Institutions and Economies
Vol. 12, No. 4, October 2020, pp. 3-25

Assessing Factors Affecting the Effectiveness of Internal Control Systems in Construction Enterprises in the Ba Ria-Vung Tau Province, Vietnam

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Abstract: *Many constructing enterprises in Vietnam, especially constructing small and medium enterprises (SMEs), have been facing stiff competition to survive and develop. This research investigates what factors influence the effectiveness of the internal control systems of these enterprises in the Ba Ria-Vung Tau Province. Both quantitative and qualitative methods were used based on the COSO Framework 2013 and several hypotheses were proposed. In addition, data were collected using questionnaires from 304 constructing small and medium enterprises. The results of the multiple regression test revealed a positive impact of five factors comprising internal control; risk assessment; control activities; information and communication; and monitoring on the systematic effectiveness, in which the monitoring factor illustrated the strongest affection and control activities factor demonstrated the least effect on the effectiveness. Furthermore, the legal sanction policy factor did not evidence a relationship with the effectiveness of the internal control system. Hence, the researchers suggested several recommendations to enhance awareness about the importance of internal control systems to the managers of these construction SMEs and leaders of local governmental institutions in the Vung Tau province, Vietnam.*

Keywords: COSO; COSO framework; effectiveness of the internal control system; internal control; internal control system
JEL Classification: M41, M42

Article Received: 11 May 2020; Article Accepted: 16 October 2020

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1. Introduction

Ba Ria – Vung Tau is an economic strategic province of the South-East area in Vietnam. With its geological and political economy, the infrastructure building activities have developed significantly to support other industries. Economic development in the Ba Ria -Vung Tau province has contributed significantly to the industry and construction with 74,53% of the gross domestic product in Vietnam according to Ba Ria – Vung Tau Statistical Yearbook 2017.

However, with construction SMEs accounting for more than 30,000 in nearly 110,000 enterprises operating in construction, these SMEs are facing stiff competition to survive and develop such as securing capital, reducing cost and enhancing operational efficiency (Li et al., 2016; Mahadeen et al., 2016). Moreover, an internal control system (ICS) is vital to reducing the negative impact of various types of financial, operational and strategic risks to the planned business results. It also creates value for other company stakeholders (Doyle et al., 2007). Developing and operating this system effectively will support enterprises in attaining their goals of reducing cost, increase profit, secure assets, improve information quality, and control resources, to name a few (Briciu et al., 2014; Mary and Byaruhanga, 2014; Mahadeen et al., 2016; Li et al., 2016). Thus, this study was conducted to ascertain the effectiveness of ICS in construction SMEs to support their development.

Vietnam is a country with a code law system. Thus, every policy from state and local managed offices significantly affects the enterprises' operations (Jensen, 1993; Beck et al., 2003). As a result, legal sanctions affect the construction industry. Punitive policies will influence how managers build and operate their ICS to avoid sanctions. It could even lead to the failure of the enterprises' internal control system (Jensen, 1993; Beck et al., 2003). Therefore, the identification and assessment of sanction policies affecting the effectiveness of ICS will support SMEs achieve their goals (Li et al., 2016).

This research endeavours to ascertain the factors comprising the components of ICS and legal sanction policy affecting the effectiveness of ICS in construction SMEs in the Ba Ria-Vung Tau province to enhance performance and advance competition of these enterprises in the current highly competitive economy.

To reach that goal, this study collected data from 304 SMEs through surveys, while also referring to the 2013 COSO Framework as well as prior research and expert opinion to establish the research model. The result shows that only five components of ICS have a positive relationship on an effective ICS. This outcome was the same as previous of Briciu et al. (2014), Mary and Byaruhanga (2014), and Mahadeen et al. (2016), although our the sample

industry in this study is construction SMEs. Further, we considered external factors affecting ICS in line with Beck et al. (2003) and Li et al. (2016).

The remainder of the paper is structured as follows. Section 2 reviews the development of theories about ICS as elaborated in prior literature and the 2013 COSO Framework. Following the review, Section 3 outlines the research model and methods used by this study to collect and analyse the data. Section 4 presents and discusses the findings of the study. Section 5 summarises the results while also discussing its limitations and future research opportunities.

2. Literature Review

2.1 Internal control system

From the late 1970s to late 1990s, ICS instructions and recommendations were formed by many organisations in the United States such as the Cohen Commission (1978), the Treadway Commission (1987), COSO (1992), the POB (1993) and the Board of Directors of the AICPA (1993) and in the United Kingdom as the Cadbury Committee (1992), Rutterman Committee (1994), Hampel Committee (1998) and Turnbull Committee (1999). The most notable recommendations comprised guidance for directors on how they should report on ICS and review its effectiveness (Onumah et al., 2012).

COSO's guidance was developed, updated and accepted globally and integrated into ICS frameworks. The Internal Control – Integrated Framework was first issued in 1992 and updated in 2004 to keep up with changes in global business. It was updated further in 2013 to enhance control capability in a computerised environment. ICS is defined as "a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance" (Mc Nally, 2013). With ICS, the organisation enhances the efficiency and effectiveness of its operations and preserves resources against loss due to waste by ensuring adherence to laws/regulations (Hanim et al., 2005; Doyle et al., 2007).

From that, the effectiveness off ICS will support and help organisations to achieve effective operations (Doyle et al., 2007). Furthermore, an ICS is effective when it provides three categories of objectives in building an effective and efficient internal control system (COSO, 2013; Mc Nally, 2013):

- Operations objectives: pertain to the effectiveness and the efficiency of the entity's operations, including operational and financial performance goals, and safeguarding assets against loss.

