

**THE IMPACTS OF FOUR INNOVATION TYPES ON FIRM  
PERFORMANCE: AN EMPIRICAL INVESTIGATION  
OF ENTERPRISES IN VIETNAM**

Nguyen Mai Nhu Cam<sup>1</sup>, Tran Thi Anh Phuong<sup>2</sup> and Tran Thi Bach Yen<sup>1</sup>

<sup>1</sup>GIZ, Can Tho University, Vietnam

<sup>2</sup>School of Business, Greenwich University, Vietnam

DOI: 10.46609/IJSSER.2021.v06i10.001 URL: <https://doi.org/10.46609/IJSSER.2021.v06i10.001>

**ABSTRACT**

The paper aims to study the effect of innovation on firm performance of firms in Vietnam. Building upon theory of creative destruction and the resource-based view theory, this study hypothesizes that product innovation, marketing innovation, process innovation, and organizational innovation positively impact on the performance of firms in Vietnam. The survey data is extracted from the Vietnam 2019 Enterprise Surveys data set with 489 firms and linear regression model with Robust Standard Errors is employed. The empirical findings revealed that product innovation has the positive impact on firm performance of firms. Also, the findings imply that enhancing innovation activities inside and outside of firms as well as reinvestment process for those activities enable to facilitate firms improve their performance in Vietnam.

**Keywords:** product innovation, marketing innovation, process innovation, organizational innovation, firm performance, ROS, Vietnam SMEs.

**1. Introduction**

After the Doi Moi reforms in 1986, Vietnam has been acquired various achievements regarding economic perspectives, which proves that Vietnamese enterprises have been successfully managed and controlled their business in recent years. However, in the condition where the market economy has significantly developed, Vietnamese enterprises necessitate to constantly figure out measures to increase their productivity and profitability to compete with their competitors if they want to survive and affirm their success in a long-term period. For that reason, improving firm performance has become a priority for each enterprise. A resource-based view theory (Wernerfelt, 1984; Barney, 1991) has mentioned that firms need to take advantage of their resources to strengthen their competitive advantage and performance, create profits and

job opportunities, largely contributing to the government's budget. Particularly, to improve firm performance, implementing innovation is one of the most popular ways applied by several firms.

In the era of globalization and integration, especially the 4.0 industrial revolution has been gone far beyond expectations, enterprises have been constantly innovating themselves to catch up with the global development, in which innovation is considered as a solid foundation. To increase the competitive ability, most enterprises in many countries, particularly the developed ones, have concentrated on innovation activities. In other words, innovation is the root of competitive advantage (Dress et al, 2000). Thanks to innovation, enterprises can easily adapt to the changeable and flexible environment; specifically, innovation is a "stepping-stone" for them to join the international economic playground. Based on the theory of creative destruction (Schumpeter, 1942), if enterprises just follow the traditional strategies and do not implement innovation activities, they may be left stranded because customers will have more choices from their competitors. Investing in innovation is the way to bring new business potential energy into companies. New innovative products, processes, marketing, and organization will differentiate the firm compared to others. Therefore, innovation activities help firms attract not only more customers but also a better workforce with high-qualified laborers. It is stated that without innovation, firms cannot be successfully developed in this fiercely competitive economy.

Previous scholars have studied the relationship between innovation and firm performance. Actually, many studies present the positive and significant impact of innovation on firm performance (Atalay, Anafarta, & Sarvan, 2013; Gunday et al, 2011; Rousseau et al, 2016; Audretch, Coad & Segarra, 2014), which determines the importance of investing in innovation, particularly in developed countries, e.g. Turkey, Italy, and America. However, in Vietnam, there are few researchers that study the effect of innovation on firm performance. The previous authors just focused on how to improve firm performance or analyzing factors that affect firm performance such as firm age, firm size, CEO gender, policies, etc. (Pervan & Višić, 2012; Gurbuz & Aybars, 2010; Jalbert, Jalbert & Furumo; 2013). For those reasons, based on a resource-based view theory (Wernerfelt, 1984; Barney, 1991) and the theory of creative destruction (Schumpeter, 1942), this paper will specialize in analyzing the topic "*The effect of innovation on firm performance: Evidence from Vietnam*" to have a scientific basis to propose managerial implications so that they can contribute to improving firm performance through investing in innovation types for Vietnamese enterprises.

