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Factors Affecting the Internal Control System: A Case Study of Chemical Enterprises in Vietnam*

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Abstract

The article analyzes the impact of factors affecting the internal control system of chemical enterprises in Vietnam, providing more empirical evidence on factors affecting the system of internal control. Research data is collected in the form of face-to-face interviews and email interviews with managers and employees working in different positions, managers at all levels, chief accountants, and accountants of 52 chemical enterprises in Vietnam. The survey results collected 310 questionnaires. After eliminating the invalid questionnaires due to many blank cells, the authors chose to use 297 questionnaires. Quantitative research was carried out with SPSS 25 software. Research results show that Business Strategy, Organizational Structure, Organization's perception of the instability of the external environment, and Organizational culture are the factors that positively affect the internal control system of chemical enterprises. This can be explained that, for chemical enterprises, Business strategy, Organizational structure, Organization's perception of the instability of the external environment, and Good organizational culture will positively impact the internal control system of chemical enterprises. Based on the research results, the authors have proposed recommendations to enhance the effectiveness of the internal control system of chemical enterprises in Vietnam, thereby contributing to improving the performance of enterprises in the chemical Vietnamese.

Keywords: Internal Control System, Chemical Enterprises, Vietnam

JEL Classification Code: M40, M41

1. Introduction

Building an internal control system is one of the very important measures because they help prevent and detect

mistakes and weaknesses to minimize losses and improve efficiency to help the organization achieve its goals. An internal control system is a process, governed by an entity's managers and all employees, designed to provide reasonable assurance that the three objectives above will be achieved. The topic of internal control and the influence of internal control on the effectiveness and efficiency of operations has been studied around the world by Ge and McVay (2005), Doyle et al. (2007), Ashbaugh-Skaife et al. (2006), Bryan and Lilien (2005), Shenkir and Walker (2006), Hammersley et al. (2008), Zulfikar et al. (2021), Pham (2021), and Hardiningsih et al. (2021).

Vietnam's chemical industry plays a key role in economic development as it provides inputs for a number of essential industries. Currently, Vietnam has fully developed sub-sectors of the chemical industry including Fertilizers and other compounds, soaps and detergents, primary plastics and synthetic rubbers, basic chemicals, paints and inks, pesticides, man-made fibers, and other chemical products. However, Vietnam's chemical industry has not yet developed to meet the increasing domestic demand. Compared with the chemical industry of other countries, the growth index

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of Vietnam's chemical industry is relatively lower. The manufacturing index of chemicals and chemical products is only 6.5% per year while the industry's inventory ratio is always increasing. The output of the chemical industry is estimated to account for only about 10% of the total industrial output of the country. With a modest growth rate and share, the chemical industry will face the challenge of rapidly increasing input demand averaging 9–10% per year in the packaging and pharmaceutical industries.

In corporate governance, control activities are especially important. Control activities help administrators to inspect and adjust management activities in various fields. The internal control system in enterprises is affected by many factors, however, most Vietnamese chemical enterprises do not really understand how to design an internal control system. Therefore, most chemical enterprises build their internal control system mechanically and theoretically. Also, some enterprises copy the internal control system of other enterprises, leading to non-conformity and ineffectiveness in the organization of the internal control system.

This study aims to examine the factors affecting the internal control system of enterprises in the chemical industry in Vietnam, thereby making some recommendations for enterprises to improve the effectiveness of internal control, contributing to improving the production and business efficiency of Vietnamese chemical enterprises.

2. Literature Review

Internal control studies can include Chenhall (2013), Henri (2006), Auzair (2011), Jokipii (2010), and Ge and McVay (2005). Chenhall (2013) provided a critical review of findings from contingency-based studies over the past 20 years, deriving a series of propositions relating management control systems (MCS) to the organizational context. The paper examined issues related to the purpose of MCS, the elements of MCS, the meaning and measurement of contextual variables, and issues concerning theory development. A final section considered the possibility that contingency-based ideas could encompass insights from a variety of theories to help understand MCS within its organizational context.

