Does Innovation Lead to Firm Growth through Endogenous Marketing Expenditure for SMEs in Ho Chi Minh City (Vietnam)?

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Abstract

This paper investigates how Vietnamese SMEs' innovation relates to its performance through impacts of endogenous covariates, such as marketing expenditure. The paper employed extended regression models. Data used is based on the Vietnam General Statistics Office survey conducted in 2017, in which 645 SMEs at Ho Chi Minh City are extracted to estimate. Very interesting findings show that positive changes in the innovation of SMEs cause an increase in sales growth and labour cost growth, but it is contributed by marketing expenditure rate as endogeneity. The companies, which are old, limited liability and private enterprises, invest more in marketing expenditure toward increasing sales growth with good control of the labour cost growth. This is a message to SMEs in Vietnam to think of innovation programmes based on marketing activity contribution, doing that the SME could obtain competitive advantages toward achievements.

Key words: firm performance, innovation, marketing, SMEs.

1 Introduction

Continuous changes in the world cause significant pressures on enterprises, specifically on small and medium enterprises (SMEs). Thus, SMEs have paid much attention to innovation to boost their performance and increase competitive advantages (Falahat et al., 2020). Innovation is one of the tools to create value for firms and a way to expand and compete in the market (Ren et al., 2015). For example, innovative technologies are vital to driving productivity in countries like Vietnam, as a developing country. The innovation activities are not only about new products and services but also about new business methods, processes, and managerial models.

Innovation plays an important role in the long-term survival of organisations (Donbesuur et al., 2020). It helps firms increase the problem-solving process and raise productivity by creating new ideas, solutions, processes, and products motivated by society's trends. Besides, it helps the firm sharpen its competitive advantages by differentiating its products/services and creating value for customers. Innovation can enhance employees' competencies and skills and help firms stay ahead of their competitors.

However, business managers might overestimate the role of product innovation in increasing competitive advantages and underestimate the role of other activities such as marketing (D'Attoma & Ieva, 2020). In contrast, academic researchers have highlighted the role of marketing activities in improving profitability (Arunachalam et al., 2018) as well as driving the sustainable competitive advantage for a firm (Papadas et al., 2019). Thus, marketing activities should be regarded as critical as innovation activities for enhancing competitive advantage (Medrano & Olarte-Pascual, 2016). Hence, it is relevant to state that marketing is an implicit activity; its endogenous impact can positively change the effects of innovation on firm performance. Marketing activities can represent through investments for marketing communication (Banerjee & Siddhanta, 2015).

Motivated by the above argument, this research accounts for the issue of endogeneity using the extended regression model (ERM). Specifically, we investigate whether the effects of SMEs' innovation on firm performance are an artifact of endogeneity bias due to marketing activities. According to our literature review, research on marketing activities and its measure is based on the marketing expenditure with an application of Manu & Sriram (1996) and Banerjee & Siddhanta (2015), while the measure of innovation is based on arguments of Ezzi & Jarboui (2016) and Manu & Sriram (1996). In sum, the contribution of this research is that it sheds light on the endogeneity of marketing activities. This is associated with innovation to affect the performance of SMEs. In addition, scholars, e.g. Ezzi & Jarboui (2016), also found

that firms with different size, age, and style of enterprises (e.g. microenterprises or private enterprises) have a different approach on marketing expenditure, so this is concerned in the study.

We focused on SMEs in Ho Chi Minh City because this city is the largest economic centre in Vietnam. Those SMEs account for 26.5% of total SMEs in 63 provinces and cities nationwide. Due to the large number of enterprises concentrated in the large economic place, the marketing activities of SMEs can present competitiveness to maintain and expand their market share. However, the study of the marketing dominance of SMEs in Vietnam is still questionable. This research is partly to provide practice and extend academic theory.

This paper is structured as follows. Section 2 identifies a conceptual framework for this research. An overview of SMEs in Vietnam is in section 3. Section 4 presents the research methodology. Empirical analysis results and discussion are in section 5. The paper concludes in section 6.

2 Conceptual background

Innovation is a broad concept and is referred to as any change in the new product development, new suppliers, or new production methods (Rosenbusch et al., 2011). An innovation, if successful, provides firms with the opportunity to benefits such as quality improvement, cost reductions, and competitive advantages. Innovation can be radical, including changes in process, system, or technology that are new to the firm. Alternatively, an innovation may be incremental, which imply a small improvement or innovation from elsewhere (Duong et al., 2021).