- Reporting objectives: pertain to the internal and external financial and non-financial reporting and may comprise reliability, timeliness and transparency.
- Compliance objectives: pertain to adherence to laws and regulations.

In addition, the effectiveness of ICS depends on simultaneously operating all five components. If one component is conducted wrongly, it will lead to the weakness of the entire internal control system and the organisation's objectives will not be achieved (Hanim et al., 2005; Doyle et al., 2007; Elahi, 2013). The five components of ICS comprise the control environment, risk assessment; control activities; information and communication; and monitoring activities.

Control environment: This component has a positive relationship with the effectiveness of ICS in an organisation (Doyle et al., 2007). It illustrates the philosophy of the firm's risk comprising types of risk, the risk management, ethical culture, human resource policies, assignment of responsibility and the organisational structure to manage risks (COSO, 2013). In the same way, it sets the tone of an organisation, influencing the control consciousness of its people (Mahadeen et al., 2016; Mary and Byaruhanga, 2014). This component is considered as the most critical factor of ICS, and the effectiveness of this system can be obtained (Doyle et al., 2007) as well as dominated for last four factors (Doyle et al., 2007; Mahadeen et al., 2016).

Risk Assessment: The effectiveness of this component has a positive effect on the effectiveness of ICS in an organisation (COSO, 2013; Mahadeen et al., 2016). It tests the likelihood, frequency and the impact level of events through a range of possible outcomes to support enterprises attaining objectives based on identifying and analysing relevant risks and determining the appropriate responses (COSO, 2013). Further, this component was understood as risk management and sometimes referred to as Enterprise Risk Management (ERM) (Mahadeen et al., 2016; Mary and Byaruhanga., 2014). Without this component, the ICS is not able to effectively work because enterprises have been defending with many risks in a fluctuating business environment (Mahadeen et al., 2016).

Control Activities: This component also creates the effectiveness of ICS in an organisation (Doyle et al., 2007; Mahadeen et al., 2016). It constitutes risk policies and procedures that properly applied in business operation to manage the risk effectively. Control activities comprise authorisations, supervisions, segregation of duties, reconciliation and verification (COSO, 2013). By applying these, the organisations will achieve their objectives, protect their assets, and measure their performance (Elahi, 2013; Mahadeen et al., 2016). Thence it can be seen that risks increase without the proper

components in place and the objectives are less likely to be attained (Elahi, 2013; Mahadeen et al., 2016).

Information and Communication: This component is a positive factor contributing to the effectiveness of ICS in an organisation (Doyle et al., 2007; Mahadeen et al., 2016). It postulates that internal and external sources should be used to provide appropriate and timely risk related to information that enables people to execute their responsibilities (COSO, 2013) or transmit information and common understanding from one person to another (Briciu et al., 2014; Mahadeen et al., 2016). Furthermore, this factor needs to be integrated throughout the value chain and all control objectives embedded (COSO, 2013).

Monitoring activities: The effectiveness of this component will enhance the effectiveness of the ICS (Doyle et al., 2007). It presents and determines how well it is working and how it can be revised and expanded to assess the quality of the internal control system's performance over time. Monitoring includes routine or separate activities or a combination of both (COSO, 2013). The monitoring process also assists timely decision-making, ensures accountability, and provides the basis for evaluation and learning (Obeidat et al., 2015; Mahadeen et al., 2016).

Further, an internal system must be consistent with the strategy and marketing performance of the enterprise to propagate its image (Vorhies and Morgan, 2003) and appraises the compliance with governmental and local policies. Moreover, the governmental administrative procedure and corruption issue is always a problem affecting the business result of any enterprises (Jensen, 1993; Beck et al., 2003; Kaufmann et al., 2009). Thus, we considered that legal sanction policies from local governments in the Ba Ria -Vung Tau will affect the way constructing enterprises organising and operating ICS. In addition, every enacted state and local policy affects the enterprises' operations (Jensen, 1993; Beck et al., 2003). Hence, we believe that the effectiveness of construction SMEs' ICS is impacted by legal sanction policy. Moreover, the critical characteristics of policies affecting enterprises include the quality, political stability, effective government, transparent accounting, and corruption controls (Beck et al., 2003; Kaufmann et al., 2009). As such, we studied the impact of legal sanction policy on the effective of ICS in this study.

From above theory framework, there are six factors impact ICS effectiveness. From the COSO Framework (2013) and McNally (2013), we appraised the effectiveness of ICS in the construction SMEs in the Ba Ria-Vung Tau province, which includes three observations:

- The trustworthiness and reliability of the report;
- Compliance with relevant legal requirements, international regularities and standards;
- The effectiveness and efficiency in using resources.

3. Methodology

3.1 Research hypotheses

The effectiveness of ICS requires all five components to operate simultaneously (Hanim et al., 2005; Doyle et al., 2007; Elahi, 2013). Thus, it could be seen that the *control environment factor* has a positive relationship with the effectiveness of ICS in an organisation (Doyle et al., 2007). It sets the tone of an organisation, influencing the control consciousness of its people (Mahadeen et al., 2016; Mary and Byaruhanga, 2014). It is considered the most critical factor of ICS (Doyle et al., 2007; Mahadeen et al., 2016). So, we tested:

Hypothesis 1: *The control environment has a positive effect on the effectiveness of the internal control system in construction SMEs.*

The risk assessment factor also has a positive effect on the effectiveness of ICS (Mahadeen et al., 2016). Without this component, the ICS is unable to work effectively because enterprises need to resolve many risks in a fluctuating business environment (Mahadeen et al., 2016). Thus, we hypothesise:

