Determinants of business performance in firms: Evidence in Vietnam technology and manufacturing enterprises

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ABSTRACT

This article aims to identify factors affecting the business performance of enterprises. Vietnam. The author gathered information from 458 technology and manufacturing businesses in Vietnam. Survey enterprises in Hanoi, Da Nang, Ho Chi Minh, and Can Tho Cites. Data were processed via SPSS software version 20.0. Cronbach's Alpha test methods, exploratory factor analysis (EFA), and regression analysis were used in this study. The results show that firm size positively affects business performance. The research results show there are 07 main factors that positively affect the business performance of enterprises, including: (1) solvency, (2) firm size, (3) growth rate revenue growth, (4) administrative procedures, (5) access to credit institutions, (6) labor qualifications and (7) the age of the business. From the results of the analysis, the author gives some recommendations and solutions to improve the business operations of businesses in Vietnam, especially those in the technology and manufacturing sectors, in the context of Industrial network 4.0.

1. Introduction

International context with the war between the US and trade China creates opportunities and challenges for businesses in Vietnam. We can take advantage of attracting foreign direct investment (Xuan et al., 2020a). The analysis of the determinants of business performance in Vietnam firms helps to promote the activities of the Vietnam enterprises.

In the era of industrial revolution 4.0, we need to take advantage of opportunities to develop strong manufacturing and technology enterprises, attracting the shift of FDI enterprises from China to Vietnam. Vietnam also needs to develop large technology enterprises in the region such as (Vinsmart with phones and television, Vinfast with a motorbike, vehicle, FPT, and Viettel with telecommunication and technology).

In this article, the author identifies the factors affecting the business performance of enterprises with evidence from technology and manufacturing enterprises in Vietnam. In order to stand firm and thrive in today's competitive environment,

technology and manufacturing enterprises in Vietnam need to improve the efficiency of their business operations. Business performance is the relationship between the results achieved in the business process and the cost to achieve that result; these quantities are influenced by many different factors with varying degrees, thus affecting the business performance of the business. The author believes that to achieve and become a high-income country, Vietnam needs to develop manufacturing, and technology can be competitive all over the world.

Therefore, in order to enhance business efficiency, manufacturing, and technology enterprises in Vietnam need to have reasonable policies to be able to offer solutions to overcome the remaining problems and limits. Knowing which factors affect business performance in manufacturing and technology enterprises in Vietnam cannot only help enterprises have a basis for assessing business policies but also help the business image in the market better and better. Therefore, measuring and evaluating the business performance of manufacturing and technology enterprises is very necessary.

2. Literature review

Ahmad et al. (2015) referred to the financial leverage impacted by the firms' profitability in Pakistan. Anbar and Alper (2011) noticed the

macroeconomics affected the commercial bank profit in Turkey. Athanasoglou et al. (2008) said macroeconomics determinants the firm profit in some specific industry. Blažková (2018) showed the determinants of profitability of the firm based on each sector and industry. Capon et al. (1990) also showed other factors that could affect business performance.

Child (1972) showed the organizational structure, and environmental issues can affect the business firms. Cosh et al. (2012) noticed that innovation mostly affected business performance. DeAngelo and Masulis (1980) showed corporate and personal tax affected firm performance. Deloof (2003) referred to working capital management, which affected the profitability of firms in Belgium.

Fareed et al. (2016) showed the determinants of business enterprises in the power and energy sector. Gill et al. (2010) improved that working capital management can increase the profitability of the enterprises in the United States of America.

Goddard et al. (2005) noticed determinants affected the profitability of European Manufacturing and services enterprises. Also, Hall and Weiss (1967) showed that the more of firm size, the more profitability of the enterprise. Nickell and Nicolitsas (1999) showed that financial pressures decreased business performance. This is the same in Serrasqueiro and Nunes (2008) improved in Portugal, small and medium firms.

Pattitoni et al. (2014) showed the determinants of the business enterprise of 15-EU countries.

From the theoretical basis and the results of previous research shows that factors affecting the performance of a business in the manufacturing enterprise and the technology include two elements:

- The subjective factor such as
  o solvency,
  o firm size,
  o growth rate,
  o access to credit institutions,
  o labor qualifications, and
  o duration operating time of the business.
- Objective factors such as
  o international and regional environment,
  o domestic environment and
  o industry environment.