Innovation contributes to the long-term development and profitability of a firm. The success of innovation is measured in various ways (Hilmersson & Hilmersson, 2021). Using the metaanalysis technique to investigate the relationship between innovation and firm performance, Rosenbusch et al. (2011) confirmed that innovation positively affects the performance of SMEs. Bigliardi et al. (2020) analysed a set of articles relating to open innovation published between 2007 and 2020 and found that open innovation has a positive influence on firm performance. Bahta et al. (2020) demonstrated that innovation capability has a significant and positive influence on the SMEs' business performance. Moreover, Rosenbusch et al. (2011) found that cultural environment affects that relationship. In collectivism cultures such as in Asian countries, innovation has the strongest effect on firm performance, while in individualism cultures such as the United States, that relationship is weaker.

2.1 Innovation and marketing communication expenditure

Marketing expenditure is a fundamental and integral part of a company's marketing efforts. Communication in marketing can be described as the messages and media that businesses can deploy to reach their potential market. Marketing communication is the ability that a firm can plan, manage, and launch its marketing programme (Pham et al., 2017). There are many different forms of marketing communication, such as direct communication (e.g., face-to-face, sales team, and telephone service centre) or indirect communication (e.g., promotion, advertising, and electronic media.) (Mihart, 2012). However, depending on the objective of marketing communication, companies will choose the most appropriate form of communication. The expenditure on marketing communication activities plays a significant role in business performance. It shows the effectiveness of using the budget allocation for marketing communication, and the benefits that the company can get back from such activities. The performance of marketing communication expenditure comes from its percentage upon the total revenue of the company's business (Manu & Sriram, 1996). To the SMEs, the stakeholders and business alliances plan and decide most of the marketing communication expenditure, formalised collaboration between two or more organisations focusing on the value chain activities (Rothkegel et al., 2006).

According to Keskin (2006), there is a relationship between marketing and innovative firm. It is because market orientation is the cradle of marketing; it interacts with innovation and affects firm performance. As a result, marketing activities cause changes in firm performance through direct innovativeness. Based on the survey of 326 respondents, who are managers, owners, and heads of marketing and R&D department, Shah, Rust, Parasuraman, Staelin, & Day (2006) confirmed a strong relationship between firm growth and marketing capacities. Firms can focus on marketing strategy to differentiate themselves from competitors and deliver better values to customers (Al-Surmi et al., 2020).

Innovation can be triggered by marketing against competitors. The development of the market has a positive effect on the ability of the company to improve, strengthen, and maintain its competitive advantage. The positive relationship between market performance and marketing is supported by an extensive literature of Sattayaraksa and Boon-itt (2016). Based on the above arguments, we propose the following hypothesis.

H1: Marketing expenditure as endogeneity causes a change in firm growth.

2.2 Innovation and the firm performance

Nowadays, firms are confronted by the explosion of information technology as well as the fast change in consumer demand. Simultaneously, the business competition is sophisticated as firm's competitors easily provide similar products and services. In that context, innovation plays a crucial role in keeping the firm stay at the competitive edge. Innovation is expensive, risky, and complicated, but it is a must-have process for the survival, growth, and renewal of any organisation (Lohe & Calabrò, 2017). It presents not only the capabilities of the firm to understand, capture, and forecast consumer demand but also a firm's propensity to engage in creativity. Innovation requires the mobilisation of external and internal resources (Ramadani et al., 2020).

Firms need to develop innovation strategies that enable them to initiate and implement innovative projects. According to Dannenberg and Burgard (2015), a so-called innovation capability means the ability of a company to exploit each employee's creativity by creating social environments to develop and implement innovative ideas. There are various useful innovation capabilities such as the organisational level, the management level, the employee, the team level, and the environment level. Firms can apply these capabilities to identify hidden problems or obstacles hampering the employee's performance. It then helps develop the strategies that can drive incremental and radical innovation.

Innovation aims at prioritising the advancement of new ideas to create value across all operations. Firm performance is a multidimensional concept (Ramadani et al., 2019) and can be measured by financial and non-financial criteria (Duong et al., 2021). Indicators such as customer satisfaction level, financial efficiency, and operational efficiency are frequently used to measure the firm performance (Agovino et al., 2017; Okada & Dana, 2017). Ramadani et al. (2017) found that firm performance was influenced by innovation activities. Karabulut (2015), in the study on Turkish manufacturing firms, stated that a clear innovation strategy improved customer performance. In another study of Malaysian manufacturing firms, Qureshi et al. (2020) indicated that innovation could mediate the relationship between firm culture and firm performance.