## **2. Literature review and theoretical model**

Due to the fierce competition in the market, innovation is considered a crucial activity for firms' survival and performance. In recent years, firms have constantly introduced new products to

meet the changeable customers' demand, enhance their process to ensure productivity, plan more marketing strategies to approach more potential clients, and improve their organizational structures to get work efficiency. Furthermore, innovation enables firms to employ a better workforce with high-qualified laborers, bringing new business potential energy into companies.

In fact, without innovation, firms can be easily eliminated by their rivals. As stated by Schumpeter (1942) in the theory of creative destruction, if a firm does not actively innovate or update innovative activities, it may lose its competitiveness and be left stranded. In other words, according to Schumpeter, creative destruction is the "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one". Entrepreneurs and workers in new technologies will be able to highlight new profit opportunities. Also, thanks to innovation, firms can effectively take advantage of resources, which contributes to reducing unnecessary costs and improving performance. According to the resource-based view theory (Wernerfelt, 1984; Barney, 1991), an enterprise is defined as a place to concentrate and combine the resources more effectively than the market. Enterprises will be successful if they are equipped with appropriate resources and combine those resources properly.

More than three centuries ago, Smith (1776) confirmed the positive relationship between innovation and growth. Later, the concepts of innovation, as well as the influence of innovation on firm growth, were developed by Schumpeter (1934). In the last two decades, many authors have studied innovation as an important component in the development process of firms. Through empirical studies, Gunday et al. (2011) suggested that the types of innovation, in general, have a positive effect on the performance of manufacturing enterprises. According to Atalay, Anafarta and Sarvan (2013), technological innovation (including product and process innovation) has a positive impact on firm performance. Other scholars in International Business also indicated that innovation and performance are closely related (Rousseau et al., 2016; Audretch, Coad & Segarra, 2014; Artz et al., 2010; Lee, Lee & Garrett, 2017).

As stated in the first condition of the Oslo Manual (OECD, 1992), innovation is limited mainly to manufacturing and it involved only technological product and process innovation. Similarly, despite being supplemented with services, the second edition of the Oslo Manual is still about technological products and process innovation. However, they are not enough to support this research because innovation is a complex process (Therrien et al., 2011), and it consists of more perspectives. Therefore, this study is based on the third condition of the Oslo Manual (OECD and Eurostat, 2005) with four types of innovation including product innovation, process innovation, marketing innovation, and organizational innovation to develop hypotheses.

- **Product innovation:** Product innovation is creating, introducing new products to customers, or improving versions of existing products that can increase the customers' uses. In other words, many new and different products have been manufactured everyday by different firms, which makes customers have various choices that suit their favour; consequently, firms need to carry out product innovation to create new spaces in a seemingly crowded market and enhance customer needs. Innovating products can help firms increase their sales to the market so that performance levels can be improved as well. Hence, the research hypothesis is proposed:

**Hypothesis 1 (H<sub>1</sub>):** Product innovation has a positive impact on firm performance.

- **Process innovation:** Process can be understood as a combination of facilities, skills, methods, technology, software, etc. used to produce, deliver, sell, or support a product. Process innovation is the application, the introduction, and the changes in equipment, method, or technology used in manufacturing a certain product that assists firms in remaining competitiveness and meeting customer demands. New processes with new technologies can assist firms in enhancing productivity, creating more high-quality products that serve customers' needs. As a result, another research hypothesis is suggested:

