

## Application of Exploratory Factor Analysis To Assessing The Impact of Local Support Factors on The Sustainable Development of Small and Medium-Sized Industrial Enterprises In Vietnam

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**Abstract:-** Sustainable development (SD) of enterprises in recent years has always been of special interest to domestic and foreign researchers, including small and medium-sized enterprises (SMEs). The study conducted a survey of 155 SMEs in three regions of the North, Central and South of Vietnam with the main survey subjects being managers in enterprises. The main purpose of the study is to assess the impact of local support policies compared to other factors developed in the research model affecting the sustainable development of small and medium-sized industrial enterprises (industrial SMEs) in Vietnam. The observations that the research team developed and included in the scale of the local support policy variable are: production premises; local social activities; administrative procedures; support from the SME association; supporting environmental policies and supporting credit activities for businesses. In this research, the authors employed exploratory factor analysis to identify 4 factors affecting the sustainable development of industrial SMEs. The research results show that support policies from localities have an important role and more strongly influence human resource factors and social responsibility (SR) policies of enterprises in their sustainable development for industrial SMEs in Vietnam.

**Keywords:** Sustainable development, industrial SMEs, local support policies, exploratory factor analysis (EFA), Vietnam

### 1. Introduction

With the international integration movement getting deeper and wider, the issues of sustainable development in general and enterprise's sustainable development in particular in recent years have always been given special attention by government management agency. Implementation of sustainable development is the responsibility of the whole society, including the contribution of the business community. However, in order to further promote the development of businesses towards sustainability, the role of local support policies should be considered.

In Vietnam, SMEs are classified based on the criteria of capital and labor. According to the Government's Decree 90/2001/ND-CP of November 23, 2001, "SMEs are independent production and business establishments, having registered their business under the current law, with registered capital not exceeding 10 billion dong or the average number of employees every year is not more than 300 people". However, after a period of application, this Decree has revealed many shortcomings in how to identify SMEs, has not yet properly assessed the nature and size of businesses in each different industry. Along with the changes and development in the integration process, on 11 March 2018, the Government issued Decree No. 39/2018/ND-CP [29] detailing a number of articles of the Law on Small Business Support and fit. Accordingly, SMEs are classified by size including micro enterprises, small enterprises, medium enterprises according to the fields, namely:

**Table 1. Classification of enterprises by capital and labor criteria**

Scale Area	Medium enterprises		Small enterprises		Micro enterprises	
	Total capital	Number of employees	Total capital	Number of employees	Total capital	Number of employees

<b>Agriculture, forestry, fisheries and industry and construction</b>	Not more than 100 billion VND	Not more than 200	Not more than 20 billion VND	Not more than 100 people	Not more than 3 billion VND	Not more than 10 people
<b>Trade and services</b>	Not more than 100 billion VND	Not more than 100 people	Not more than 50 billion VND	Not more than 50 people	Not more than 3 billion VND	Not more than 10 people

Source: Government Decree 2018

Accordingly, the field of operation of SMEs is determined based on the current law provisions on the system of economic sectors and the provisions of specialized laws. In the case of enterprises operating in many areas, the criteria for determining SMEs are based on the field with the highest revenue; If the highest revenue-generating field cannot be identified, the determination criteria will be based on the field with the highest labor use.

Also according to the SME support policy, there are 8 types of support that SMEs will definitely receive from the government, which is access to credit; tax and accounting support; support of production premises; technology support; support incubation facilities, technical facilities, common working areas; support market expansion; information, advice and legal assistance; support human resource development. Policies supporting SMEs have achieved certain results and gradually been integrated into sectoral / sectoral policies / programs of ministries, sectors and localities. About half of the support policy groups achieved relatively clear supportive outcomes for SMEs, such as financial assistance, human resource development, information and advice, and market development promotion. However, although the policies and programs to support SMEs have achieved some remarkable results, the implementation and impact of these policies are still limited and exist. Specifically, more than 80% of SME support policies / programs do not assess support results. Secondly, many policies have just stopped at the general encouraging policies, there are no clear preferential policies such as assisting SMEs in production space, participating in procurement and service provision. Public service, many problems in the tax incentives, SME support policies in supporting industries. The scope and scale of support of some policies are still small, such as the policy on business incubators (only 08 business incubators in two big cities, Hanoi and Ho Chi Minh City), policies on credit guarantees for SMEs (18 local guarantee funds with limited operating results), new business management and production management consulting policies are mainly implemented in a small number of enterprises in the North, due to limited resources, mainly mobilized from international aid. Some policies have low content quality, and the implementation is not suitable for SMEs such as information support. Fifthly, the progress of implementation of SME support policies and programs is still very slow, usually the time to develop normative documents guiding implementation takes 2 to 3 years. Sixthly, policies and programs to support SMEs are currently being carried out sporadically, fragmented and spread out. Meanwhile, for an enterprise, want to develop sustainably, it must have elements of resources, finance, technology level, access to market information, legal knowledge,... overall support of the Government. Finally, the level of implementation of SME support policies at the local level is limited. The work of grasping the needs and the situation of SMEs production and business remains weak. Many localities have not been proactive in developing programs and policies to support SMEs in the area, most of which have just participated in the implementation of programs hosted by ministries and sectors with modest levels (trade promotion, intellectual property, quality control, etc.).