Henri (2006) examined, from a resource-based perspective, the relationships between the use of management control systems (MCS) and organizational capabilities. More specifically, the study focused on the diagnostic and interactive uses of one important aspect of MCS, namely performance measurement systems (PMS), and four capabilities leading to strategic choices (i.e., market orientation, entrepreneurship, innovativeness, and organizational learning). The results suggested that an interactive use of PMS fosters the four capabilities by focusing organizational attention on strategic priorities

and stimulating dialogue. Also, by creating constraints to ensure compliance with orders, the diagnostic use of PMS exerts negative pressure on these capabilities. Furthermore, some evidence suggested the influence of dynamic tension resulting from the balanced use of PMS in a diagnostic and interactive fashion on capabilities and performance.

Auzair (2011) investigated the use of Management Control Systems (MCS) in Malaysian hotels. MCS was conceptualized as Action/Results controls, Formal/Informal, Tight/Loose controls, Restricted/Flexible, Impersonal/Interpersonal controls, and Financial/Non-Financial information to represent management control bureaucracy. The framework also recognizes business strategy and external environment (perceived environmental uncertainty - PEU) as factors associated with organizations' choice of MCS. A survey methodology was employed. Questionnaires were administered to the top management of the hotels in Malaysia. The findings indicated that hotels pursuing cost leadership strategy were positively associated with a more bureaucratic MCS while hotels pursuing differentiation strategy were associated with less bureaucratic MCS. PEU is negatively associated with less bureaucratic MCS which indicates tighter control when the environment is perceived as unpredictable. Overall, the data demonstrated that the type of MCS utilized by hotels is associated with the business strategy pursuit and the Jokipii (2010) examined which contingency characteristics firms choose to adapt their internal control structure and whether it results in a more favorable assessment of the effectiveness of control by the management. While the components of internal control have been examined individually in the control literature, this paper attempted to shed light on internal control and place it in a broader context. The results, derived from a web-based survey of 741 Finnish firms, indicated that firms adapt their internal control structure to deal with environmental uncertainty and to achieve observed control effectiveness. Also, the strategy has statistically significant effects on the internal control structure.

Ge and McVay (2005) focused on a sample of 261 companies that disclosed at least one material weakness in internal control in their SEC filings after the effective date of the Sarbanes-Oxley Act of 2002. Based on the descriptive material weakness disclosures provided by management, they found that poor internal control is usually related to an insufficient commitment of resources for accounting controls. Material weaknesses in internal control tend to be related to deficient revenue-recognition policies, lack of segregation of duties, deficiencies in the period-end reporting process and accounting policies, and inappropriate account reconciliation. The most common account-specific material weaknesses occur in the current accrual accounts, such as the accounts receivable and inventory accounts. Material weakness disclosures by management also

frequently describe internal control problems in complex accounts, such as the derivative and income tax accounts. Statistical analysis results showed that disclosing a material weakness is positively associated with business complexity (e.g., multiple segments and foreign currency), negatively associated with firm size (e.g., market capitalization), and negatively associated with firm profitability (e.g., return on assets).

3. Research Methods and Models

3.1. Research Methods

The scope of the study is all chemical enterprises in Vietnam. Research data is collected in the form of face-to-face interviews and email interviews with managers and employees working in different positions, managers at all levels, chief accountants, and accountants of 52 chemical enterprises in Vietnam. The survey results collected 310 questionnaires. After eliminating the invalid questionnaires due to many blank cells, the authors chose to use 297 questionnaires.

A study of chemical firms using a questionnaire was conducted to analyze the impact of various factors on the internal control system. The internal control system, Business strategy, Organizational structure, Organization’s perception of the instability of the external environment, and Organizational culture, were measured on a five-level Likert scale - Very good, good, average, not good, weak. A type of psychometric response scale in which responders specify their level of agreement to a statement typically in five points: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree. The 5-level Likert scale is familiarly used in many studies, so the authors also quantify each factor according to five levels. Quantitative research was carried out with the software SPSS 25.