**Hypothesis 2 (H<sub>2</sub>):** Process innovation has a positive impact on firm performance.

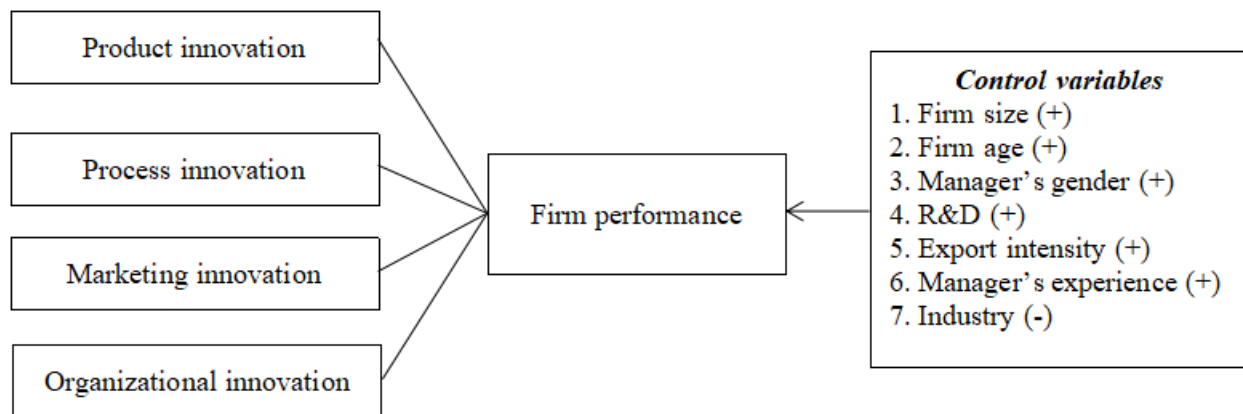
- **Marketing innovation:** To introduce a new product or to sell any product to customers with a high number, firms must plan smart marketing strategies; particularly, marketing can be involved product design, pricing, promotion, or even packaging, and marketing can be in the form of online (social media, digital marketing, etc.) or traditional ways (brochures, journals, banners, etc.). Marketing innovation which is the implementation of a new marketing method that has been never applied or used before may include a wide range of tasks which are related to customer orientation, market orientation, and product promotion. Consequently, the research hypothesis is presented:

**Hypothesis 3 (H<sub>3</sub>):** Marketing innovation has a positive impact on firm performance.

- **Organizational innovation:** According to OECD Oslo Manual (2005), organizational innovation is the implementation of introducing a new organizational method or improving organizational structures in the firm's business practices, workplace organization, or external relations. If organizational innovation can be carried out well, firms can increase their performance by reducing administrative and transaction costs, improving workplace satisfaction and labor productivity, etc. An innovative organization can be seen as a tool to promote teamwork, reduce power distance among employees and employers, encouraging creative

thinking to discover the problems from new perspectives. Since then, the author develops the following hypothesis:

**Hypothesis 4 (H<sub>4</sub>):** Organizational innovation has a positive impact on firm performance.



**Figure 1: Proposed research model**

### 3. Research methodology

#### 3.1 Data

Data from Vietnam Enterprise Surveys of World Bank which was surveyed in 2019 and published in 2020 is used in this research. The method of random sampling stratified by industry and firm size was used. The survey areas for subsidiaries are in the manufacturing and service sectors. The total number of enterprises surveyed is 996 subjects; in which, manufacturing is classified into 5 groups: food & beverage, garment industry, non-metallic products, metallic products, and other manufacturing industries - From 142 to 194 businesses will be interviewed in each field. Enterprises surveyed are in 5 areas: Red River Delta, North Central and Central Coast, Southeast, Mekong River Delta. For research subjects and information that meet the objectives of this study, the expected number of enterprises is 489 enterprises.

#### 3.2 Measurement of Variables

##### Dependent variable:

**Firm performance (Y):** is represented by Return on Sales (ROS) which equals net income after tax divided by total sales (Maja & Višić, 2012; Lazar, 2016). The value ranges from -15.33% to 79.75%. The higher the value is, the more efficient of firm has been operated.

**Independent variables:**

- **Product innovation ( $X_1$ ):** Dummy variable which is used to measure product innovation will equal 1 if the firm has introduced new or significantly improve products or services during the last three years; if not, it would get the value 0 (Recica et al, 2018; Hall, Lotti & Mairesse, 2009; Gotsch & Hipp, 2012).

- **Process innovation ( $X_2$ ):** Process innovation is measured by dummy variable that will equal 1 if the firm has introduced any new or significantly improved methods of manufacturing products or offering services during the last three years; if not, it would get the value 0 (Recica et al, 2018; Hall, Lotti & Mairesse, 2009; Gotsch & Hipp, 2012).

- **Organizational innovation ( $X_3$ ):** Organizational innovation is determined by dummy variable which equals 1 if the firm has introduced any new or significantly improved organizational structures or management practices during the last three years; if not, it would get the value 0 (Recica et al, 2018; Hall, Lotti & Mairesse, 2009; Gotsch & Hipp, 2012).