In Vietnam, according to the annual report of Vietnam Enterprises 2018/2019 of Vietnam Chamber of Commerce and Industry (VCCI) in terms of classification of SMEs according to the Government's Decree No. 39, according to the labor tissue: Medium-sized enterprises are with the number of 8,518 enterprises, accounting for 1.58%; small-sized enterprises are with the number of 115,235 enterprises, accounting for 21.35%; and micro-sized enterprises are with the number of 415,835 enterprises, accounting for 77.07%. The proportion of SMEs currently accounts for 97.8% of the total number of enterprises in Vietnam. In particular, the total number of industrial SMEs in all sectors is 76,158 enterprises, accounting for 14.1% of the total number of enterprises across the country, by the end of the second quarter of 2019 (Vietnam General Statistics Office, 2019). The number of enterprises in the manufacturing industry always accounts for a large proportion of the total number of industrial SMEs with 69,716 enterprises (accounting for 91.5%). In contrast, the number of enterprises concentrated in the electricity and gas

distribution industry is still low, in 2018, there were 1,415 enterprises, accounting for only 1.85% (Vietnam General Statistics Office, 2019).

The characteristics of industrial SMEs come from the characteristics of the industry and the size of the business. Comparable to other industrial SMEs in the world, being the small size, Vietnam's industrial SMEs also have similar characteristics with other countries (Nguyen Dinh Phan & Nguyen Ke Tuan, 2007). At present, industrial SMEs in Vietnam belong to many economic sectors with many forms of business organizations such as foreign-invested enterprises, government-owned enterprises, private enterprises, limited liability companies, joint stock companies, etc. For a long time, businesses of different sectors were not treated equally and discriminated. As a result, it affects the way businesses do business, and also creates a starting point of unequal access for resources (in bank loans or in land allocation, etc.); industrial SMEs have a limited volume of products, mainly based on manual labor, often providing only a few products and services that match the qualifications and experience of the business owner as well as the financial capacity of the enterprise; The business capital of industrial SMEs is mainly owned by the business owner, or the investment borrowed from relatives and friends, and the ability to access capital from credit institutions is low; Industrial SMEs have flexibility due to low initial investment, low labor use and local resources utilization. Therefore, industrial SMEs can easily change their production plans, business premises, business types and even easily dissolve their businesses; The industrial SMEs were established and operated mainly based on the capacity and experience of the business owners themselves, so the organization's structure is very simple, the management decisions are also quickly implemented (Trinh Duc Chieu, 2010).

Based on the characteristics of industrial SMEs in Vietnam today, it can be seen that, in the long run, the sustainable development of industrial SMEs in Vietnam is necessary and consistent with the universal development movement of the world as the international integration is taking place in countries deeper and wider. With the inherent characteristics of the current industrial SMEs in Vietnam mentioned above such as: limited capital, backward manufacturing technology, poor infrastructure will greatly affect the productivity or problems in addressing environmental pollution and contribution to the overall development of society (Phung The Dong, 2019). These obstacles need to be overcome thoroughly to promote industrial SMEs in Vietnam towards the sustainable development in the near future.

The development of enterprises, in addition to the dependence on available resources, is supported by government policies and development assistance from government management agencies directly to the localities where enterprises' operation is really necessary for businesses, including industrial SMEs (Etuk.R & Baghebo, 2014). Over the past years, the central to local political system has paid special attention to and introduced a series of supportive policies to promote SMEs in Vietnam, especially the SMEs who developing towards sustainability such as: Implementing a variety of credit packages with preferential interest rates for industrial SMEs; The Law on Supporting SMEs was passed by the National Assembly and came into effect on January 1, 2018, including 4 chapters and 35 articles, providing principles, content and resources to support SMEs; responsibilities of agencies, organizations and individuals related to supporting activities, etc. with many preferential policies, supporting SMEs in production and business. This is an important legal corridor for all sectors of the economy to join hands to support the strong development of SMEs (Bui Bao Tuan, 2019). However, from the perspective of the role and the degree of influence of the local support policies compared to other factors, the impact on the sustainable development of the industrial SME sector needs to be assessed and considered more thoroughly to come up with more specific, practical and feasible solutions in the coming time.