3.2. Research Model and Research Hypothesis

From the research overview, the proposed research model is as follows:

$$ICS = \beta_1 + \beta_2 \times BS + \beta_3 \times OS + \beta_4 \times PIE + \beta_5 \times OC + E$$

For assessing the impact of factors on the internal control system of chemical enterprises, the study uses four detailed hypotheses as follows:

H1: Business strategy has a positive relationship with the internal control system of chemical enterprises in Vietnam.

H2: Organizational structure has a positive relationship with the internal control system of chemical enterprises in Vietnam.

H3: Organizational perception of the instability of the external environment has a positive relationship with the internal control system of chemical enterprises in Vietnam.

H4: Organizational culture has a positive relationship with the internal control system of chemical enterprises in Vietnam.

4. Research Results

4.1. Testing the Scale

The results of evaluating the reliability of the scale by Cronbach’s Alpha show that the scales have reliability greater than 0.6 and the correlation coefficient of the total variable is greater than 0.3. All scales satisfy the conditions for exploratory factor analysis (EFA). The reliability of the scales is summed up in the table below (Table 1).

4.2. Exploratory Factor Analysis

Factor analysis was performed with Principle Component extraction, Varimax rotation for the dependent

Table 1: Scale Test Results

No	Variable Name	Symbol	Number of Observed Variables	Cronbach’s Alpha	Smallest Total Variable Correlation Coefficient
1	Internal control system	ICS	5	0.645	0.368
2	Business strategy	BS	4	0.745	0.492
3	Organizational structure	OS	6	0.807	0.485
4	Organizational perception of instability of the external environment	PIE	5	0.754	0.418
5	Organizational culture	OC	4	0.743	0.452

observed variable. The results show that the coefficient $KMO = 0.846$ (condition > 0.5); Significance level and Barlett test = 0.000 (condition < 0.05), which shows that EFA analysis is appropriate. The total variance extracted is $54.661\% > 50\%$, and factor loading factors are all greater than 0.5, so they are satisfactory. The official scale after EFA processing includes 19 observed variables as proposed (Table 2).

4.3. Regression Analysis

Adjusted R^2 reflects the influence of the independent variables on the variation of the dependent variable. In this

Table 2: EFA Exploratory Factor Analysis

	Factors			
	1	2	3	4
OS2	0.765			
OS1	0.763			
OS4	0.736			
OS6	0.669			
OS3	0.664			
OS5	0.627			
PIE2		0.749		
PIE3		0.741		
PIE4		0.678		
PIE5		0.636		
PIE1		0.512		
OC2			0.751	
OC4			0.747	
OC3			0.744	
OC1			0.613	
BS2				0.783
BS4				0.780
BS1				0.649
BS3				0.540

Table 3: Results Statistical Value Factors

Model	Summary Model				
	R	R Squared	Adjusted R^2	Estimated Error of Standard Deviation	Durbin Coefficient–Watso
1	0.755 ^a	0.570	0.562	0.36731	1.836

^aPredictors: (Constant), OC, OS, PIE, BS; ^bDependent Variable: The ICS.

case, 4 factors (Business Strategy, Organizational Structure, Organization's perception of the instability of the external environment, and Organizational culture) affect 56.2% of the internal control system of enterprises in the chemical industry. The Durbin-Watson coefficient is 1.836, and range from 1.5 to 2.5, so there is no first-order sequence autocorrelation (Table 3).

To check if the regression model is consistent with data sets collected and is relevant or not, the authors continue testing the suitability of the model through accreditation ANOVA as follows (Table 4).

Sig test $F = 0.000 < 0.05$, therefore, the regression model evaluates the influence of 4 factors (Business strategy, Organizational structure, Organization's perception of the instability of the external environment, and Organizational culture) on the internal control system of chemical enterprises in Vietnam.

The model's F -statistic has a Sig value. = $0.000 < 0.05$, which shows that the model fits the data set and can be generalized. VIF coefficients are all less than 2, so there is no multicollinearity between components that do not appear in the research model.