- **Marketing innovation ( $X_4$ ):** Dummy variable which equals 1 if the firm has introduced new or significantly improved marketing methods during the last three years; if not, it would get the value 0 (Recica et al., 2018; Hall, Lotti & Mairesse, 2009; Gotsch & Hipp, 2012).

**Control variables:**

- **Firm age ( $X_5$ ):** Firm age is defined as the length of time during which a firm has been established up to 2019 (Gurbuz & Aybars, 2010; Fama & French, 2004; Chun et al., 2008), ranging from 1 to 113 years.

- **Manager's gender ( $X_6$ ):** Manager's gender is measured by dummy variable which equals 1 if the manager is female and 0 if the manager is male (Jalbert, Jalbert & Furumo, 2013).

- **Firm size ( $X_7$ ):** Firm size is measured by taking natural logarithm of firms' number full-time employees (Pervan & Višić, 2012). The value fluctuates from 0,69 to 8,85. The higher value means the size of the firm is larger.

- **Research and Development (R&D) ( $X_8$ ):** R&D is calculated by the ratio of cost of R&D on total sales (Hall & Bagchi-Sen, 2007), with the highest value being 5,7% and the lowest being 0 (firm does not invest in R&D).

- **Export intensity ( $X_9$ ):** The ratio of cost of export (direct and indirect) on total sales (Vo Van Dut, 2015; Filatotchev et al., 2008), with the highest value being 1 and the lowest being 0.

- **Manager’s experience ( $X_{10}$ ):** Experience of the manager is measured by the number of years since the manager took the position until 2019 (Vo Van Dut, 2015), fluctuating from 2 to 60 years.

- **Industry ( $X_{11}$ ):** Dummy variable equals 1 if firm belongs to manufacturing and 0 if firm belongs to service (Vo Van Dut, 2017).

**Table 1. Variables description and sign expectation**

Labels	Explanation	Measurement method	Expectation
<b>Dependent Variable</b>			
Y	Firm Performance	Firm performance is represented by Return on Sales (ROS) which equals net income after tax divided by total sales	
<b>Independent Variables</b>			
X <sub>1</sub>	Product Innovation	Dummy variable equals 1 if the firm has introduced new or improve products or services during the last 3 years; if not, it would get the value 0	(+)
X <sub>2</sub>	Process Innovation	Dummy variable equals 1 if the firm has introduced any new or improved methods of manufacturing products or offering services during the last 3 years; if not, it would get the value 0	(+)
X <sub>3</sub>	Organizational Innovation	Dummy variable equals 1 if the firm has introduced any new or improved organizational structures or management practices during the last 3 years; if not, it would get the value 0	(+)
X <sub>4</sub>	Marketing Innovation	Dummy variable equals 1 if the firm has introduced new or improved marketing methods during the last 3 years; if not, it would get the value 0	(+)
<b>Control Variables</b>			
X <sub>5</sub>	Firm age	Years that a firm has been in operation from being established to the present time	(+)
X <sub>6</sub>	Manager’s gender	Dummy variable equals 1 if the CEO is female and 0 if the CEO is male	(+)
X <sub>7</sub>	Firm size	Taking natural logarithm of firms’ number full-time employees	(+)
X <sub>8</sub>	R&D	The ratio of cost of R&D on total sales	(+)
X <sub>9</sub>	Export intensity	The ratio of cost of export (direct and indirect) on total sales	(+)



<b>X<sub>10</sub></b>	Manager's experience	The number of years since manager took the manager position until 2019	(+)
<b>X<sub>11</sub></b>	Industry	Dummy variable equals 1 if firm belongs to manufacturing and 0 if firm belongs to service	(-)

---

### 3.3 Estimation Method

In this research, linear regression model using ordinary least squares (OLS) to estimate the impact of factors on firm performance. The regression equation is shown as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \varepsilon$$

in which,

Y is dependent variable (Firm performance);

$\beta_0$ : the intercept (the value of Y when all the value of X=0);

$\beta_{1 \rightarrow 4}$ : the regression coefficients of independent variables;

$X_{1 \rightarrow 4}$ : the observation coefficient of independent variables;

$B_{5 \rightarrow 11}$ : the regression coefficients of control variables;

$X_{5 \rightarrow 11}$ : the observation coefficient of control variables;

$\varepsilon$ : the error term.