## **2. Literature review**

Apparently, SMEs play an important role in economic growth, job creation and innovation in each country; therefore, a SME in general is regarded as one of the important factors in the national innovation and sustainable development strategy (UN, 2017, p. 8). However, in reality, SMEs have to face many difficulties and challenges ranging from access to finance, scale, resources, technologies, etc., to environmental impacts (Yoshino, N. and F. Taghizadeh-Hesary, 2016), Yadollahi Farsi et al, 2014; World Bank, 2009, p. 3). Most SMEs are more concerned about economic growth than environmental protection; however, economic sustainability is required because production is highly dependent on the resilience of natural resources (Mauricio Quintero - Angel et al., 2017, p. 153). Sustainable development of SMEs continues to become a topic of discussion in many studies. According to the World Business Council for Sustainable Development (Watts, P., & Holme, R, 1999), sustainable businesses can be interpreted as corporate commitment to conduct ethically and contribute to economic development, while improving workforce's quality of life, their families, local and global communities in both the present and future. Therefore, in respect to SME sustainability, it covers most aspects of economy, social attitudes, safety and the environment (Mina Rafiei and Luis A. Ricardez-Sandoval, 2020, p. 3).

However, a question is raised related to whether SMEs can afford sustainable development or not (Evy Crals and Lode Vereeck, 2004, p. 2). This depends not only on efforts from the business but also on government policies. Most planning policies at the international, national and local levels play an important role in achieving the enterprise's sustainable development goals (Green Win, 2018, p. 6). With government and local participation, economic, technical and social conditions will be ensured. SMEs and new jobs are formed, producers benefit from the supportive State subsidies' policies (ILO, 2019, p. 7). In order for SMEs to achieve both economic growth and higher satisfaction for customers and the community, it is necessary to improve their business competitiveness (Bennett & Crudgington, 2003, p. 27,32). However, the major difficulty for SMEs is the capability to access to capital (Thorsten Beck, 2007, p. 1). As a result, many countries have issued financial policies to support SMEs (World Bank, 2009, p. 24).

According to Amit Bouri et al (2011, p. 17), SME's access to capital in many countries is mainly from the banking system, but banks can often seek high profits in their core markets; therefore, they have few reasons to accept the risk of lending to SMEs. The World Bank (2009, p. 7) also argued that many SMEs in emerging markets often relied on informal investment such as borrowing from relatives. In view of this fact, in order to facilitate SMEs' access to capital, International Finance Institutions (IFIs) have shown strong interest in SMEs when developing donor programs. For SMEs, it combines three IFI development priority areas: developing private sectors, promoting access to finance and growth for SMEs (Amit Bouri et al, 2011, p. 26). In addition, governments have adopted a variety of measures to support SMEs to access finance, such as reducing existing legal / regulatory obstacles, applying measure to set up supportive financial market for SMEs, intervening in the direct market to promote or encourage financial support activity for SMEs (World Bank, 2009, p. 24).

In order to promote SMEs' sustainable development, each country issues policies which are appropriate to its economic development conditions (UNEP, 2007, p. 14). For example, in Africa, government policies often focus on three important areas of capital, capacity and knowledge as most SMEs in this region are changing their development model to pay attention to meet the needs of low-income customers. This is why most public policies direct their Investment Funds to support investment in businesses that provide clean water, housing, health care and energy to the community with low income (UNEP, 2007, p. 16). In terms of this issue, Barbara James (2007, p. 12), proposed the need to educate investors about how to access financial resources; in addition, it is necessary to build the capacity and participation of local banks when developing SME supportive projects as well as training local managers in identifying, investing and promoting sustainable development for SMEs.

Many countries also pay attention to environmental and social policies to support SMEs for sustainable development. G.Trufil and K. Hunter (2006, p. 584) refer to the Project of developing a sustainable development framework which is implemented in Scotland and based on a number of initiatives such as: supporting SMEs to build and comply with the provisions of the law on different environments and sustainability to improve business opportunities; Developing reporting systems for SMEs to participate in their sustainability effectiveness assessment and identify key gaps to be addressed; and Supporting the modernization of SMEs. Several European governments have also implemented a number of initiatives and policies to support SMEs for sustainable development through improving competitiveness and resource efficiency. Firstly, in order to stimulate the application of sustainable development measures, governments in these countries are suggested to work with business and trade associations to clarify the rules and encourage the adoption of green practices, as well as understanding the needs of SMEs. Secondly, often when seeking support for environmental issues, SMEs often turn to local authorities, so they are well prepared to give guidance and advice to SMEs about sustainability and regulations to be executed seriously. Many essential measures are put in place by local authorities such as advertising support, information dissemination, web-based tools and direct capacity building to provide advice and guidance for SMEs to carry out "green" activities (Green Win, 2018, p. 7-8).