Hypothesis 2: *Risk assessment has a positive effect on the effectiveness of the internal control system in construction SMEs.*

The control activities factor also contributes to the effectiveness of ICS (Doyle et al., 2007; Mahadeen et al., 2016). It constitutes risk policies and procedures that are applied properly in business operations to manage risk effectively. By applying these, the organisation would achieve it objectives, protect its assets, and measure its performance. In addition, risks will occur without this component (Elahi, 2013; Mahadeen et al., 2016). Thence, there is a positive relationship between this factor and the effectiveness of ICS. We hypothesise:

Hypothesis 3: *Control activities have a positive effect on the effectiveness of the internal control system in construction SMEs.*

Further, the information and communication factor contribute to the effectiveness of ICS in an organisation (Doyle et al., 2007; Mahadeen et al., 2016). It postulates that internal and external sources should be used to provide appropriate information and communicate it throughout the organisation (Briciu et al., 2014; Mahadeen et al., 2016). Thus, this factor addresses the compliance of staff in an organisation. We hypothesise:

Hypothesis 4: *Information and communications have a positive effect on the effectiveness of the internal control system in construction SMEs.*

Moreover, effective monitoring enhances the effectiveness of ICS (Doyle et al., 2007; Obeidat et al., 2015). It presents and determines how well it is working and how it can be revised and expanded to assess the quality of ICS performance over time (COSO, 2013). It also assists in making decisions timely, ensures accountability, and provides a basis for evaluation and learning (Obeidat et al., 2015; Mahadeen et al., 2016). We hypothesise:

Hypothesis 5: *Monitoring has a positive effect on the effectiveness of the internal control system in construction SMEs.*

Further, an effective internal system propagates an image of compliance with the governmental laws (Vorhies and Morgan, 2003) and affects the business result (Jensen, 1993; Beck et al., 2003; Kaufmann et al., 2009). Thus, legal sanction policies from local governments affect enterprises' effectiveness significantly (Jensen, 1993; Beck et al., 2003). Hence, we believe that the effectiveness of construction SMEs' ICS is impacted by legal sanction policy. We hypothesise:

Hypothesis 6: *The legal sanction policy has a positive effect on the effectiveness of the internal control system in construction SMEs.*

3.2 Research Model

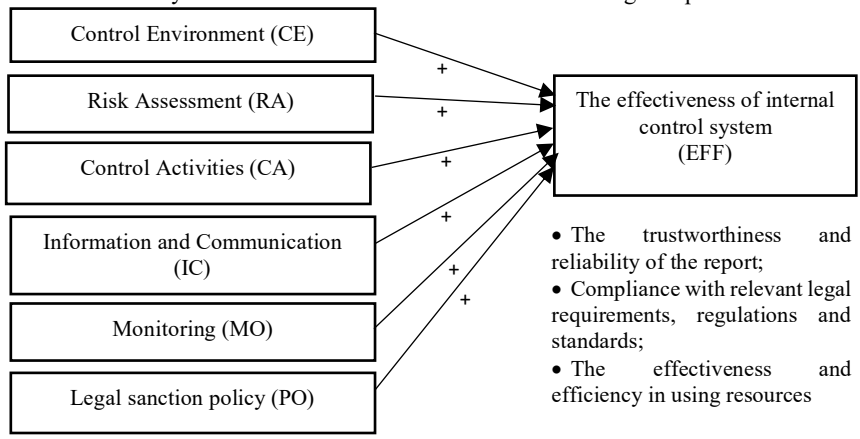
The research model aims to determine what factor impacts the effectiveness of ICS. In this study, the research model is based on The Internal Control – Integrated Framework COSO, Tulbul, Cobit (Briciu et al., 2014; Mary and Byaruhanga, 2014; Mahadeen et al., 2016). Although the terminology may

differ, all ICS frameworks share the same goals and functions (Doyle et al., 2007; Briciu et al., 2014).

These models help measure the five components of ICS as five independent variables (Mahadeen et al., 2016) or one to four of five components (Mary and Byaruhanga, 2014). In this study, the dependent variable was the effectiveness of ICS (Doyle et al., 2007; Briciu et al., 2014; Mary and Byaruhanga, 2014; Mahadeen et al., 2016), which is achieved when three objectives of the ICS were fulfilled by the enterprises (COSO, 2013; MCNally, 2013; Briciu et al., 2014; Mahadeen et al., 2016).

Furthermore, in this study, the authors considered that legal sanction policy has a positive relationship with the effectiveness of ICS as the role of external factor affects the development and operation of ICS in enterprises and leads to enhancing the effectiveness of this system (Jensen, 1993; Beck et al., 2003). Therefore, we propose a research model to investigate the effectiveness of ICS of construction SMEs as follows:

Figure 1: Proposed model of factors affecting to the effectiveness of based-risk internal control system in construction SMEs in the Ba Ria-Vung Tau province



Source: Author's proposed model

The authors will conduct multiple regression analysis to identify the equation assessing factors' effect on the effectiveness of the internal control system in the construction SMEs in the Ba Ria-Vung Tau province. The specific standardised equation is:

$$EFF = \beta_1 CE + \beta_2 RA + \beta_3 CA + \beta_4 IC + \beta_5 MO + \beta_6 PO$$

Where EFF is the effectiveness of ICS in enterprises; CE represents for control environment; RA is risk assessment; CA refers to control activities; IC serves as information and communication; MO expresses monitoring; and PO depicts legal sanction policy.