Xuan et al. (2020b) included 6 factors:

- solvency,
- firm size,
- capital structure,
- asset structure,
- growth rate and
- cost-to-sales ratio.

Xuan (2020) included 16 impact factors:

- State-supported policies,
- legal system,
- tax policies,
- interest rate policies,
- local policies,
- administrative procedures,
- support from the Business Association,
- access to credit institutions,
- land lease procedures,
- access to capital markets,
- infrastructure,
- loan procedures,
- equipment,
- market information,
- marketing and
- labor qualifications.

Nguyen and Nguyen (2020) included 9 impact factors:

- debt ratio of the enterprise,
- ratio of fixed assets/total assets,
- bank loans/total liabilities,
- treasury stock/equity,
- inventories warehouse/total assets
- selling expenses and administrative expenses/total operating expenses,
- gender leadership,
- the growth rate of total assets and
- time operation of the business.

Xuan (2013) included 7 impact factors:

- scale,
- growth rate,
- management of customer receivables,
- investment in fixed assets,
- capital structure,
- economic risks of the business and
- uptime.

3. Theoretical basis and research model

A hypothesis is built based on an overview of the studies on the factors affecting business performance in the organization. The author uses quantitative research methods to explore the components of business performance in manufacturing and technology enterprises in Vietnam, adjusting and supplementing the observed variables used to measure research concepts. Qualitative research was conducted through hands-on discussions with experts on observed variables. Fig. 1 shows the author's research model.

- **Solvency:** The solvency of the enterprise shows the ability of the enterprise to pay its debts. Therefore, if the liquidity of the business is higher, it proves that the business has a healthy financial situation, thereby improving the business performance of the business. The author hypotheses as follows:

H1: The higher the solvency of manufacturing and technology enterprises in Vietnam, the higher the business efficiency and vice versa

- **Enterprise size:** Size is a factor that affects the performance of an enterprise, positively affecting the performance of the business. The author makes the following hypothesis H2:

H2: The larger the scale of manufacturing and technology enterprises in Vietnam, the higher the business efficiency and vice versa

- **Revenue growth rate:** The growth rate of sales will reflect the capacity of sales activities, the more this increase means, the more goods are sold, this will positively affect the business performance of the business. Karma. The author hypotheses as follows:

H3: The higher the growth rate in revenue of manufacturing and technology enterprises in Vietnam, the higher the business efficiency and vice versa.

- **Administrative procedures:** Procedures are a type of legal procedure, which stipulates the order of time and space when exercising a certain competence of the State apparatus, which is the way of handling affairs of agencies state in relationships with agencies, organizations and individual citizens. Therefore, quick, open, and transparent administrative procedures will positively affect the business performance of the business. The author hypotheses H4 as follows:

H4: the better the administrative procedures of manufacturing and technology enterprises in Vietnam, the higher the business efficiency and vice versa

- **Access to credit institutions Credit:** Institutions are an important source of funding, a prerequisite for expanding production and business, contributing to improving the efficiency of capital use of enterprises (Cosh et al., 2012). The author hypotheses H5 as follows:

H5: The higher the credit institution's access to manufacturing and technology enterprises in Vietnam, the higher the business performance and vice versa.

- **Labor qualification:** The qualification of employees is one of the most important factors affecting the business performance of an enterprise. The higher the level of labor skills, the more sophisticated and quality the products are made, which leads to higher customer satisfaction. The author hypotheses H6 as follows:

H6: The higher the labor skills level of manufacturing and technology enterprises in Vietnam, the higher the business efficiency and vice versa.

- **Operation time:** For businesses, we want to receive high trust from customers and their partners; it requires a long time to operate. The author hypotheses H7 as follows:

H7: The longer an enterprise in operation, the better it performs and vice versa.

4. Research methodology

Regarding the survey subjects: Workers and business owners in manufacturing and technology enterprises in Vietnam.

About sample size: The sample size will depend on what we want from the data collected and what relationship we want to establish. The more is complex the research problem, the larger the sample. Another general rule is that the larger the sample, the higher the accuracy of the research results. In practice, however, the choice of sample size depends on a very important factor, the financial capacity and the time that researcher can afford. The author collected surveys at 458 manufacturing and technology enterprises in Vietnam. Enterprises are concentrated mainly in Hanoi, Da Nang, Ho Chi Minh, and Can Tho cities. This is the biggest city in Vietnam, and those cities can be almost the biggest manufacturing and technology in Vietnam. The author believes that this data can be represented by the manufacturing and technology firms in Vietnam.