According to Keskin (2006), innovation has an important role in the growth of SMEs. Keskin (2006) remarked on a significant contribution of innovation to firm performance. It can decide the long term achievements of SMEs. Sulistyo and Siyamtinah (2016) showed a positive and significant influence of marketing capabilities toward innovation capabilities and firm performance. Good innovation capabilities have the ability to promote innovation and sustainable product development for a company. The authors showed that innovation capabilities can be increased by improving marketing capabilities, the spirit of entrepreneurship, and relational capital. A company that produces higher innovation capability has better business performance and a stronger competitive advantage. Thus, the managers of SMEs should pay attention to establishing a higher entrepreneurial spirit, optimising the market analysis ability, widening the various stakeholder's networks, and providing more opportunities to employees to perform themselves. Such activities are able to create more innovation capabilities as well as competitive advantages for SMEs.

Saridakis et al. (2019) found that innovative SMEs exported more than non-innovative SMEs. Specially, innovation on goods is associated with propensity to export than innovation on service or process. Ramadani et al. (2019) noted limited research on the effect of innovation on firm performance in transition economies. In their study, they indicated that there was a positive relationship between product innovation and firm performance in transition economies. Haddad et al. (2019) argued that only innovative companies effectively serve the needs of their customers and survive in a volatile and risky environment in the long run. Although innovation is not enough to guarantee the survival and success of SMEs, it is essential to the success of SMEs (Ndesaulwa & Kikula, 2016). Therefore, SME managers should include innovation as an integral part of their business strategy. As arguments and findings mentioned above, we proposed the second hypothesis as below.

H2: Innovation investment has a significant contribution to firm growth with association to marketing expenditure.



Figure 1: Relationship between Innovation and firm performance with endogeneity of marketing

2.3 Performance measurement development

Financial constrain is a major barrier for innovation activities, especially for low technology SMEs and micro-enterprises (Bayarçelik et al., 2014). Mahendra et al. (2015) stated that access to finance is an important factor of innovation level in the organisation. However, financing for innovation is a difficult investment decision because innovative projects always have higher risks than others. Investors or managers, therefore, worry more about the investment put in innovation. Moreover, raising money from external sources creates information asymmetry problems between firms and external investors because it is difficult to monitor innovation. A company's performance must be measured by the efficiency of the company itself and by its operation on the market. In the financial sector, it can also be known as financial stability or financial health. There are many different financial measures to evaluate a company's performance, such as return on equity, return on assets, return on investment, revenue, profit margin, capital adequacy, stock prices, sales growth, and liquidity ratio. Depending on the financial issues, market, company business, industry, and competitors, the company will choose the approximate measures to evaluate its performance.

This research selects sales growth and labour growth as two performance measures in a company. Firstly, following the suggestion of Watson (2007) and Binh and Tien (2019), the sales growth of 2018 and 2019 are recorded. Watson (2007) used sales growth as firm performance and found a significant relationship between sales growth and networking. Similarly, Binh and Tien (2019) used the sales growth as firm performance and confirmed a significant impact of corporate social responsibility on the sales growth.

Secondly, Ramadani et al. (2017) concluded that the education level of staff, labour costs, and skills had a positive impact on the ability of firms to invest in innovation and develop new products. (Fernandes et al., 2013) found a positive effect of the labour force on product innovation. Binh and Tien (2019) calculated the total cost of labour hired for two consecutive years toward the labour cost growth to define firm growth (Evans, 1987). Based on the arguments above, the firm's performance used in the current paper is the sales growth and the labour cost growth.

In this paper, the labour growth is calculated as below.

Growth = $Ln[E_t/E_t]/[t'-t]$, where E presents employee size, t and t' are time of two years.

3 Overview of SMEs in Vietnam

According to VCCI (2019), SMEs account for about 98,1% of all businesses in Vietnam. Despite its high portion, the contribution to the economy of SMEs is not commensurate because

many barriers are affecting their development. Estimated in the period 2017-2019, the private sector (in which the private enterprise has the leading role) contributes almost 50% of GDP, over 30% of the state budget revenues, 45% of the capital invested in the whole society. Those numbers and percentages can be shown that SMEs are the major sector of the economy in Vietnam. The size and scope of Vietnamese SMEs drive them a vulnerable way of adapting to the change fluctuation from the external environment. Due to international integration and market competition, SMEs seemly have undergone a transformation to integrate and adapt to changes at home and abroad. In doing so, innovation is the way that SMEs in Vietnam are gradually taking to seize the competitive advantage in the market.