3.3 Data collecting

To confirm the research model, a qualitative method was necessary, which includes interviewing experts (Green, 1979; Seidman, 2006). Thusly, after reviewing prior research as well as the COSO Framework 2013, a survey with dependent and independent variables as well as observations was used to interview the directors of five construction SMEs in Ba Ria-Vung Tau and five other experts (lecturers, researchers) who have thorough knowledge about ICS. Further, the survey used the technique of Seidman (2006) and Alreck and Settle (1994) to eliminate bias and increase the quality of the questionnaire and the ensuing discussion.

After that, to confirm the respondents understand the questions clearly (Seidman, 2006; Alreck and Settle, 1994), the authors interviewed the director or chief accountant from ten other enterprises (other than the five above construction SMEs) in Ba Ria-Vung Tau as well as ran a pre-test (Cronbach' Alpha) to determine the reliability of observations. Then, a completed survey encompassing observations were measured with a typical five-level Likert scale (Alreck and Settle, 1994) ranging from strongly disagree (value = 1) to strongly agree (value = 5). The survey was sent to respondents who belong to the leader board who have professional knowledge to understand and answer questions (Seidman, 2006; Alreck and Settle, 1994). These respondents were chosen because of their position and understanding of an enterprise's ICS. Further, these enterprises differed from the 15 above mentioned construction SMEs.

In addition, the control environment established the behavioural disciplines of top managers, creating the foundation of personal and professional integrity; ethical values and competence of all staff in an entity (COSO, 2013; Mary and Byaruhanga, 2014; Mahadeen et al., 2016). Risk assessment assessed the frequency and level of risk (COSO, 2013; Mahadeen et al., 2016). Control activities researched the risk activities and risk responses (COSO, 2013; Elahi, 2013). The fourth factor, information and communication, evaluated the record, process and communication of internal and external information in a conformist timeliness and procedure supporting staff to perform their responsibilities seriously (COSO, 2013; Briciu et al., 2014; Mahadeen et al., 2016).

Monitoring appraises the qualitative evaluated process of timeline control system comprising on-going monitoring and periodic monitoring or the combination of both (COSO, 2013; Obeidat et al., 2015; Mahadeen et al., 2016). The legal sanction policy encompasses four characteristics of effectiveness, stabilisation, transparency, accounting responsibility (Jensen, 1993; Beck et al., 2003). Further, the three perspectives encompass the trustworthiness and reliability of enterprises' reports; the compliance with relevant legal requirements and standards in operation; and the effectiveness and efficiency in using resources to investigate the effectiveness of ICS (COSO, 2013; MCNally, 2013; Briciu et al., 2014; Mahadeen et al., 2016).

In this study, the sample size satisfied the Multiple Regression Analysis (MRA) (Green, 1979; Tabachnick et al., 2007) and Exploratory Factor Analysis (EFA) (Hair et al., 1998). Thus, the minimal sample size for this research was 160 samples. In addition, the authors sent the survey to directors, vice directors, chief accountants and deputy managers of 350 construction SMEs in the Ba Ria-Vung Tau province for comprehensive results (it should be at least tenfold observations according to Hair et al. (1998)). Additionally, the questionnaire was designed with 39 questions divided into two sections. Section one included seven questions related to enterprise and respondents' information, and section two included 32 questions in six factors as independent variables and three questions concentrated on the dependent variable.

Likewise, the Statistical Package for Social Sciences was used to analyse and present data in the form of mean and standard deviation for each question and factor through the statistical description. Cronbach's Alpha analysis was conducted to test the credibility of observations with value generally accepted at 0.7 (Hair et al., 1998; Tabachnick et al., 2007). Furthermore, the authors conducted EFA to confirm the relationship between dependent and independent variables as well as test the hypothesis (Hair et al., 1998). Likewise, MRA was processed to evaluate the hypothesises and the impact of the independent variables on the dependent variable (Tabachnick et al., 2007).

4. Results and Discussions

A total of 350 questionnaires were sent to directors, vice directors, deputy managers and chief accountants in 350 enterprises. Some 328 were returned accounting for 93.71%. After testing the appropriate answers, total usable responses accounted for 304 higher than the minimum sample requirement of this study. Therefore, the collected data was valid

and reliable to conduct EFA and MRA. Table 1 illustrates the respondents' profiles.

Table 1: Respondents' profiles

Items		Frequency	Percent (%)
Position	Director	29	9.54
	Vice director	64	21.05
	Deputy manager	60	19.74
	Chief accountant	151	49.67
Experience	Between 1 and 3 year	106	34.87
	Between 3 and 5 year	73	24.01
	Upper 5 year	125	41.12
Working Time at enterprise	Under 1 year	6	1.97
	Between 1 and 3 year	154	50.66
	Between 3 and 5 year	69	22.70
	Upper 5 year	75	24.67
Firm type	Private	68	22.37
	Limited	157	51.64
	Stock	79	25.99
Equity (Billion)	Under 10	120	39.47
	Between 10 and 50	144	47.37
	Upper 50	40	13.16
Active time	Between 3 and 5 year	79	25.99
	Between 5 and 10 year	153	50.33
	Upper 10 year	72	23.68
Labour quantity	Between 10 and 50	79	25.99
	Between 50 and 100	153	50.33
	Between 100 and 200	72	23.68

Source: Author's own analysis based on SPSS output

Tab. 1 illustrated a significant quality of respondents with a similar number of managers and chief accountants, 50.33% and 49.67%. Furthermore, most respondents had over three years of experience (65.13%). The average working time at an enterprise was very high, with 98.03% over one year. This underscores the quality of the respondents to understand and answer the survey questions. Moreover, the figures of equity and labour quantity also presented characteristics of enterprises as SMEs according to classification standard in Vietnam's Business Law.