Regarding data processing techniques: Data collected from the survey subjects was assessed by the reliability analysis method through Cronbach's Alpha coefficient, EFA analysis method, and regression-testing method.

5. Actual performance status of manufacturing and technology enterprises in Vietnam

5.1. Analyzing the reliability of scales

The authors verify the reliability of data using Cronbach's Alpha coefficient, the scale only ensures reliability when Cronbach's Alpha coefficient is greater than 0.6, and the correlation coefficient - the total is greater than 0.3. Test results for scales are presented in Table 1.

Thus, 24 observation variables used to measure 07 components of business performance in enterprises (X, Y, Z, T, TI, TR, and TH) and 04 observation variables used to measure operational efficiency in enterprises. Business activities (HI) satisfy the conditions in the reliability analysis of scales o through Cronbach's alpha coefficient.
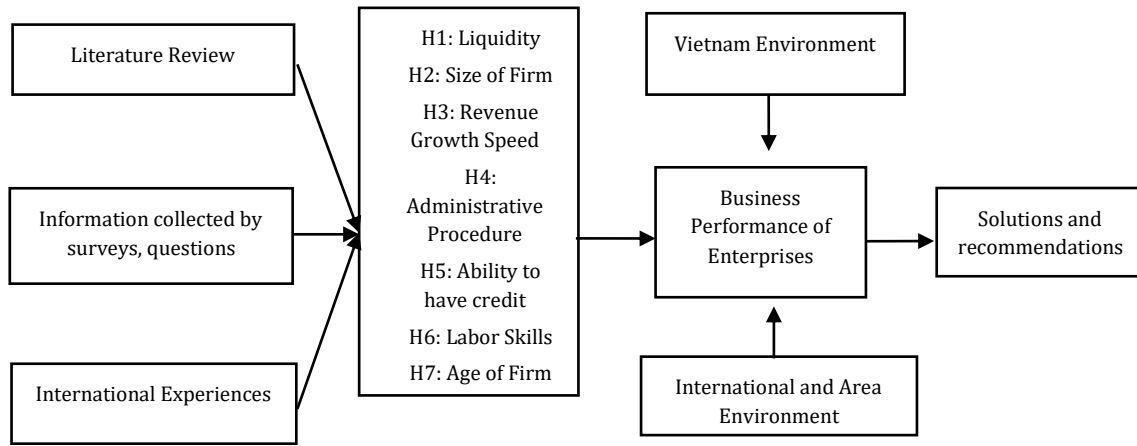
Fig. 1: The research model

Table 1: Verification of reliability of survey data observation

Variable	Average scale if variable	Variance scale if variable	Variable correlation of total variable	Cronbach's Alpha if the variable type
		Solvency (X): Cronbach's Alpha = 0.882		
X1	9.4760	8.821	0.809	0.834
X2	9.7560	10.627	0.561	0.890
X3	9.5600	9.637	0.763	0.847
X4	9.7160	9.578	0.775	0.848
X5	9.4920	9.311	0.770	0.860
		Business size (Y): Cronbach's Alpha = 0.980		
Y1	15.7960	25.986	0.964	0.973
Y2	15.6920	27.065	0.853	0.983
Y3	15.5880	24.918	0.934	0.976
		Growth rate (Z): Cronbach's Alpha = 0.832		
Z1	9.6400	4.668	0.876	0.816
Z2	9.4700	4.324	0.622	0.724
Z3	9.2100	4.008	0.778	0.801
		Administrative procedures (T): Cronbach's alpha = 0.651		
T1	5.9400	1.743	0.508	0.516
T2	5.3400	1.510	0.435	0.596
T3	5.4800	1.455	0.462	0.558
		Next access to credit institutions (TI): Cronbach's Alpha = 0.733		
TI1	7.2700	7.817	0.701	0.788
TI2	7.4700	8.127	0.684	0.697
TI3	7.1600	7.428	0.650	0.763
		Employment level (TR): Cronbach's Alpha = 0.90		
TR1	7.9200	8.002	0.745	0.895
TR2	8.3000	8.106	0.831	0.862
TR3	8.1880	7.944	0.895	0.839
TR4	8.2800	8.901	0.691	0.910
		Uptime (TH): Cronbach's alpha = 0.837		
TH1	8.3200	3.696	0.663	0.796
TH2	8.2800	3.447	0.611	0.824
TH3	8.1080	3.767	0.641	0.806
		Effective operations business (HI): Cronbach's alpha = 0.902		
HI1	8.2240	6.118	0.801	0.866
HI2	8.3520	6.647	0.706	0.899
HI 3	8.1880	5.920	0.777	0.876
HI4	8.2120	6.079	0.846	0.850