Besides, to support the business of SMEs in Vietnam, the Vietnamese Government issued resolutions No. 19/NQ-CP on improving the business environment, improving national competitiveness; Resolution No. 35/NQ-CP dated 16/5/2016 and Directive No. 26/CT-TTg on support and development DN until 2020; Resolution No. 75/NQ-CP on reductions in fees and expenses for ENTERPRISES; Resolution No. 98/NQ-CP on Government action program implementing Resolution No. 10-NQ/TW on 3/6/2017 of the party on private sector development... At the same time, the Government also promoted the implementation of solutions to create a favourable and transparent business environment for all economic components, focused on assisting the development of SMEs. To further enhance the legal effect, promote the implementation of SME support policies, at the 3rd session of XIV, Congress adopted SME support Law (Law No. 04/2017/QH14). The law is enforceable from 01/01/2018, with a series of basic support policies for SMEs such as access to credit, information, human resource development, consultancy, technology, and so on, has made an important step forward in the work of improving the positive support policy for SMEs to grow stronger.

In terms of different types of enterprises: the number of state-owned enterprises (SOEs) fell 18.4% and to 23.1% labour reduction compared to 01/01/2012. Period 2012-2017 the average annual reduction of 4.0% in the number of enterprises and 5.1% in the number of employees. This shows that the policy of equalisation and the rearrangement of SOEs has improved, but the implementation process is quite slow. The number of FDI increased 54% and increased to 62.8% of labour compared to 01/01/2012; Average year period 2012-2017, the FDI increased by 9% and labour 10.2%, higher than two times the SOEs. Number of non-state enterprises at 52.3% 01.01.2017 and labour increased by 27.9%, higher than SOEs but lower than FDI; Average year period 2012-2017 of non-state enterprises rose by 8.8%, and employment

increased by 5%. This result shows that FDI attracted many workers in the past five years contributed to employment for workers.

Over the decades, the emerging economic growth in Vietnam has been largely based on investment and labour. The number of employees is increasing, and companies are investing more and more in machinery and equipment. Business growth has been no longer in the traditional way. In the future, the Vietnamese economic growth will mostly have to rely on the increase in labour productivity. The most important driving force of productivity is innovation, namely, driven by technology. SME's business in Vietnam is more and more developed. According to VCCIP statistics, more than 50% of the economic growth comes from the profitability of SMEs. However, Vietnam firms, including large enterprises or SMEs that want to thrive in the future, should pay more attention to competition and innovation (Dana, 1994, 2002). Pioneer in digital transformation is the foundation for the development.

4 Research methodology

This study focuses on testing the hypothesised propositions (Figure 1), in which innovation measure is based on innovative per cent to improve the product based on the cost of technology investment of two consecutive years. Ezzi & Jarboui (2016) defined the variable of innovation as an expenditure of R&D divided by total revenue. The marketing expenditure rate in this study is based on the ratio between the marketing expenditure and the revenue (Manu & Sriram, 1996). The growth of sales and labour cost are two representative indicators of firm performance, as defined previously.

Data is sourced from the survey conducted in 2017 under the Central Institute for Economic Management of the Ministry of Planning and Investment, in which SMEs are considered. The survey also gets supports from Vietnam General Statistics Office's collaboration and is conducted with the cycle of each two years. Normally, the database is published after one and a half years because the survey result needs time to collect and clean data. This is why the survey of 2019 has not been published yet, so a limitation of this study just concerns the survey of 2017. However, the methodology in the current paper will be a significant contribution to the academic literature for SMEs in developing countries, e.g., Vietnam.

As mentioned, the survey is conducted on 2,649 enterprises located in ten provinces (Hanoi, Hai Phong, Ha Tay, Phu Tho, Nghe An, Quang Nam, Khanh Hoa, Lam Dong, Ho Chi Minh City, and Long An). These SMEs are registered and issued the code of tax. Although there is a lot of information included in the survey, the variables concerned are the firm age, style of

firm, innovation, marketing expenditure, and firm performance. Firm performance is reported by the growth rate of sales and the growth rate of labour cost between 2016 and 2017.