In the next step, the authors used descriptive statistics to show the mean and standard deviation values of observations and appraised the effectiveness of the six independent variables (including CE; RA; CA; IC, MO and PO) and dependent factor (EFF).

According to Tab. 2, all the average values were above 3.0. Two factors were over 3.5 for information and communications and legal sanction policy with 3.77 and 3.61, respectively. In addition, the value of the effective internal control system in construction SMEs was above average with 3.26.

This result reflected that the respondents' evaluation of the internal control system is not so high.

Table 2: Descriptive Statistics of Variables

	Mean	Standard Deviation	Minimum	Maximum	Median	Mode
Control Environment						
CE1	3.14	1.17	1.00	5.00	3.00	3.00
CE2	3.15	1.22	1.00	5.00	3.00	3.00
CE3	3.23	1.20	1.00	5.00	3.00	3.00
CE4	3.11	1.19	1.00	5.00	3.00	3.00
CE5	3.23	1.27	1.00	5.00	4.00	4.00
Average	**3.17**					
Risk Assessment						
RA1	3.60	1.00	1.00	5.00	4.00	4.00
RA2	3.49	1.09	1.00	5.00	4.00	4.00
RA3	3.55	1.13	1.00	5.00	4.00	4.00
RA4	3.46	1.15	1.00	5.00	4.00	4.00
Average	**3.53**					
Control Activities						
CA1	3.55	1.15	1.00	5.00	4.00	4.00
CA2	3.55	1.18	1.00	5.00	4.00	4.00
CA3	3.39	1.15	1.00	5.00	3.00	3.00
CA4	3.39	1.26	1.00	5.00	4.00	4.00
CA5	3.60	1.23	1.00	5.00	4.00	5.00
Average	**3.50**					
Information and Communications						
IC1	3.68	1.08	1.00	5.00	4.00	4.00
IC2	3.74	1.05	1.00	5.00	4.00	4.00
IC3	3.66	1.10	1.00	5.00	4.00	4.00
IC4	3.77	1.08	1.00	5.00	4.00	4.00
IC5	3.98	0.72	2.00	5.00	4.00	4.00
Average	**3.77**					
Monitoring						
MO1	3.42	1.29	1.00	5.00	4.00	4.00
MO2	3.37	1.25	1.00	5.00	3.00	4.00
MO3	3.48	1.22	1.00	5.00	4.00	4.00
MO4	3.41	1.17	1.00	5.00	4.00	4.00
MO5	3.33	1.20	1.00	5.00	3.00	3.00
MO6	3.25	1.21	1.00	5.00	3.00	3.00
Average	**3.38**					
Legal Sanction Policy						
PO1	3.87	1.08	1.00	5.00	4.00	4.00
PO2	3.74	1.15	1.00	5.00	4.00	4.00
PO3	3.83	1.06	1.00	5.00	4.00	5.00
PO4	3.01	1.10	1.00	5.00	3.00	3.00
Average	**3.61**					
The Effectiveness						
EFF1	3.31	0.58	2.00	5.00	3.00	3.00
EFF2	3.26	0.58	2.00	5.00	3.00	3.00
EFF3	3.24	0.58	2.00	5.00	3.00	3.00
Average	**3.26**					

Source: Author's own analysis based on SPSS output

Table 3: Result of Cronbach's Alpha Analysis

	Scale Mean if Item Deleted	Scale Variance if	Corrected Item-Total Correlation	Cronbach's Alpha if Item
Rating scale of factor Control Environment, Cronbach' Alpha = 0.820				
CE1	12.72	14.322	.631	.779
CE2	12.71	14.195	.611	.785
CE3	12.63	14.512	.584	.793
CE4	12.75	14.254	.622	.782
CE5	12.63	13.890	.612	.785
Rating scale of factor Risk Assessment, Cronbach' Alpha = 0.806				
RA1	10.51	7.901	.567	.783
RA2	10.62	7.254	.626	.755
RA3	10.56	7.027	.637	.750
RA4	10.64	6.811	.660	.738
Rating scale of factor Control Activities, Cronbach' Alpha = 0.836				
CA1	13.93	14.593	.642	.802
CA2	13.93	14.001	.692	.788
CA3	14.08	14.577	.637	.803
CA4	14.09	14.191	.605	.813
CA5	13.88	14.316	.614	.810
Rating scale of factor Information and Communications, Cronbach' Alpha = 0.791				
IC1	15.15	9.528	.511	.772
IC2	15.10	9.040	.623	.734
IC3	15.17	8.558	.672	.716
IC4	15.06	9.320	.543	.761
IC5	14.86	10.980	.538	.769
Rating scale of factor Monitoring, Cronbach' Alpha = 0.872				
MO1	16.84	22.336	.719	.842
MO2	16.89	22.516	.737	.839
MO3	16.78	23.145	.694	.846
MO4	16.85	24.589	.590	.864
MO5	16.93	23.672	.661	.852
MO6	17.01	23.855	.635	.857
Rating scale of factor Policy, Cronbach' Alpha = 0.780				
PO1	7.5625	3.811	.608	.714
PO2	7.6908	3.482	.634	.686
PO3	7.6020	3.844	.613	.708
Rating scale of factor The Effectiveness, Cronbach' Alpha = 0.855				
EFF1	6.50	1.142	.715	.807
EFF2	6.55	1.087	.766	.758
EFF3	6.57	1.143	.698	.823

Source: Author's own analysis based on SPSS output

Basing on the figures in Tab. 3, the reliability of observation with Cronbach' Alpha is from 0.780 to 0.872. Thus, the data showed the reliability of observations was very good. In addition, with the PO factor, the authors analysed Cronbach' Alpha twice and deleted observation PO4 because it has

a Corrected Item-Total Correlation value under 0.3. Hence, this observation should be eliminated when testing the hypothesises and conducting EFA.