Actually, small and medium – sized industrial enterprises are often seen as one of the drivers of economic growth, job creation and poverty reduction in developing countries. They are critical means to accelerate the economic and industrialization to be quickly achieved. In order to contribute to the overall development of small and medium – sized industrial enterprises in countries and territories, the Government should provide necessary infrastructure and incentives to enhance and encourage SMEs development. They should provide more financial support to loosen strict and contradictory policies that allow SMEs to operate with fewer barriers for greater development opportunities (Etuk.R & Baghebo, 2014).

Kamunge et al. (2014) used the EFA factor analysis method via a questionnaire with 274 samples, selected 5 factors that affect the development of small industrial enterprises and including Government Policy factors beside other factors namely Market information services; Financial resource; Management capabilities; and infrastructure.

A research by Gholamhossein.H and Ali Ramezani (2016) identified factors affecting the maintenance of entrepreneurship in small and medium-sized food industry enterprises in Iran. Researchers of the study conducted in-depth interviews with 12 managers / owners of enterprises, then conducted a broad survey with 130 enterprises through questionnaires. Research findings show that social factors including customer orientation and environmental factors include: product recycling activities, production emissions; elements of government policies have the biggest impact on maintaining entrepreneurship among small and medium-sized food industry enterprises in Iran. In line with Gholamhossein.H and Ali Ramezani (2016), Umar Ibrahim (2008) with the scope of research space is a small and medium-sized industry in Nigeria's Borno state analyzed about factors affecting the performance of this industry. The study emphasized that, in order for small and medium-sized industrial enterprises to achieve production goals and to optimize efficiency, the core element is to have a suitable workforce with a refined attitude. The country has a good working environment, good infrastructure and financial resources, along with the support for government policies and a fair competitive environment. The support of state management policies is necessary for small and medium-sized industrial enterprises in addition to environmental factors, business strategies and internal resources of enterprises. These enterprises are limited in resources and competitive capacity in the market compared to other large enterprises, so the support of policies given by local State management agencies is necessary and viewed as an important leverage that helps businesses achieve their long-term sustainability goals (Martin L. Martens, 2010).

In addition to the positive aspects from the supportive policies of the government and local authorities, some studies also point out the limitations of the supportive policies being ineffective, creating major obstacles in the sustainable development of small and medium industrial enterprises. A research by Peng Tong et al. (2019) pointed out that the existing shortcomings aimed at the sustainable development of small and medium enterprises in China in the context of low carbon economy (reduction of greenhouse gas emissions), which emphasized dissatisfaction with the Government's supportive policies because of cumbersome administrative procedures, high informal costs and inadequate financial support for credit. A research by Le Ngoc Nuong (2018) used a linear structure model (SEMs) to identify and evaluate the influence of factors that are barriers affecting the development of small and medium-sized industrial enterprises. In Thai Nguyen, a province of Vietnam, the study found that the local Supportive Policy factor creates a larger barrier than the enterprise's human resources and raw material factors, in addition to factors related to financial capability and competence to access to finance. Ghosh et al. (2011) combined the analysis of key success factors for small and medium-sized industrial enterprises and the factors hindering SMEs' development in Singapore / Malaysia and Australia/New Zealand. The research results indicate that the factor hindering the success of businesses in both Singapore and Australia is the high cost of doing business due to lack of support from the Government. However, the level of the impact level in Singapore is greater. Or the study of Mashenece et al. (2014) with the scope of research in African countries, using multivariate regression models that showed the growth and development potential of SMEs depending on convenient business environment. However, most countries in Africa are facing many challenges that may hinder their growth potential, including the bureaucracy factor in business registration at the State management agencies in the locality. The study also emphasizes that the Government needs to be more transparent in facilitating the resolution of business procedures for SMEs in order to create a better competition in the market.

In general, basic studies have highlighted the role of government and local support policies for the sustainable development of small and medium-sized enterprises in general and small and medium-sized industrial enterprises in particular. Considering the scope of research in Vietnam, this issue has not been reviewed and evaluated in detail. Therefore, this study is necessary to assess the role and impact of the supporting policy in reality from the locality compared to other factors affecting the sustainable development of small and medium-sized industrial enterprises in Vietnam.