The statistical model concerned is presented as below

$$y = b0 + b1*x1 + b2*w1 + e.y$$
(1)

where:

y: Firm performance, which two indicators are the sales growth and the labour cost growth

x1: Innovation as an explanatory variable; it plays an exogenous one. Its measure is innovative per cent of technology investment of 2017 compared to 2016.

w1: Endogenous covariates, which the marketing expenditure rate is employed with instruments such as firm age and firm type. Their measures are stated in table 1.

b1 and b2 are the coefficient of the exogenous and endogenous variables, respectively, and e.y is called the error.

To endogeneity, instrument variables of firm age and firm style are employed. Firm age is measured in years; and firm style is a dummy variable, 1 being the family enterprise and 0 being the limited liability and private enterprises. Firm age is concerned in many studies because of its contribution to firm performance (Evans, 1987; Solakoglu & Demir, 2016) and innovation performance (Fang et al., 2019). According to Smith et al. (2006), once the firm is older, its product lifecycle is a declined earning, while the younger enterprises have more chances to diversity than that of older enterprises.

The firm style in the study is a nominal variable, 1 being family enterprise and 0 being limited liability and private enterprise; it plays an important role affecting firm performance (Bonilla et al., 2010; Tang et al., 2007). Employing the firm style in the ERM is mainly based on (Bonilla et al., 2010), who found a significant relationship between the firm style and firm performance in Chile, the family enterprise perform better.

The model of ERM is employed to test the model proposed in Figure 1. The measure of firm performance is a successor from previous research (Binh & Tien, 2019; Jones, 2010; Watson, 2007). Its measured value is based on the sales growth and the labour cost growth of two consecutive years.

No.	Variable	Label	Author
	Firm performance		
1.	Salesgrowth	Sales growth	Binh & Tien (2019),
			Watson (2007)

Table 1: Information of input variables in the model

2.	Laborcostgrowth	Labour cost growth	Binh & Tien (2019), Jones (2010)
3.	Innovation	Being SMEs' innovation, it is measured in innovative percent to improve product based on the cost of technology investment between 2017 and 2016.	Ezzi & Jarboui (2016), Manu & Sriram (1996)
	Endogenous		
4.	Marketing_Exp	Being marketing expenditure, measured by the ratio between the marketing expenditure and the revenue	Manu & Sriram (1996)
	Instruments		
5.	FirmAge	Firm age is measured in years	Evans (1987), (Solakoglu & Demir, 2016), (Fang et al., 2019)
6.	FirmStyle	Firm style is dummy variable, 1 = family enterprise; 0= otherwise (Limited liability and private enterprise)	(Bonilla et al., 2010), (Tang et al., 2007).

5 Empirical analysis

As described in Table 2, the minimum age of a firm is seven years old; this shows that SMEs in the study have a certain business maturity level. It is noted that this research studied a sample of SMEs in Ho Chi Minh City. As a requirement from the Vietnam General Statistics Office, only SMEs having two consecutive years in financial statements were selected for the interview. Because Ho Chi Minh City is the largest economic centre in Vietnam, it is not surprising that SMEs in the sample have high firm ages. The average growth of sales and labour cost of consecutive years are larger than 1, respectively, which means an increase on average in SMEs' growth of 2017 compared to 2016.

			Std.		
Variable	Orbs	Mean	Dev.	Min	Max
Sales growth (%)	645	1.080	0.380	0.110	6.100
Labour cost growth (%)	645	1.089	0.378	0.001	7.083
Innovation (%)	645	1.139	0.551	0.045	9.065
Marketing expenditure (%)	645	0.044	0.038	0.029	0.265
FirmAge (years)	645	17.247	8.114	7.000	65.000
FirmStyle (1 being family					
enterprises, 0 being otherwise)	645	0.439	0.497	0.000	1.000

Table 3 and 4 present the results of ERM. The error in the marketing expenditure and the error in the sales growth in model 1a show a significant correlation, but its coefficient value is small (0.092 in model 1a, Table 3). Also, we found a significant correlation value between the error in the marketing expenditure and the error in the labour cost growth; its coefficient value is small (0.103 in model 1b, Table 4). Both of these correlations are significant at 5% level. As a result, the marketing expenditure is endogenous for the sales growth for both model 1a and model 1b.

Likely, in model 2a and model 2b, the error in the marketing expenditure and the error in the labour cost are 0.099 and 0.119, respectively. These two coefficients are low and significant at 1% level, so we conclude the marketing expenditure plays in the proposed model as the endogenous variable impacting on the sales growth and the labour cost growth. As a result, hypothesis H1 is supported. We conclude that "*marketing expenditure as endogeneity causes a change in firm growth*."