Table 4: Result of EFA analysis

Rotated Component Matrix[a]						
	Component					
	1	2	3	4	5	6
MO2	.824					
MO1	.805					
MO3	.797					
MO5	.757					
MO6	.740					
MO4	.714					
CA2		.818				
CA3		.784				
CA1		.750				
CA5		.729				
CA4		.698				
CE1			.780			
CE4			.771			
CE5			.762			
CE2			.749			
CE3			.742			
IC3				.778		
IC1				.739		
IC5				.711		
IC2				.706		
IC4				.680		
RA3					.805	
RA4					.796	
RA2					.789	
RA1					.717	
PO2						.837
PO3						.824
PO1						.818

Source: Author's own analysis based on SPSS output

In the next step, the authors conducted EFA analysis. The result demonstrated a good consequence with the value of the KMO and Bartlett's Test was 0.787 (value of Sig. ≈ 0.000) for the six independent variables and 0.724 (value of Sig. ≈ 0.000) for the dependent variable. The result of Rotated Component Matrix was illustrated in Table 4.

Before conducting MRA, the authors tested the six hypothesises to discover the relationship between the factors and the effectiveness of the internal control system. By using the One-way ANOVA test, the result in Table 5 showed that all the value at Sig. column of H_1 – CE → EFF; H_2 – RA → EFF; H_3 – CA → EFF; H_4 – IC → EFF; H_5 – MO → EFF were ≈ 0.000 < 0,05 and H_6 – PO → EFF were ≈ 0.659 > 0,05. Hence, five hypothesises from H_1 to H_5 were accepted, and H_6 was eliminated. It means that the effectiveness of five factors of ICS comprising control environment; risk assessment; control activities; information and communication; monitoring related to the effectiveness of the internal control system in construction SMEs.

Table 5: The relationship of variables

	Sum of	df	Mean	F	Sig.
H1 - CE--->EFF					
Between Groups	10.011	17	.589	2.614	.001
Within Groups	64.427	286	.225		
Total	74.438	303			
H2 - RA--->EFF					
Between Groups	20.186	16	1.262	6.674	.000
Within Groups	54.253	287	.189		
Total	74.438	303			
H3 - CA--->EFF					
Between Groups	22.767	19	1.198	6.586	.000
Within Groups	51.671	284	.182		
Total	74.438	303			
H4 – IC--->EFF					
Between Groups	21.602	17	1.271	6.878	.000
Within Groups	52.836	286	.185		
Total	74.438	303			
H5 - MO--->EFF					
Between Groups	27.150	24	1.131	6.674	.000
Within Groups	47.288	279	.169		
Total	74.438	303			
H6 - PO--->EFF					
Between Groups	2.126	11	.193	.781	.659
Within Groups	72.312	292	.248		
Total	74.438	303			

Source: Author's own analysis based on SPSS output

From the above result, the authors conducted MRA to consider the affected level of factors on the effectiveness of internal control system and investigated what factors have the strongest effect and the least effect. The results are expressed in Tables 6 and 7.

Table 6: The correlations between variables

		CE	RA	CA	IC	MO	PO	EFF
CE	Pearson Correlation	1	.040	-.059	.029	-.027	-.023	.199**
	Sig. (2-tailed)		.491	.305	.615	.641	.695	.000
	N	304	304	304	304	304	304	304
RA	Pearson Correlation	.040	1	.307**	.169**	.121*	-.031	.407**
	Sig. (2-tailed)	.491		.000	.003	.035	.588	.000
	N	304	304	304	304	304	304	304
CA	Pearson Correlation	-.059	.307**	1	.311**	.107	.054	.340**
	Sig. (2-tailed)	.305	.000		.000	.062	.351	.000
	N	304	304	304	304	304	304	304
IC	Pearson Correlation	.029	.169**	.311**	1	.195**	.000	.418**
	Sig. (2-tailed)	.615	.003	.000		.001	.998	.000
	N	304	304	304	304	304	304	304
MO	Pearson Correlation	-.027	.121*	.107	.195**	1	-.153**	.491**
	Sig. (2-tailed)	.641	.035	.062	.001		.008	.000
	N	304	304	304	304	304	304	304
PO	Pearson Correlation	-.023	-.031	.054	.000	-.153**	1	-.080
	Sig. (2-tailed)	.695	.588	.351	.998	.008		.163
	N	304	304	304	304	304	304	304
EFF	Pearson Correlation	.199**	.407**	.340**	.418**	.491**	-.080	1
	Sig. (2-tailed)	**.000**	**.000**	**.000**	**.000**	**.000**	**.163**	
	N	304	304	304	304	304	304	304

Source: Author's own analysis based on SPSS output

Based on the number in Table 7, the correlation between dependent variable EFF and independent variables CE; RA; CA; IC and MO were significant at the 0.01 level, and the validity at 99%. In addition, the correlation between dependent variable EFF and five independent variables was positive, while

the PO factor did not illustrate the correlation with EFF as the Sig. Value was 0.163 > 0.05.