### **3. Methodology**

#### **3.1. Questionnaire and data collection**

Before conducting the official survey, the research team conducted in-depth interviews with economic experts and managers in small and medium-sized enterprises in Vietnam to build a proposed research model and a scale for variables in the model. The results of in-depth interview data were tested by the research team on SPSS software to calibrate the scale accordingly, then conducted a formal survey. Representatives of enterprises participating in the official survey are those who are from department heads and above, have university degrees and work with their own professional specialty. The time for the research team to conduct in-depth interviews is: February 1, 2020 to February 10, 2020. And, the time to conduct the official survey: February 20, 2020 to March 3, 2020.

In this study, raw data collection was conducted through in-depth interviews with experts and managers in industrial SMEs in Vietnam to develop an official questionnaire. The questionnaire consists of 3 parts. The first part includes sociodemographic information about sociodemographic details of respondents, part 2 is information related to the characteristics of the business, and part 3 is the questions related to the factors affecting the sustainable development of industrial SMEs. The data collection is done through convenient sampling methods to collect feedback data of business managers on the impact of the local support policies for businesses on SME development in Viet Nam.

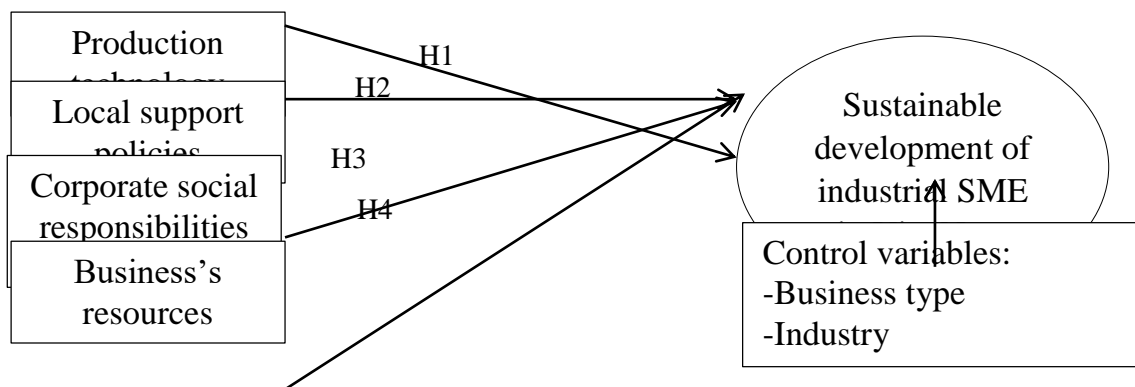
The questionnaire uses the Rensis Likert scale (also known as the Likert scale), the Likert scale has 5 levels from low to high scores, ranging from 1-5 as follows: 1. Strongly disagree; 2. Disagree; 3. Normal; 4. Agree; 5. Strongly agree. The total number of questionnaires issued is 180, collecting 168 feedbacks, the number of valid feedbacks for data processing is 155. Each 1 questionnaire corresponds to an enterprise.

### 3.2. Data analysis

Raw data, after being collected, will be processed in SPSS 23.0 software. The study tested the reliability of a scale using Cronbach's Alpha coefficient, which is a statistical test of the degree of rigor with which the items in the scale correlate. Then, conduct Exploratory Factor Analysis (EFA) to check the unidirectional of the scales in the study. Finally, the study uses multivariate regression methods to evaluate the impact of the local support policies compared to the following factors: Manufacturing technology; Environmental and social responsibility policies of enterprises and their resources to the sustainable development of industrial SMEs in Vietnam.

In this study, the author uses the main method of EFA discovery factor analysis to determine whether or not new factors from the proposed research model (factors in the proposed research model are based on In-depth interview results and overview results from the relevant research models). The main purpose of this study is to determine the level of influence of local supportive policy factors compared to other factors proposed in the proposed research model: Production technology, responsibility corporate society and its resources. Therefore, the EFA analysis method is consistent with this research objective. In subsequent studies, the research team will expand the size of the research sample, identify the moderator variables in the research model through the SEM linear structure model to more accurately assess the factors affecting sustainable development of small and medium-sized industrial enterprises in Vietnam.

### 3.3. Research model



**Figure 1. Research Model**

The research model consists of 4 independent four variables: production technology factors, local support policies, corporate social responsibility and internal resources. The basis for the research team to present and identify these 4 independent variables is based on the results of in-depth interviews with experts who are on the board of directors of small and medium-sized enterprises in Vietnam and economic experts. in the same field of study (20 in-depth interview participants). In addition, the research team also combined with the research overview results of the relevant research works at home and abroad to build the proposed research model as shown in Figure 1. Based on the research model, the research hypothesis is presented as follows.