Interestingly, we could not find the effects of innovation on marketing. However, there was a significant influence of innovation on sales growth and labour cost growth. Thus, hypothesis H2 is supported, and we concluded that "*innovation investment has a significant contribution to firm growth with association to marketing expenditure*".

Because the coefficients of innovation in all models are positive and significant at any level, an increase in innovation of SMEs causes a rise in firm performance. This means that 1% increase in innovation investment makes 0.603% increase in sales growth and 0.186% in labour cost growth. In addition, the results also show that the firm style and the firm age create vitiligo for endogeneity impacting firm performance. Accordingly, the coefficients of firm style and firm age are significant at 1% level, except firm age of model 2a is 5%. In model 2a, SMEs, which are limited liability and private enterprises, are instrumental and contribute to changes in the endogeneity to influence firm performance rather than family enterprises. On the other side, the SMEs with older age have more marketing expenditure consideration and make a change in firm performance.

Model 1a: S	ales growth	Model 2a: Labour cost growth			
Variable	Coefficient	P> z 	Variable	Coefficient	P> z
Salesgrowth			Laborcostgrowth		
Innovation	0.603	0.000	Innovation	0.186	0.000
_cons	0.393	0.000	_cons	0.877	0.000

Table 3: Result of ERM

Marketing_Exp			Marketing_Exp		
FirmStyle	-0.018	0.000	FirmStyle	-0.018	0.000
FirmAge	0.001	0.006	FirmAge	0.001	0.010
Innovation	-0.001	0.822	Innovation	-0.001	0.827
_cons	0.044	0.000	_cons	0.044	0.000
var(e.salesgrowth)	0.034		var(e.laborcostgrowth)	0.133	
var(e.Marketing_Exp)	0.001		var(e.Marketing_Exp)	0.001	
corr(e.Marketing_Exp,			corr(e.Marketing_Exp,		
e.salesgrowth)	0.092	0.019	e.laborcostgrowth)	0.099	0.011
Number of obs	645		Number of obs	645	
Wald chi2(1)	2077.680		Wald chi2(1)	50.78	
Prob > chi2	0.000		Prob > chi2	0.000	
Log likelihood	-1956.039		Log likelihood	-2018.448	

Table 4: Result of ERM

Model 1b: Sal	es growth	Model 2b: Labour cost growth			
Variable	Coefficient	P> z 	z Variable Coefficien		P> z
Salesgrowth			Laborcostgrowth		
Innovation	0.603	0.000	Innovation	0.186	0.000
_cons	0.393	0.000	_cons	0.877	0.000
Marketing_Exp			Marketing_Exp		
Innovation	-0.001	0.869	Innovation	0.001	0.869
_cons	0.433	0.000	_cons	0.043	0.000
var(e.salesgrowth)	0.034		var(e.laborcostgrowth)	0.133	
var(e.Marketing_Exp)	0.001		var(e.Marketing_Exp)	0.001	
corr(e.Marketing_Exp,			corr(e.Marketing_Exp,		
e.salesgrowth)	0.103	0.008	e.laborcostgrowth)	0.119	0.002
Number of obs	645		Number of obs	645	
Wald chi2(1)	2077.68		Wald chi2(1)	50.78	
Prob > chi2	0.000		Prob > chi2	0.000	
Log likelihood	1369.497		Log likelihood	933.814	

To confirm the reliability of model 1a, model 2a, model 1b, and model 2b, the method of Principal Component Analysis (PCA) is employed, which the independent variables of Firmstyle, FirmAge and Innovation played as items are used to predict components. Based on PCA, two components were extracted from three items, in which the first component (PC1) includes FirmStyle and FirmAge, so-called "PC1_Firm characteristics", the second component (PC2) includes innovation, so-called "PC2_Innovation". As a result, there are two new independent variables, e.g. PC1_Firm characteristics and PC2_Innovation employed in the ERM to estimate their impacts on the sales growth and the labour cost growth. Four new models of model 1a1, model 2a1, model 1b1, and model 2b2 have resulted in table 5 and table 6. Accordingly, the error in the marketing expenditure and the error in the sales growth in model 1a1 show a significant correlation, but its coefficient value is small (0.095 in model 1a1, Table

5). Also, we found a significant correlation value between the error in the marketing expenditure and the error in the labour cost growth; its coefficient value is small (0.133 in model 1b1, Table 5). Both of these correlations are significant at 5% level. As a result, the marketing expenditure is endogenous for the sales growth for both model 1a1 and model 1b1.