Table 7: The result of multiple regression analysis

Model Summary[b]

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R^2 Change	F Change	df 1	df 2	Sig. F Change	
1	.705[a]	.497	.487	.35505	.497	48.918	6	297	.000	1.938

a. Predictors: (Constant). PO. IC. CE. RA. MO. CA

b. Dependent Variable: EFF

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.999	6	6.166	48.918	.000[b]
	Residual	37.439	297	.126		
	Total	74.438	303			

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.838	.180		4.667	.000		
	CE	.108	.022	.201	4.854	.000	.989	1.011
	RA	.149	.025	.262	6.006	.000	.890	1.124
	CA	.083	.024	.154	3.412	.001	.826	1.211
	IC	.159	.029	.242	5.484	.000	.871	1.149
	MO	.207	.022	.399	9.336	.000	.929	1.077
	PO	-.008	.023	-.015	-.357	.722	.970	1.031

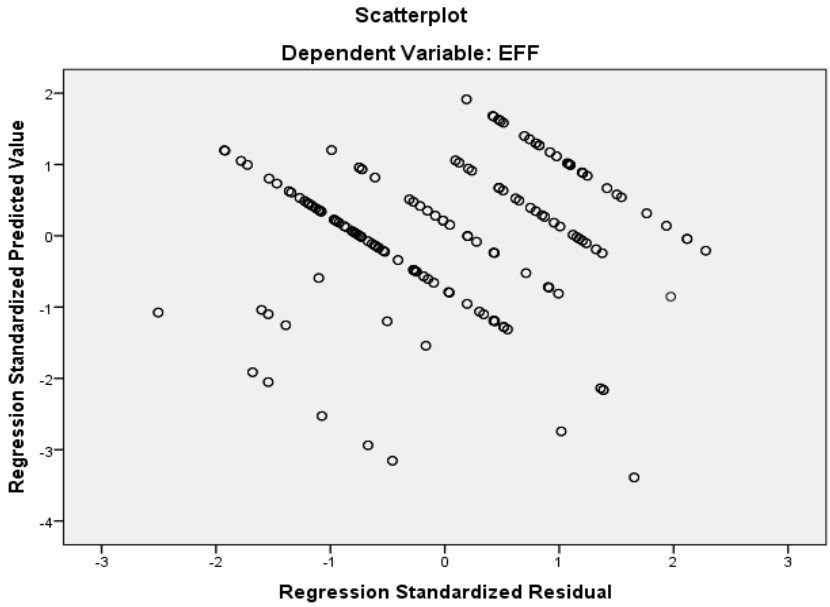
Source: Author's own analysis based on SPSS output

The Model Summary[b] demonstrated the Adjusted R Square = 0.487. It means that five factors CE; RA; CA; IC and MO of ICS explained 48.70% the effectiveness (EFF) of construction SMEs' ICS and the remaining 51.30% of the effectiveness (EFF) was affected by other factors. Furthermore, we have the value of Sig. ≈ 0.000b < 0.05 in the ANOVA[a] table. Consequently, the regression model was appropriate and acceptable. In addition, with the table coefficients[a], all the Sig. value of five factors were ≈ 0.000 < 0.05. Hence, factors CE; RA; CA; IC and MO expound the change of the effectiveness value. Moreover, based on the value of standardised coefficients column in the coefficients[b] table, the standardised regression model is:

$$EFF = 0.201CE + 0.262RA + 0.154CA + 0.242IC + 0.399MO$$

In general, according to the Model Summary[b], we have the value of Durbin-Watson = 1.938 ≈ 2. It means that there was no autocorrelation phenomenon. Thus, we can affirm that the collected data is trustworthy and valid to reflect the research result. With the ANOVA[a] table, we had the value of F = 48.918, which is significant and the value of Sig. ≈ 0.000b < 0.05. Thus, the research model conducted by the authors was appropriate with a mean level of 5.00%. On the other hand, with the value of VIF column in the coefficients[b] table, we had the figures of six factors less than 2. Therefore, we could conclude that there was no multicollinearity phenomenon. According to figure 2, there was no infringement on the linear relationship assumption of the research model.

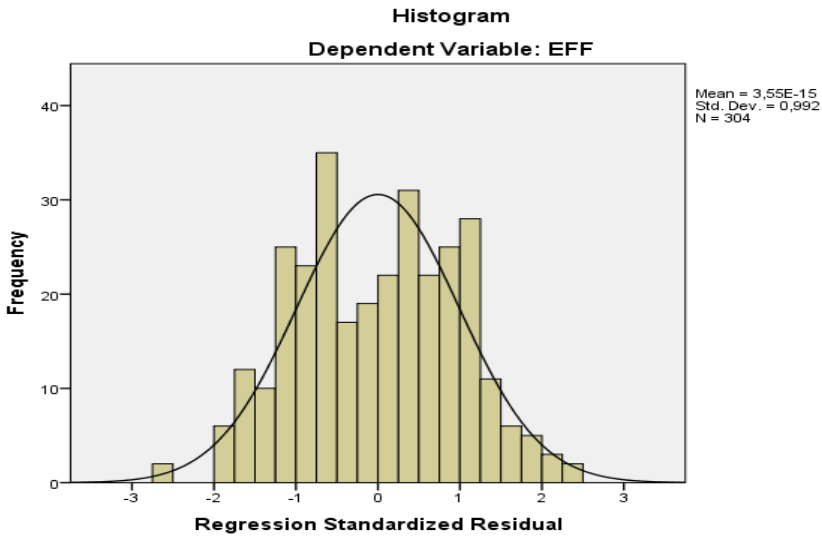
Figure 2: Linear relationship



Source: Author's own analysis based on SPSS output

We also conducted testing of the standard distribution of residual. The result was interpreted in figure 3 as follows.