*Hypothesis H1:* Manufacturing technology factors positively affect the sustainable development of industrial SMEs in Vietnam

*Hypothesis H2:* The element of local support policies has a positive influence on the sustainable development of industrial SMEs in Vietnam

*Hypothesis H3:* The policy element of corporate social responsibility has a positive influence on the sustainable development of industrial SMEs in Vietnam.

*Hypothesis H4:* Business's resources (including financial and human resources) positively affect the sustainable development of industrial SMEs in Vietnam

Based on the research overview and previous studies, the authors formulated a scale to study the factors affecting the sustainable development of Vietnam's industrial SMEs as follows:

**Table 1. Measurement scale and construction source**

Scales	Code	Questions	Sources
<b>Manufacturing technology</b>	CN1	Prioritize in investing to renew equipment annually	Le Ngoc Nuong (2018); Trinh Duc Chieu (2010) and author's proposal
	CN2	Manufacturing technology is top priority	
	CN3	Develop a new product development strategy	
	CN4	Focus on human resource investment to apply new technologies	
<b>Local Support Policies</b>	CS1	Easy access to production premises smoothly	Le Ngoc Nuong (2018); Muhammad. A et al (2015) and author's proposal
	CS2	Supported to participate in local social activities	
	CS3	There are no difficulties in local administrative procedures	
	CS4	Local SME associations have a lot of positive support for industrial SMEs	
	CS5	Be promptly informed of changing policie on environmental protection	
	CS6	Local interest in social security for employees	
<b>Corporate Social Responsibilities</b>	TN1	Attend vocational training programs for young people in the community	Phan Van Dan (2012) and author's proposal
	TN2	Participate in building clean water and sanitation programs for the community	
	TN3	Participate in training, capacity building, social knowledge for employees	
	TN4	Contribute to social activities in local	
	TN5	Focusing and paying attention to issues of environmental pollution treatment	
	TN6	Comply with regulations of law on ensuring the safetiness of food and environment	
<b>Business's Resources</b>	NL1	Current finance and infrastructure is sufficient to expand the business	Umar Ibrahim (2008) và Trinh Duc Chieu (2010)
	NL2	Current financial resources are sufficient to maintain business activities	
	NL3	Human resources in businesses have good working capacity	
	NL4	The number of employees in the organizations is becoming more and more competent annually	
	NL5	After being trained, employees will work more effectively	
<b>Sustainable Development</b>	BV1	Businesses have high profit and grow steadily every year	Phan Van Dan (2012) and author's proposal
	BV2	Businesses can expand production and business markets	
	BV3	Businesses are recorded for environmental protection in production	
	BV4	Businesses have made positive contributions to local	

		environmental protection activities	
	BV5	Businesses are always highly appreciated by local agencies for their contribution to local social activities	
	BV6	Businesses always create motivation to work for employees	

(Source: Summary of the authors)

#### 4. Research results

##### 4.1. Descriptive statistics research sample

**Table 2. Number of SMEs by geographical area**

Geographical Area	Size	Micro	Small	Medium	Density by region (%)
Northern region		35	59	9	66,5
Central region		6	5	4	9,7
Southern region		9	21	7	23,8
<b>Total number of Enterprises</b>		<b>50</b>	<b>85</b>	<b>20</b>	<b>100</b>

(Source: Research sample statistics of the authors)

The number of industrial SMEs by geographic area after collecting survey data can be seen that the enterprises participating in the survey are available in the Northern, Central and Southern regions. The percentage of feedbacks collected in the North accounted for the largest proportion (66.5%), followed by the South (23.8%) and the Central (9.7%).

**Table 3. Number of surveyed enterprises by industry and size**

Industry	Size	Micro	Small	Medium	Total	Density by Industry (%)
<b>Mining</b>		6	9	2	17	<b>11</b>
<b>Processing and manufacturing</b>		29	51	12	92	<b>59,4</b>
<b>Producing and distributing electricity and gas</b>		8	10	4	22	<b>14,2</b>
<b>Water supply, water treatment and waste disposal</b>		7	15	2	24	<b>15,4</b>
Total number of Enterprises		<b>50</b>	<b>85</b>	<b>20</b>	<b>155</b>	100
Density by Size (%)		<b>32,3</b>	<b>54,8</b>	<b>12,9</b>	<b>100</b>	100

(Source: Research sample statistics of the authors)

Survey results of industrial SMEs in Vietnam by industry and size are presented in detail in Table 3. Out of 155 valid surveys, the number of SMEs in the industry processing and manufacturing accounted for the largest proportion (59.4%); the number of enterprises in the Mining industry accounts for the least proportion (11%).