Likely, in the model 2a1 and model 2b1 (table 6), the error in the marketing expenditure and the error in the labour cost are 0.104 and 0.119, respectively. These two coefficients are low and significant at 1% level, so we conclude the marketing expenditure plays in the proposed model as the endogenous variable impacting the sales growth and the labour cost growth. As a result, hypothesis H1 is supported; this is consistent with the result of table 3 and table.

Based on the prediction of PCA, two components extracted are employed in ERM. Model 2a1 and model 2b1 present that the independent variable of "PC1_Firm characteristics" is significant and negative for both those two models. In terms of firm type and firm age, this means characteristics of SMEs can improve SMEs' performance once SMEs are limited liability and private enterprises with young age. This result is also consistent with the finding of table 3.

Additionally, the independent variable of "PC2_Innovation" is not significant at any level in model 1a1, model 1b1, model 2a1, and model 2a2; this result confirms that the role of innovation as an exogenous one affect firm performance; this conclusion is consistent with the previous models.

Model 1a1: Sal	es growth	Model 2a1: Labour cost growth			
	Coefficien			Coefficien	
Variable	t	P> z	Variable	t	P> z
Salesgrowth			Laborcostgrowth		
Innovation	0.605	0.000	Innovation	0.189	0.000
cons	0.392	0.000	_cons	0.874	0.000
Marketing_Exp			Marketing_Exp		
PC1_Firm characteristics	-0.004	0.008	PC1_Firm characteristics	-0.004	0.000
PC1_Innovation	0.001	0.398	PC1_Innovation	0.001	0.420
_cons	0.044	0.000	_cons	0.044	0.000
var(e.salesgrowth)	0.034		var(e.laborcostgrowth)	0.133	
_var(e.Marketing_Exp)	0.001		var(e.Marketing_Exp)	0.001	
corr(e.Marketing_Exp,			corr(e.Marketing_Exp,		
e.salesgrowth)	0.095	0.015	e.laborcostgrowth)	0.114	0.004
Number of obs	645		Number of obs	645	
Wald chi2(1)	2083.780		Wald chi2(1)	52.35	
Prob > chi2	0.000		Prob > chi2	0.000	

Table 5: Result of ERM

Log likelihood	1373.3124	Log likelihood	937.786

Table 6: Result of ERM

Model 1b1: Sa	les growth	Model 2b1: Labour cost growth			
Variable	Coefficient	P> z 	z Variable Coefficie		P> z
Salesgrowth			Laborcostgrowth		
Innovation	0.604	0.000	Innovation	0.188	0.000
_cons	0.392	0.000	_cons	0.875	0.000
Marketing_Exp			Marketing_Exp		
PC2_Innovation	0.001	0.401	PC2_Innovation	0.001	0.426
_cons	0.044	0.000	_cons	0.044	0.000
var(e.salesgrowth)	0.034		var(e.laborcostgrowth)	0.133	
var(e.Marketing_Exp)	0.001		var(e.Marketing_Exp)	0.001	
corr(e.Marketing_Exp,			corr(e.Marketing_Exp,		
e.salesgrowth)	0.104	0.008	e.laborcostgrowth)	0.119	0.002
Number of obs	645		Number of obs	645	
Wald chi2(1)	2083.57		Wald chi2(1)	51.82	
Prob > chi2	0.000		Prob > chi2	0.000	
Log likelihood	1369.8349		Log likelihood	934.118	

To enhance the data analysis, we have conducted additional segmentation of SMEs. Three variables, such as firm age, firm style and firm growth, are employed toward segmentation, which the cluster method is concerned. Because the sales growth is defined as firm performance, it is a representation indicator one and associated with firm style and firm age toward segmentation based on the cluster method. As a result, there are three input variables employed in the cluster analysis as below

- SA_Growth: the sales growth (measured in percentage) is grouped into quartertile (Q1=25%; Q2=50%; Q3=75%; Q4=100%) by value.
- Fir_Style: Firm style measured in two values, 1 being a family enterprise, 0 being a limited liability and private enterprise
- FirmAge: firm age measured in years

The cluster method results in the five clusters as the best decision (Figure 1). Cluster-1 accounts for 31% with characteristics: the sales growth (SA_Growth) of quarter 2 (Q2) accounting for 53%, firm style as the family enterprise with 100%, and firm age with an average age of 19.43 years. Cluster-2 accounts for 19.5% with different characteristics: the sales growth at Q2 occupies 100%, firm style is limited liability and private enterprises accounting for 100%, and the average firm age of 15.85%. Similarly, other clusters of the cluster-3, the cluster-4, and the cluster-5 have different characteristics.