Figure 3: Residual frequency



Source: Author's own analysis based on SPSS output

Figure 3 showed that the standard distribution curve superimposed the histogram. Moreover, the value of Mean ≈ 0 as well as standard deviation value (Std. Dev.) = 0.986. We could infer that the residual distribution was almost standard.

With the regression model, the figures demonstrated that the monitoring factor (with β = 0.399) strongly affected the effectiveness of ICS of construction SMEs in the Ba Ria-Vung Tau province. This result was the same as Briciu et al. (2014) and Mahadeen et al. (2016). It could be explained that construction operations occur directly at the workshop and the monitoring skills of supervisors has improved (Elahi, 2013). Further, in construction, monitoring is an official requirement as managers conduct day-to-day monitoring and promote improved performance (Mahadeen et al., 2016). Additionally, because many risks occur at the workshop like violating safety standards, this practical monitoring dimension received the most significant notice from leaders of construction SMEs in Ba Ria-Vung Tau and boosted the effectiveness of ICS (Doyle et al., 2007; Briciu et al., 2014; and Mahadeen et al., 2016).

Further, control activities factor (with β = 0.154) least affected the effectiveness of ICS. The reason could be due to poor identification and response to risk. This leads to control procedures not being established comprehensively. The owners argued that the cost to deploy solutions enhancing control activities for boosting the effectiveness of ICS is high (Doyle et al., 2007; Elahi, 2013; Obeidat et al., 2015, 2014).

Likewise, control environment factor was considered the most important component in ICS (McNally, 2013; Doyle et al., 2007; Briciu et al., 2014). However, the outcome showed that it only had the fourth level of impact on ICS. The reason may come from the weakness of top managers in control knowledge and lack of capital to invest in adequate ICS (Doyle et al., 2007; Li et al., 2016). Therefore, managers could promote practices that satisfy employees' interests, enforce appropriate human resource policies, and adopt transparency through structured reinforcement to prevent risks to ICS in the future (Mahadeen et al., 2016).

While legal sanction policy factor (with Sig. value = 0.722) did not affect EFF. The result was is in contrast to prior viewpoints (Jensen, 1993; Beck et al., 2003). It could be explained that SMEs' managers ignored or executed insufficient laws or regulations as well as the level of penalty with manipulations is not a sufficient deterrent.

Table 8: The result of hypothesis testing

	One-way Anova	Correlation (Pearson)		Regression		
Hypothesis	**Sig. Value**	**Cont.**	**Sig. Value**	**Beta**	**Sig. Value**	**Result**
MO → EFF	0.001	0.199**	0.000	0.201	0.000	Accepted
RA → EFF	0.000	0.407**	0.000	0.262	0.000	Accepted
CA → EFF	0.000	0.340**	0.000	0.154	0.000	Accepted
IC → EFF	0.000	0.418**	0.000	0.242	0.000	Accepted
MO →	0.000	0.491**	0.000	0.399	0.000	Accepted
PO →	0.659	-0.080	0.163	-0.015	0.722	Eliminated

Source: Author's own work

According to Tab. 8, five of six hypotheses were accepted. The result illustrated the positive relationship of five factors comprising MO; RA; CA; IC và MO with the effectiveness of the internal control system in construction SMEs in the Ba Ria-Vung Tau province. This result was suitable with the COSO Framework because every organisation has ICS with its' five components (McNally, 2013; Doyle et al., 2007; Briciu et al., 2014). However, although experts in construction perceived the impact of the legal sanction policy independent variable on the ICS and the same as the viewpoint of Jensen (1993) and Beck et al. (2003), the study outcome did not illustrate the relationship with the dependent variable. The reason for this may be from the sensitivity of the information according to Alreck and Settle (1994) and Seidman (2006). This research result will lead to future studies about external factors, particularly legal sanction policy.

5. Conclusions

This study aimed to discover the effect of factors embracing control environment; risk assessment; control activities; information and communication; monitoring and legal sanction policy factor on the effectiveness ICS in construction SMEs in the Ba Ria-Vung Tau province, Vietnam. The result explained that the effectiveness of five factors belongs to ICS incorporate the effectiveness of ICS with the positive relationship and the legal sanction policy factor did not show a relationship with this system. Simultaneously, the MO factor (with $\beta = 0.399$) had the strongest effect and the CA factor (with $\beta = 0.154$) had the least effect on the effectiveness of the ICS in construction SMEs. Hence, we advocate the following suggestions for construction SMEs in the Ba Ria-Vung Tau to enhance their ICS:

- Enhancing the effectiveness of five factors as five components of ICS for effective ICS with a focus on monitoring;
- Enhancing knowledge of ICS based on the COSO Framework for the managers as well as staff in construction SMEs to ensure these factors are effective and efficient;
- Governmental departments should focus on monitoring activities and increasing the penalties, even revoking business licences to force construction SMEs in the Ba Ria-Vung Tau province to comply with the law.

The finding of this research provides evidence of a positive relationship between the five factors and the effectiveness of ICS (McNally, 2013). It broadens the role of ICS in construction with the ICS effectiveness of construction SMEs in Ba Ria-Vung Tau.

Besides that, the model explained only 48.7% of the fluctuation in the dependent variable. It means that 51.3% belong to other factors that need to be discovered. In addition, the legal sanction policy variable did not have a positive relationship with the dependent variable as the study had initially expected. These drawbacks could lead to forthcoming research in construction that considers external factors on ICS effectiveness, as well as applying legal sanction policy variable in the research model of the effectiveness of ICS.

To sum up, this paper enriches the knowledge of ICS in Vietnam's construction sector by adopting the COSO theory.

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