##### 4.2. Verify the reliability of the scale

The scales are assessed for reliability through Cronbach's Alpha coefficient. The results of calculating this coefficient indicate that 4 groups of factors have a Cronbach's Alpha coefficient greater than 0.6 (Table 4). All observed variables have correlated-total variables > 0.4. Therefore, the factor scales affecting the sustainable development of industrial SMEs in Vietnam are eligible for EFA.

##### 4.3 Exploratory Factor Analysis

The results of the EFA's all factors affecting the sustainable development of industrial SMEs in Vietnam produce the value of KMO (Kaiser-Meyer-Olkin) = 0.821 > 0.6. Therefore, factor analysis is consistent with the research data obtained. The Bartlett's test value with the hypothesis (H0) is "non-correlated variables" with the value Sig = 0.00 < 0.05.

**Table 4. Results of EFA's factors and evaluation of reliability of the scale**

Factors	Factor Loading					
	1	2	3	4	5	6
<b>Cronbach's Alpha</b>	<b>0.723</b>	<b>0.736</b>	<b>0.741</b>	<b>0.781</b>	<b>0.712</b>	<b>0.786</b>



CN1	0.735					
CN3	0.713					
CN2	0.709					
CN4	0.701					
CS1		0.796				
CS3		0.775				
CS5		0.723				
CS4		0.661				
CS6		0.645				
TN3			0.801			
TN2			0.772			
TN5			0.731			
TN6			0.725			
TN4			0.686			
NL1				0.736		
NL2				0.654		
NL3					0.831	
NL4					0.801	
NL5					0.775	
BV1						0.825
BV3						0.809
BV4						0.776
BV2						0.751
BV5						0.726

(Source: Results of data analysis through SPSS 23.0 of the authors)

After the first EFA, observed CS2 and TN1 with loading factor less than 0.4, so it was excluded from the model. The author conducted a second factor analysis with 24 indicators in the research model, the results showed that there are 6 groups of factors extracted from 24 indicators (Table 4). The data processing result for the value of Eigenvalues = 1,136 > 1, so it can be confirmed that the number of factors extracted is appropriate. Total Variance Explained of factor analysis is 55,256% > 50%. This means that the extracted factors explain 55,256% of the observed variables included in the EFA.

The results of EFA show that the business resource factor group is extracted from 2 separate groups of factors NL1, NL2 are financial resources and NL3, NL4, NL5 are human resources.

The influence of the local supportive policy element is larger than the enterprise's human resource factor and corporate social responsibility policy. The results of the research are consistent with the current context in Vietnam for small and medium industrial enterprises. Although accounting for over 90% of the total number of enterprises across the country, the number of small and medium-sized enterprises is still largely limited when the production level is backward, lacking capital and supportive policies of the locality as well as the Government is not really strong enough to push these enterprises to maintain development in the long term. The research results show that human resources factor does not have an equal or at least greater effect than production technology factors or state support policies. This problem is not consistent with the theory of corporate governance, but it is consistent with the reality in Vietnam today. For small and medium-sized enterprises, when there are many barriers in accessing capital to improve production technology, support policies from the state to localities related to issues such as: production premises, infrastructure, tax policies ... are always focused and more urgent than needs and requirements for manpower.

#### 4.4. Regression analysis

Regression analysis results for the value of  $R = 0.516$  and adjusted  $R^2$  is 0.525. This means that the relationship between the independent variables explains 52.5% of the dependent variable as "Sustainable development of industrial SMEs in Vietnam". Through ANOVA variance analysis results, the value of  $F = 62,316$  with the statistical significance  $Sig = 0,000 < 0.05$ . They can confirm the existence of relationships between independent variables and dependent variables. Thereby, showing that the research model ensures reliability.