5.2. Factor analysis to discover EFA

Table 2 shows the results of factor analysis to discover EFA.

- The KMO coefficient in the analysis is 0.799> 0.6, indicating that the factor analysis result is a guarantee of reliability.
- Bartlett's Test has Sig coefficient =0.000<0.05 indicates that the factor analysis results ensure a statistically significant level.
- The variance extracted by 88,001% indicates that the variability of the analyzed factors can explain 88,001% of the variation of the original survey data, which is significant at a fairly good level. The Eigenvalues factor of the 7th element is equal to 3,013>1, indicating the convergence of the analysis stopped at the 7th element, or the analysis results show that 07 factors were extracted from the survey data.
- The factor load factor of each observed variable representing all factors is greater than 0.5, indicating that the observed variables exhibit influence on the factors that these variables represent.

5.3. Regression analysis

From the analysis of Table 3, we have an equation describing the fluctuation of factors affecting business performance in the manufacturing enterprise and technology in areas of Vietnam as follows:

$$Y = 0.298 + 0.222X1 + 0.076X2 + 0.121X3 + 0.485X4 + 0.325X5 + 0.234X6 + 0.126X7 + ei$$

Table 2: Results of factor analysis to discover EFA

Variable	Factor						
	1	2	3	4	5	6	7
THUTUC2	0.930						
THUTUC1	0.860						
THUTUC3	0.722						
TRINHDO1		0.899					
TRINHDO3		0.863					
TRINHDO2		0.812					
TRINHDO4		0.785					
THOIGIAN1			0.765				
THOIGIAN3			0.724				
THOIGIAN2			0.680				
KHANANG5				0.975			
KHANANG2				0.963			
KHANANG3				0.942			
KHANANG4				0.927			
KHANANG1				0.889			
TIEPCAN1					0.787		
TIEPCAN2					0.752		
TIEPCAN3					0.726		
QUYMO3						0.686	
QUYMO1						0.642	
QUYMO2						0.627	
TOCDO2							0.907
TOCDO1							0.884
TOCDO3							0.863
Variance extracted (%)	23.428	34.897	45.666	53.241	68.982	75.357	88.001
Eigenvalues	7.857	6.596	6.012	5.187	4.666	3.817	3.013
KMO=0.799					Sig.=0.000		

Thus, based on the results regression analysis that the author has conducted as Table 3, we can see that the factor "the administrative bureaucracy," "access to institutions credit," "labor qualifications" and "solvency" have the biggest impact on business performance in manufacturing and technology enterprises in Vietnam, the regression coefficient is equal to 0,485; 0.325; 0.234 and 0.222.

Table 3: Results of regression analysis

Model	Regression coefficient not normalized		Regression coefficient normalized	t	Sig.
	B	Std. Error	Beta		
Constant	0.298	0.122		2.006	0.000
F_KHANANG	0.222	0.023	0.201	2.647	0.000
F_QUYMO	0.076	0.046	0.158	2.343	0.006
F_TOCDO	0.121	0.011	0.167	2.001	0.013
F_THUTUC	0.485	0.045	0.524	3.247	0.007
F_TIEPCAN	0.325	0.043	0.289	2.102	0.018
F_TRINHDO	0.234	0.033	0.207	2.681	0.000
F_THOIGIAN	0.126	0.048	0.274	2.125	0.003

Dependent variable: Business performance

6. Conclusion and solution

6.1. Conclusion

Research "Factors affecting the business performance of manufacturing and technology enterprises in Vietnam" have focused on studying a number of factors affecting efficiency. Business results of manufacturing and technology enterprises in Vietnam, helping businesses and related organizations have a more specific view on the operation situation in order to find some solutions to improve the performance of your business.