In the table below (Table 5), regression results showing the influence of these factors on the internal control system of Vietnamese chemical firms are shown:

Value accreditation sig for each independent variable < 0.05 : all variables are significant in the model. Beta coefficients are positive: all variables have a positive effect on the dependent variable

The regression model is written as follows:

$$ICS = 1.133 + 0.229 \times BS + 0.118 \times OS + 0.179 \times PIE + 0.387 \times OC + E$$

Based on the research results, we can draw some conclusions:

The organizational culture component has a higher standardized Beta coefficient (0.387) than the other factors. The normalized beta coefficients of the remaining factors are Business strategy (0.229), Organizational structure (0.118), and Organization's perception of the instability of the external environment (0.179). Thus, Business Strategy, Organizational Structure, Organization's perception of the

Table 4: Testing the Fit of the Model (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32.783	4	8.196	60.747	0.000 ^b
	Residual	36.967	274	0.135		
	Total	69.751	278			

Table 5: Multiple Regression Results

Model Unnormalized		Coefficients						
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Multicollinear Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.133	0.190		5.948	0.000		
	BS	0.162	0.039	0.229	4.195	0.000	0.651	1.535
	OS	0.092	0.036	0.118	2.552	0.001	0.899	1.112
	PIE	0.146	0.043	0.179	3.371	0.001	0.684	1.462
	OC	0.301	0.040	0.387	7.552	0.000	0.737	1.357

instability of the external environment, and Organizational culture are factors that positively affect the internal control system of chemical enterprises in Vietnam (Figure 1).

5. Recommendations

From the results of the study on the impact of the above factors on the internal control system of chemical enterprises in Vietnam, the authors give some recommendations to strengthen the system of internal control, thereby contributing to improving the operational efficiency of chemical enterprises.

The internal control system is influenced by the type of business strategy the company chooses. Different business strategies tend to use control systems in different ways. Each type of business strategy will have a different degree of impact on the constituent elements of the internal control system. Therefore, Vietnamese chemical enterprises need to pay attention to the level of impact of each component on the internal control system to be consistent with the business strategy that the company is using.

In a company with a large degree of hierarchy, the control activities are often more complex so more control is needed. This allows employees to participate in the decision-making process that will help the organization respond quickly to the authorities. However, when the decision-maker is unskilled, there is a risk, and this necessitates more control. As a result, the parts that make

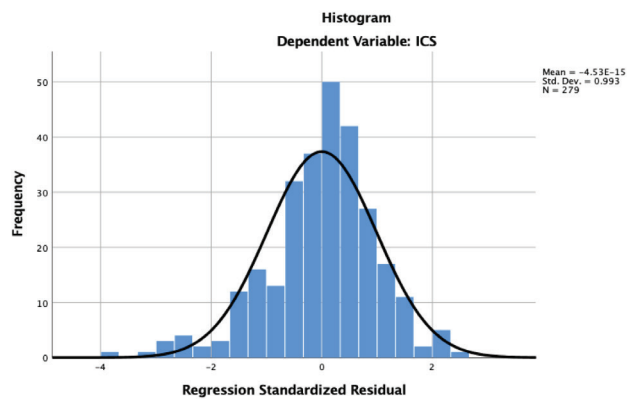


Figure 1: Standardized Residual Frequency Chart

up the internal control system will have to be changed based on the type of organizational structure.

The higher the organization’s awareness of the instability of the external environment, the more information processing is required, so the company needs to pay attention to the information and communication factors. The uncertainty of the external environment means that the company lacks information for planning products and services, assessing customer needs, and creating contingency plans. Therefore, it is necessary to increase information and operations. Control activities need to be tighter to help the organization achieve its goals.

The internal control system needs to change to match the organizational culture that Vietnamese chemical enterprises choose. The control system should change to fit the organizational culture characteristics. As a result, each type of organizational culture will have varying degrees of impact on the internal control system's basic elements. To match the organizational culture that the company chooses, the enterprise must pay attention to the level of impact of each component on the internal control system.

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