**Table 2. Statistical description and correlation matrix of factors in the research model (N=489)**

	Vif	Min	Max	Mean	Std. Dev.	0	1	2	3	4	5	6	7	8	9	10
<b>0</b> Firm performance		-0.153	0.7975	0.25	0.21											
<b>1</b> Product innovation	1.34	0	1	0.34	0.47	0.11*										
<b>2</b> Process innovation	1.36	0	1	0.38	0.49	0.02	0.42**									
<b>3</b> Organizational innovation	1.16	0	1	0.19	0.39	0.11*	0.19**	0.27**								
<b>4</b> Marketing innovation	1.31	0	1	0.27	0.45	0.13**	0.38**	0.39**	0.29**							
<b>5</b> Firm age	1.11	1	113	13.20	10.21	-0.05	0.12*	-0.02	0.04	0.05						
<b>6</b> Manager's gender	1.01	0	1	0.20	0.40	-0.03	-0.31	-0.05	-0.01	-0.04	-0.1					
<b>7</b> Firm size	1.26	0.69	8.85	3.85	1.46	-0.07	0.12**	0.06	0.16**	0.04	0.29**	-0.05				
<b>8</b> R&D	1.01	0	0.58	0.03	0.63	0.03	0.09*	-0.05	0.01	-0.03	0.03	-0.03	0.04			
<b>9</b> Export intensity	1.12	0	1	0.96	9.29	0.12**	0.002	0.01	0.08	0.00	0.04	-0.01	0.32**	0.01		
<b>10</b> Manager's experience	1.03	2	60	17.61	0.19	-0.09*	-0.06	-0.08	-0.04	-0.03	-0.02	-0.06	0.09*	0.02	0.03	
<b>11</b> Industry	1.04	0	1	0.24	0.37	-0.1*	0.05	0.07	0.04	-0.02	0.08	0.02	0.16**	0.03	0.03	0.05

Source: Data processing results from STATA, 2020

\*,\*\* respectively indicates the significant level at 5% and 1%

## 4. Results a

### 4.1 Statistical description and correlation matrix

Descriptive statistics of Vietnamese enterprises in 2019 with 489 observations is presented in Table 2 which includes the number of observations, mean value, standard deviation, the maximum and minimum value of the variables. Variance Inflation Factor (VIF) of all independent variables are less than 2; therefore, there is no multi-collinearity phenomenon in the model. This implies that an estimated value of the variables is not biased (unbiased estimation) when simultaneously estimating factors in the model, which means that the change of an independent variable in the model will not change the impact of another independent variable on the dependent variable.

The result of the correlation matrix in **Table 2** shows that firm performance is positively correlated with product innovation ( $X_1=0.11$ ), marketing innovation ( $X_3=0.13$ ), organizational innovation ( $X_4=0.11$ ), and export intensity ( $X_9=0.12$ ); and negatively correlated with manager's experience and industry with the coefficients being  $-0.09$  and  $-0.1$  respectively. The correlation of the remaining factors with firm performance is not statistically significant ( $p > 0.1$ ).

### 4.2 Discussion

With the significance level being 1%, White-test gives the result that Prob = 0.0491. Due to Prob < 5%, Heteroscedasticity occurs. However, this phenomenon will make estimated values obtained by conventional regression methods on the table data ineffective, thereby reducing the reliability of the regression coefficient. Consequently, to increase the reliability of the regression coefficients, the linear regression model with Robust Standard Errors (White, 1980) is applied to give a proper estimation of the standard errors in which accept the presence of Heteroskedasticity. The result of linear regression model with Robust Standard Errors model on the study of innovation on firm performance is summarized in **Table 3**.

