirms that the scales are appropriate for testing the theoretical model of the study. The Exploratory

Factor Analysis (EFA) extracted five convergent factors, with all Eigenvalues exceeding 1 and accounting for 7.8% of the variance.

The theoretical model testing shows that the effectiveness of the ICS in SMEs in Da Nang is influenced by five determinants. Specifically, the results indicate that the **Monitoring Activities** component has the strongest positive impact on the effectiveness of the ICS (β = 0.202), followed by the **Information and Communication** component (β = 0.185), the **Control Environment** (β = 0.105), the **Control Activities** (β = 0.004), and finally the **Risk Assessment** (β = −0.051). All hypotheses (H1, H2, H3, H4, and H5) are statistically supported. To help SMEs in Da Nang recognize the importance of selecting appropriate factors to achieve high ICS effectiveness. the author proposes the following managerial implications:

- **Control Environment:** Enhance the quality of human resources through transparent recruitment, clear incentive policies, and advanced training. Clearly delineate roles, responsibilities, and authority among departments, and establish an ethical code of conduct within the organization.
- **Risk Assessment:** Organizations should regularly analyze and evaluate potential risks, and hold periodic meetings to develop effective response solutions. Additionally, management capability should be strengthened through in-depth training on risk analysis.
- **Control Activities:** Leverage technology to manage data, ensuring both data security and integrity. Ensure that the delegation of authority and responsibilities is strictly adhered to across all departments.
- **Information and Communication:** Encourage the use of specialized accounting software instead of Excel to improve accuracy and management efficiency. Companies should also develop a culture of information sharing via email to ensure transparency and proper record-keeping.
- **Monitoring Activities:** Establish a schedule for periodic inspections and promote cross-departmental monitoring. Additionally, conduct regular evaluations to sustain and continuously improve the ICS over time.

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