In sum, the cluster method brings a message that depending on the difference in the level of sales growth rate, they are clustered into difference in the firm style (family enterprises or limited liability and private enterprise) and different average firm ages.

Clusters

Input (Predictor) Importance

Cluster	cluster-1	cluster-2	cluster-3	cluster-4	cluster-5
Label					
Size	31.0% (200)	19.5% (126)	25.1% (162)	12.9% (83)	11.5% (74)
Inputs	SA_Growth	SA_Growth	SA_Growth	SA_Growth	SA_Growth
	Q2 (53.0%)	Q2 (100.0%)	Q4 (53.1%)	Q3 (100.0%)	Q1 (100.0%)
	Fir_style	Fir_style	Fir_style	Fir_style	Fir_style
	1 (100.0%)	0 (100.0%)	0 (100.0%)	1 (100.0%)	0 (100.0%)
	FirmAge	FirmAge	FirmAge	FirmAge	FirmAge
	19.43	15.85	15.78	18.94	15.04



Model Summary



Figure 2: Segmentation based on firm age, firm style and the sales growth

6 Conclusion

To study the endogenous influence of marketing on firm performance through the dominance of innovation, the quantitative method of ERM was employed, in which the data source used is from Vietnam General Statistics Office surveyed in 2017 with 645 SMEs at Ho Chi Minh City extracted from the population of ten provinces as cities. The results found that marketing is an endogenous factor that increases firm performance, which is dominated by innovation. Especially for older and larger businesses, the endogeneity of marketing has a

greater influence. Innovation in SMEs have a significant contribution to the sales growth and the labour cost growth, but in which this innovation is based on a good control on the increasing in the sales growth.

6.1 Theoretical implications

While innovation activities have received strong attention in developed countries, emerging countries have just focused on innovation recently. Consequently, there is still a lack of understanding of the role of innovation in emerging countries (Choi et al., 2014). It is noted that emerging countries grow rapidly and take an increasingly important role in the world economy (Haddad et al., 2019). Companies in emerging countries have to develop innovation abilities to enhance competitive advantages. However, the relationship between innovation and firm performance in the context of an emerging market is nascent (Choi et al., 2014). Our study addresses this gap and makes two contributions. First, we found that innovation stimulates the growth of sales and labour costs. This is consistent with findings for the Asia and China contexts (Lee et al., 2020; Li et al., 2020). Specifically, we find that when spending for innovation increases, the coefficient of increase for market sales (0.603%) is higher than the coefficient of increase in labour costs (0.186%).

Second, although there is significant difficulty in reconciling issues of endogeneity to marketing strategy (Rutz & Watson, 2019), we find that SMEs that have high investment on innovation also have better market performance. In addition, the findings show that SMEs with a long time in the market will have an endogenous effect in marketing use on firm performance, while young SMEs give the opposite idea. Limited liability and private enterprises have more adoption in marketing expenditure toward increasing the sales growth with good control of the growing labour cost.

6.2 Managerial implications

This research provides important implications for managers and policymakers. They could be generalised to other emerging markets with low labour costs. SMEs in emerging markets could pay more attention to marketing and innovation as our results show that they boost firm performance. SMEs have many difficulties engaging in innovation activities due to resource constraints, intellectual property rights, and culture (Leckel et al., 2020). Hence, innovation policy is vital to increase innovation for SMEs. The policymakers should design guidelines and incentives to help increase the firm's abilities in improving innovation and pursue marketing activities.

6.3 Limitation and future research

In terms of limitations, we used sales growth and labour cost as dependent variables. Alternative performance measures could lead to different findings and explanations. Also, we only focused on the Vietnam context with data of 2017. There are other emerging contexts (e.g., Brazil, India) where business, culture, and political environments influence the effects of innovation. Future research could conduct in these countries to apply innovation theory to different contexts. In addition, Dana et al. (2021) recently proposed a diagnostic tool for assessing the potential of innovation initiatives. Future research could adopt the proposed model to identify issues in designing and implementing innovation projects at SMEs in Vietnam.

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