Based on the Beta coefficient in Table 5, it can be seen that the factors in the research model, the Manufacturing technology factor have the largest Beta standardization factor = 0.312. Social policy (TN) factor has

the smallest Beta coefficient = 0.1122. Sig value. of all variables <0.05. Therefore, the hypotheses H1, H2, H3 and H4 proposed in the research model are all accepted. The non-standardized regression model of factors affecting the sustainable development of industrial SMEs in Vietnam is determined as follows:

$$BV = -1,251 + 0,312 *CN + 0,263*TC + 0,122*TN+ 0,166*CS + 0,156*NL (1)$$

**Table 5. Beta coefficient after performing regression**

	Non-standardized coefficient		Standardized coefficient	Validation value t	Level of significanceSig.
	B	Standard error	Beta		
(Constant)	-1,251	0,216		-4,221	0,000
CN	0,521	0,043	0,312	6,217	0,000
CS	0,452	0,055	0,166	5,251	0,001
NL	0,128	0,038	0,156	3,422	0,012
TC	0,104	0,035	0,263	3,425	0,002
TN	0,282	0,061	0,122	6,421	0,001

(Source: SPSS23.0 data processing results of the authors)

Based on the regression equation (1), it can be seen that the manufacturing technology (CN) factor has the greatest impact on the sustainable development of industrial SMEs in Vietnam. Next are the factors of Finance (TC), local support policies (CS), Human resources (NL) and finally the corporate social responsibility (TN) policy. The research results are similar to those of Le Ngoc Nuong (2018) and Muhamad. A et al (2015). In Le Ngoc Nuong's study (2018), the local support policies have the fourth most powerful influence and the 1<sup>st</sup> strong manufacturing technology factor out of the 7 factors that have an impact on the development of small industrial enterprises and fit. The local support policies have a positive influence and are the factor that has a greater impact than the human resource factor in the enterprise and the policy on social responsibility for the sustainable development of industrial SMEs in Vietnam. It can be explained here that, for the industrial SME sector, the incentives from local support policies have a direct impact and clearly affect the existing limitations of the industrial SME sector. For example, business strategies, access to finance or unnecessary bureaucratic procedures which increase costs, creating barriers for businesses towards sustainable development in the long term.

#### 4.5. Testing statistical hypotheses

Using Anova's variance analysis to determine the differences of types of businesses and industries participating in the survey. In this analysis, the coefficient of concern is the Sig coefficient. The hypothesis H0 poses is that there is no difference in the sustainable development of enterprises by business sector and type of enterprise. If the Sig coefficient is > 0.05, reject the H0 hypothesis, which means that there is a difference in the type of business and business lines in the field of SMEs development in Vietnam. If Sig < 0.05, accept hypothesis H0.

The testing results of all groups of enterprises by type and business lines give Sig value < 0.05. Specifically, testing the differences by type of enterprise has a value of Sig = 0.018; Testing difference by business lines has value of Sig = 0.005. Therefore, reject the H0 hypothesis.

#### 5. Conclusion

The research results show that the local support policies factor has the 3rd most important influence on the 5 factors affecting the sustainable development of industrial SMEs in Vietnam with a coefficient of  $\beta = 0.166$ . This proves that supportive policies from the localities, in particular relevant agencies and agencies, and the local SME Association play an important role in promoting industrial SMEs towards sustainable development. Therefore, through the research results, the author proposes a number of solutions and recommendations to the state management agencies to promote the SMEs in Vietnam towards sustainable development, specifically as follows:

*Firstly*, maintain and improve the quality of the investment environment in localities, especially local planning for industrial development. Create mechanisms for relevant policies for industrial SMEs in a more open manner such as administrative procedures, tax policies, land use policies, etc. to ensure transparency and accountability in public administration. In addition, People's Committees at all levels in localities need to develop specific land planning to create favorable conditions for industrial SMEs to deploy construction and manufacturing in areas with favorable transportation, separating from residential areas but still ensure satisfactory service infrastructure.

*Secondly*, strengthening the deployment of training support activities to improve labor productivity for businesses. Specifically, relevant government departments such as: Department of Labor, War Invalids and Social

Affairs, Department of Planning and Investment, etc. in provinces and cities must be a bridge between businesses and quality education & training institution in the local area to coordinate the deployment of knowledge and skills training courses for employees and managers in businesses to gain access to advanced technology to apply in manufacturing.

*Thirdly*, strengthen the role of the SME Association in localities and other business associations in the area to promote the development and cohesion among SMEs, including industrial SMEs. Supporting and promoting the operation of the SME association is necessary in the current highly competitive market economy. In addition, through these associations, businesses can timely access new policies, new legal documents of the Government on sustainable development.

*Fourthly*, actively propagandize, encourage and honor industrial SMEs to deploy, apply sustainable business and production models, use clean production technology, and effectively use nature resources and environmental protection.

*Fifthly*, there are mechanisms and policies to support preferential credit sources for new businesses going into operation but producing clean, environmentally friendly products, applying advanced technology in production. Need to diversify capital access channels for industrial SMEs. Encouraging associated credit institutions to create a database system for SMEs in general and industrial SMEs in particular, and at the same time need to be transparent about necessary criteria on access to credit for businesses.

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