*Model 1, model 2, and model 3* respectively present the influence of product innovation, organizational innovation, and marketing innovation on the performance of firms in Vietnam. The result shows that product innovation ( $X_1$ ) has a positive impact on firm performance of firms in Vietnam at the significance level at 1% ( $\beta_1 = 0,057$ ;  $p < 0,01$ ). *This result is consistent with the expectation of  $H_1$ .* Next, organizational innovation ( $X_3$ ) has a positive impact on firm performance of firms in Vietnam at the significance level at 5% ( $\beta_3 = 0.06$ ;  $p < 0.05$ ). *This result is consistent with the expectation of  $H_3$ .* And the last one, organizational innovation ( $X_3$ ) has a positive impact on firm performance of firms in Vietnam at the significance level at 1% ( $\beta_4 =$

0.06;  $p < 0.01$ ). This result is consistent with the expectation of  $H_4$ . So  $H_1$ ,  $H_3$ , and  $H_4$  are favored in theory and practice.

**Table 3. Regression model (Robust Standard Errors) of factors affecting firm performance of Vietnamese firms**

	Model 1		Model 2		Model 3		Model 4	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
<b>Constant</b>	0.40**	0.06	0.41**	0.06	0.39**	0.06	0.40**	0.06
<b>Independent variables</b>								
Product innovation	0.06**	0.02					0.05*	0.02
Process innovation							-0.04	0.02
Organizational innovation			0.06*	0.03			0.05	0.03
Marketing innovation					0.05**	0.02	0.05	0.02
<b>Control variables</b>								
Firm age	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manager's gender	-0.02	0.02	-0.02	0.02	-0.02	0.02	-0.02	0.02
Firm size	-0.02*	0.01	-0.02*	0.01	-0.01*	0.01	-0.02*	0.01
R&D	0.15	0.15	0.11	0.15	0.13	0.15	0.14	0.15
Export intensity	0.09**	0.03	0.09**	0.03	0.09**	0.03	0.09**	0.03
Manager's experience	0.00	0.00	-0.002*	0.00	0.00	0.00	-0.002*	0.00
Industry	-0.10	0.06	-0.10	0.06	-0.09	0.06	-0.09	0.06
<b>R<sup>2</sup></b>	0.606		0.573		0.628		0.794	
<b>N</b>	489		489		489		489	
<b>P-value</b>	0.00		0.00		0.00		0,00	

Source: Data processing results from STATA

\*,\*\* respectively indicates the significant level at 5% and 1%

Model 4 synthesizes all four independent variables and control variables on performance of firms in Vietnam.  $R^2$  in model 4 is 0.794 then it means that the variation of independent variables and control variables explains 79.4% the change in firm performance. P-value is 0.0000 which means

the model is statistically significant at 1%. This implies that the estimation result of model 4 is the best to explain the variation of independent variables and control variables on firm performance.

Concerning independent variables, only product innovation ( $X_1$ ) has a positive impact on firm performance of firms in Vietnam at the significance level at 5% ( $\beta_1 = 0.05$ ;  $p < 0.05$ ). Process innovation ( $X_2$ ), organizational innovation ( $X_3$ ), and marketing innovation ( $X_4$ ) have no statistically significant impact on firm performance ( $p > 0.05$ ). Based on this result, *only  $H_1$  is favored, thereby  $H_2$ ,  $H_3$ , and  $H_4$  are theoretically rejected*. Consequently, firms can improve their performance by carrying out product innovation. This is true when a resource-based view theory (Wernerfelt, 1984; Barney, 1991) and the theory of creative destruction are applied. Terziovski (2010), Kostopoulos (2013), Zawawi et al. (2016), and Nguyen Thi Canh et al (2019) used those theories to study about innovation. Product innovation helps firms not only improve their competitiveness but also enable take advantage of opportunities from international markets (Eriksson et al., 1997).

Although product innovation has a positive effect on the dependent variable, in fact, many firms have not recognized whether conducting innovation will help increase their firm performance or not. Some understand that innovation is important, yet they do not know how to start or implement innovation activities effectively. This can be explained by many reasons. The concept of innovation is still new to many Vietnamese enterprises. The concepts of innovation have only been formed after many multinational corporations and companies landed in Vietnam such as Unilever, Nestle, ... Therefore, the perception of innovation activities is still limited. At the same time, firms still have limitations in finding human resources with in-depth knowledge or understanding of innovation because this is a new field. Currently, many firms have built up innovation rooms in the companies, which is a good sign for the growth of firms in the coming time. However, with the current development situation in our country, firms need to have more experts in this field.