By quantitative research methods in the regression model, the study has estimated and identified the factors affecting the business performance of manufacturing and technology enterprises in Vietnam, in which 4 factors have the most impact including (1) administrative procedures, (2) access to credit institutions, (3) labor qualifications, and (4) solvency.

The results show that, if the development of manufacturing economy and technology becomes an important driving force of the socialist-oriented market economy, leading the production economy and technology to develop rapidly, sustainable, diverse with a high growth rate in terms of both quantity, quality and proportion of domestic products, the concerned organizations, and local governments need to improve further on

"administrative procedures." Credit institutions must have policies to support more manufacturing and technology businesses. In addition, research shows that a manufacturing and technology enterprise is more effective if it has a high level of labor and the ability to pay.

6.2. Solutions

6.2.1. Regarding administrative procedures

Local governments need to regularly review and evaluate administrative regulations and administrative procedures to propose simplification or elimination of cumbersome administrative procedures. And set, reduce costs, shorten settlement time, ensure publicity, transparency, and improve the responsibility of state agencies.

The functional agencies should periodically conduct surveys to assess the satisfaction of enterprises with the service of state administrative agencies at all levels in the fields of business registration, and investment has timely rectification solutions.

Continuing to well implement the "one-door" mechanism, "one-stop-shop" and coordinating regulations and rules; implement publicly and transparently in operations of administrative agencies at all levels, widely disseminate and publicly post up at offices, regulations, processes and administrative procedures, etc., so that enterprises know, implementation and monitoring; At the same time, it must be updated promptly when there is a change.

Enhancing the training and retraining to improve professional qualifications, professionalism, responsibility, dynamism, honesty, discipline, exemplary dedication to serving the people and serving society in settling the work of cadres and civil servants, especially cadres and civil servants working in the one door department.

Continue to modernize the administration: upgrade and increase the number of online public services to levels 3 and 4; expand the modern one-door and one-stop model in the remaining districts of the area; maintain and apply the quality management system according to TCVN ISO 9001: 2008 standard to the operation of state administrative agencies; promote the application of information technology in activities of administrative agencies.

6.2.2. Regarding access to credit institutions

Developing credit markets for manufacturing and technology enterprises in Vietnam through supplier diversification, increasing competition in the market to improve capacity loans, and new product formation.

Improving the quality of the credit scoring system of credit institutions and the appraisal capacity of credit officers, in order to enhance the quality of loans, reduce bad debt ratios, and shorten credit appraisal time.

Improving the efficiency of credit guarantee activities for manufacturing and technology enterprises. Commercial banks in Vietnam need to provide complete information on the loan process, improve the quality of investment project formulation, business, and production consultancy, in order to create the most favorable conditions for customers in the process of implementing loan procedures.

6.2.3. Regarding the improvement of the quality of labor qualifications

Enterprises need to regularly send employees to participate in training courses at research institutes or professional associations.

Encourage employees to participate in seminars to improve their skills and knowledge at work.

Invite leading experts to share and guide employees about new technologies, new techniques in production and business.

Every year, businesses should link with vocational training institutions in the area to organize worker upgrading exams. Encourage workers to self-study and self-improve their skills.

Collaborate with international educational organizations specializing in improving vocational skills abroad, sending workers to joint learning, and training organizations.

6.2.4. Some other solutions

The authorities need to take measures to improve the financial management capacity, prepare financial statements, build business plans, and manage cash flow for manufacturing enterprises. And technology in Vietnam, such as organizing training and training courses hosted by the Department of Finance or the Accounting Association, in order to help businesses be proactive in making appropriate business plans or projects with the requirements of the credit institution.

Constantly improving the size of the business through linking with other units, expanding the distribution and purchasing system, etc., Local authorities need to improve and promulgate legal documents soon to create favorable conditions support production and technology enterprises in Vietnam to invest in developing products and business activities.

Encourage the establishment of professional associations, business support organizations to provide information, training advice, support on capital, techniques market, etc., on a voluntary basis.

In summary, in this research, the author finds that the administrative procedure affected the highest to the business performance of the Vietnam enterprises. This is the new point in contrast to the research of Goddard et al. (2005) showed in the studies of determinants in European manufacturing and technology services.

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Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

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