Similar to previous model, export intensity ( $X_9$ ) is positively correlated with firm performance at the significance level of 1% ( $\beta_9 = 0.09$ ;  $p < 0.01$ ). It can be explained via the result that firms should focus on export activities to increase export revenue, thereby partly helping firms improve firm performance. Besides, to increase volume of export activities, firms need to improve their products in terms of quality, price, labels, tastes, colours, package, etc. to attract foreign customers.

However, firm size ( $X_7$ ) is inversely correlated with firm performance at the significance level of 5% ( $\beta_7 = -0.02$ ;  $p < 0.05$ ). It can be explained that firm size is not only reflected by the number

of employees but also the quality of the employees. Although a firm does not have a large number of employees, high-qualified employees with good productivity, creativity, and abilities to research and develop new products will help that firm develop. Conversely, a firm with a large number of employees who have low skills and productivity will make firm performance decrease.

Furthermore, manager's experience negatively impacts on firm performance at the significance level of 5% ( $\beta_{10} = -0.002$ ;  $p < 0.05$ ). The higher number of years a manager has taken such the position, the firm performance tends to decline. This can be explained that the experience of the manager is not only shown through the number of years, but also the flexibility and the inquisitiveness of each manager. Although a manager has not worked for a long time, they may have many innovative and different ideas; as a result, they will be able to ensure the stability of the firm. In contrast, an experienced manager may tend to be more subjective and rigid. That is the reason why it is sometimes difficult for them to approach new economic trends in business, obstructing the development of the business.

## **5. Conclusion and discussion**

In this research, linear regression model using ordinary least squares (OLS) to estimate the impact of factors on firm performance. However, because Heteroscedasticity occurs, the linear regression model with Robust Standard Errors is used to receive better estimation. The result demonstrates that product innovation impacts positively on firm performance.

In order to enhance firm performance via innovation, enterprises should have a detailed plan to conduct innovation activities. The proposition bases of the following managerial implications originate from data processing, papers, theories, and literature review. Thereby, if an enterprise wants to seriously invest in innovation, they should be serious to construct a long-term goal by choosing appropriate innovation types with proper strategies that suits the expenditure of each enterprise; establishing R&D center to have a better understanding of the business environment, rivals, the opportunities of enterprises on the market; investing in human resources who are experts in innovation fields; and re-investing in innovation to form a stable cycle for innovation activities.

Furthermore, enterprises can take advantage of funding from non-governmental organizations or non-profit organizations to call for sponsorship money. Also, enterprises need to utilize and recruit talented staff and experts who are specialized in innovation so that they can have plans to develop those activities, which will assist enterprises in ensuring investment efficiency. When everything follows the patterns, enterprises will be able to reinvest in innovation in the next period, contributing to laying a solid foundation for long-term development.

The limitation of this study is that the author considers only enterprises that provide data but not all enterprises in Vietnam, so the research results may not be really representative. Simultaneously, the source of data is in 2019; however, from 2019 to the present time, Vietnam's economy has had many fluctuations, so data collection may involve many differences which leads to different results. In the future, there should be more studies that compare innovation activities in more specific industries such as pharmacy, wholesale, entertainment, resources, etc. Also, the regulatory relationship between innovation types should be noticed to gain more objective results. Additionally, the limitations of this research are also suggestions for the next research direction.

## **References**

- Artz, K. W., Norman, P. M., Hatfield, D. E. & Cardinal, L. B. (2010), 'A Longitudinal Study of the Impact of R&D, Patents, and Product Innovation on Firm Performance', *The Journal of Product Innovation Management*, 27, 724-740.
- Atalay, M., Anafarta, N. & Sarvan, F. (2013), 'The relationship between innovation and firm performance: An empirical evidence from Turkish automotive supplier industry', *Procedia - Social and Behavioral Sciences*, 75, 226-235.
- Audretch, D. B., Coad, A. & Segarra, A. (2014), 'Firm growth and innovation', *Small Business Economics*, 43, 743 - 749.
- Barney, J. (1991), 'Firm Resources and Sustained Competitive Advantage', *Journal of Management*, Vol. 17, No. 1, 99-120.
- Chun, H., Kim, J. W., Morck, R. & Yeung, B. (2008), 'Creative destruction and firm-specific heterogeneity', *Journal of Financial Economics*, Vol.98(1), 109-135.
- Eriksson, K., Johanson, J., Majkgård, A., & Sharma, D. D. (1997). National systems of biotechnology innovation: Complex interdependence in the global system. *Journal of International Business Studies*. <https://doi.org/10.1057/palgrave.jibs.8490104>
- Fama, E. F., & French, K. R. (2004). New lists: Fundamentals and survival rates. *Journal of Financial Economics*. <https://doi.org/10.1016/j.jfineco.2003.04.001>
- Filatotchev, I., Stephan, J., & Jindra, B. (2008). Ownership structure, strategic controls and export intensity of foreign-invested firms in transition economies. *Journal of International Business Studies*. <https://doi.org/10.1057/palgrave.jibs.8400404>
- Gunday, G., Ulusoy, G., Kilic, K. & Alpkan, L. (2011), 'Effects of innovation types on firm performance', *International Journal of Production Economics*, 133, 662-676.

- Gurbuz, A. O. & Aybars, A. (2010), 'The impact of foreign ownership on firm performance, Evidence from an emerging market: Turkey', *American Journal of Economics and Business Administration*, 2(4), 350-359.
- Hall, B. H, Lotti, F. & Mairesse, J. (2009), 'Innovation and productivity in SMEs: empirical evidence for Italy', *Small Business Economics*, 33, 13-33.
- Jalbert, T., Jalbert, M. & Furumo, K. (2013), 'The relationship between CEO gender Financial Performance and Financial Management', *Journal of Business and Economics Research*, Vol.11(1), 25-33.
- Kostopoulos, K. C., Spanos, Y. E. & Prastacos, G. P. (2003), 'The Resource – Based View of the Firm and Innovation: Identification of Critical Linkages'.
- Lazar, S. (2016), 'Determinants of firm performance: Evidence from Romanian listed company', *Review of Economics & Business Studies*, Vol.9(1), 53-69.
- Lee, R., Lee, J. H. & Garrett, T. C. (2019), 'Synergy effects of innovation on firm performance', *Journal of Business Research*, Vol.99, 507 - 515.
- Pervan, M. & Višić, J. (2012), 'Influence of firm size on its business success', *Croatian Operational Research Review (CRORR)*, Vol. 3, No.1, 213-223.
- Recica, F., Jackson, I., Hashi, I. & Krasniqi, B. A. (2019), 'Innovation and the export performance of firms in transition economies: the relevance of the business environment and the stage of transition', *International Journal of Entrepreneurship and Small Business*, Vol. 38, No.4.
- Rousseau, M. B., Mathias, B. D., Madden, L. T. & Crook, T. R. (2016), 'Innovation, firm performance, and appropriation: A meta-analysis', *International Journal of Innovation Management*, Vol.20, No.3, 1650033.
- Schumpeter, J. A. (1942). 'Capitalism and the Process of Creative Destruction'. *Monopoly Power and Economic Performance*.
- Smith, A. (1776). 'An inquiry into the wealth of nations', Strahan and Cadell, London.
- Terziovski, M, (2010), 'Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: a resource-based view', *Strategic Management Journal*, Vol.31(8), 892 - 902.
- Therrien, P., Doloreux, D., & Chamberlin, T. (2011). Innovation novelty and (commercial) performance in the service sector: A Canadian firm-level analysis. *Technovation*. <https://doi.org/10.1016/j.technovation.2011.07.007>



- Vo, D. Van. (2017). The impact of institutional difference on Vietnamese firms' export intensity: The role of international experience. *Science & Technology Development Journal - Economics - Law and Management*. <https://doi.org/10.32508/stdjelm.v1iq2.446>
- Wernerfelt, B. (1984), 'A Resource-Based View of the Firm', *Strategic Management Journal*, Vol. 5, No. 2, 171 - 180.
- White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica*.
- Zawawi, N. F. M., Wahah, S. A., Al-Mamun, A., Yaacob, A. A., Samy, N. K. & Fazal, S. A. (2016), 'Defining the Concept of Innovation and Firm Innovativeness: A Critical Analysis from Resource-Based View Perspective', *International Journal of Business and Management*, Vol.11, No.6, 87-94.