A comparative analysis of startups financing in Vietnam

Nguyen Thi Hanh[1]

Foreign Trade University, Hanoi, Vietnam

Abstract

The purpose of this paper is to compare the potential and funding amount of startups financing in Vietnam during the period of 2010 – 2018. Probit regression is employed to clarify the differences in fundraising potential among some industries. In addition, linear regression is applied to investigate the capacity of startups financing. The finding shows that startups in financial technology (fintech) and e-commerce have advantages in raising capital. Furthermore, startups in service technology dominate the capacity of raising money. In addition, the study shows that the older of startups age, the higher potential and capacity of outside financing. The study attributes valuable results to both academic and practical fields. Entrepreneurs can, thus, seize opportunities successfully in new ventures.

Keywords: Startups financing, Industry, New technology-based firms

1. Introduction

The importance of entrepreneurship for economic development has become widely acknowledged among researchers. Entrepreneurs are shown to generate, disseminate innovations and create jobs (Cohen and Klepper, 1992; Acs and Armington, 2004). They fill in market niches, increase competition and consequently promote economic capacity (Minniti *et al.*, 2005). Entrepreneurs, however, face challenges at the startup stage. One of the common problems for new ventures is raising sufficient funding to enable them to launch and operate businesses successfully. Accordingly, available finance and opperating cost have been cited as one of the major constraints for entrepreneurship (Stanworth and Gray, 1991; Storey, 1994; Beck *et al.*, 2005; 2006; 2008; OECD, 2006). Startups, which are also referred to as new technology based firms (NTBF), mainly base their businesses and opperations on some external resources, which come from investors specialized on equity such as venture capital

---

[1] Corresponding author: hanhnt@ftu.edu.vn

firms, angel investors, accelerators, incubators, and crowdfunding. Among these financial resources, equity capital acquisition is one of the most critical factor in the growth path of a startup (Hustedde and Pulver, 1992; Colombo and Grilli, 2010; Colombo *et al.*, 2010). The lack of adequate funds hinders firms' growth and even threatens survival because it is strongly correlated to acquisition of other resources (Carpenter and Petersen, 2002).

Startups at the early stages need money to bring up and evaluate their ideas so that a large percentage of startups fail in this stage. According to the research of Viettonkin Consulting (2019), which is based on a survey conducted in 2018 with 268 startups in Vietnam, the biggest challenge faced by startups is insufficient funds to cover their operations and lack of support from the government and the ecosystem to mobilize investment capital. Therefore, creating favorable conditions for these businesses to have easier access to financial capital is essential. It is also important to have support from the government in creating a facilitating business environment. In some studies on factors affecting the startups financing, the macro factors related to the industry environment are important. According to Kaplan and Strömberg (2000), investors require startups to allow for rapid growth industries due to a better chance to get higher return on investment. Industry's profit has an impact on the potential and amount of raising funds for businesses. Thus, startups should take into account industry's circumstances when starting a business. This study focuses on startups, which are small, new technology, and fast-growing firms with annual growth rates ranging from 20 to 25 percent per year. The growth of startups may be contingent on growth of industries or increase in market share.

Our analysis aims to figure out differences among industries and amount of startups financing in Vietnam. This study contributes to the entrepreneurship literature in startups financing and provides important implications for researchers and practitioners, who are interested in startups and venture capital. The study consists of five sections. The following section presents theoretical basis and research hypotheses. Section 3 describes data and methodology. Results and discussion are presented in Section 4. Section 5 concludes the study and presents some recommendations.

2. Literature review

2.1 Startup financing

Entrepreneurship is a complex category that involves many activities, such as identifying and evaluating opportunities, searching resources, opperating businesses and fundraising to maintain all activities. As pointed out by Clarysse *et al.* (2011), the result from structuring resource portfolios which obtains human, social, technology and financial resources makes startups become more dynamic and longer survival time. Therefore, they always seek for external resources to develop. Among these resources, financial capital is one of the most critical factors (Hustedde and Pulver, 1992; Colombo and Grilli, 2010; Colombo *et al.*, 2010). The lack of adequate funds hinders firm's growth and even threatens survival because it is strongly correlated to resource acquisition (Carpenter and Petersen, 2002). Due to the fact that startups often need more amount of money than the founder's capacity in early stages, new

ventures base their development on the resources collected from external financing, which comes from investors specialized in equity. It can be venture capital firms, angel investors, accelerators, incubators, or crowdfunding.

The importance of various types of financing can be explained by the findings that about 23.7% of startups has disappeared within the first two years and further 52.7% have been vanished in a time span of four years. Major reasons behind their failure are the bankruptcy, owner's financial health and access to financing options. (Berger and Udell, 1998). In the US, one of the most important sources of money for these firms is the venture capital industry. In Asia, however, the venture capital industry is less likely to fund high technology companies than in the US. There is even an aversion for these risky investments (Murray, 1994). Besides venture capital, a variety of other sources of finance are potentially available to startups (Timmons and Bygrave, 1986). These include personal savings of the entrepreneurs themselves, which are occasionally supplemented with capital or loans from family or friends.

Denis (2004) notes that obtaining external financing is difficult for entrepreneurs due to information asymmetry and moral hazard problems. While entrepreneurs understand the quality of the proposed project, it may be difficult for investors to comprehend. In addition, investors and entrepreneurs may disagree about the value of the project and the probability of success. The moral hazard problem happens when there is substantial external funding and entrepreneurs misuse or misallocate those funds for their personal benefit.

Therefore, it is critical to understand determinants of the potential of new ventures to access to financial resources, especially in the early stages. Cressy (1996) suggests that human capital determines the potential of a firm to access to financial resources. Others researchers affirm that capital raised by a startup is positively related to entrepreneurs's level of education (Bates, 1990; Storey and Wynarczyk, 1996). Storey and Wynarczyk (1996) find that firms' specific factors have great explanatory power for fundraising efficacy.

There is a numerous literature in developed country contexts, where the business environment is more advanced and probably completely different from emerging economy contexts, such as in Vietnam. As Mason and Harrison (2000) point out, it is not clear that situation in developed countries is readily transposable to the emerging economies. Major differences are: (i) The fact that the venture capital industry is longer established and larger in developed countries; (ii) The secondary stock market is much more important than that in emerging markets; (iii) The development of new industries largely occurs through new firms in developing countries (Ooghe *et al.*, 1991). As a result, this study in Vietnam is new.

The first study in Vietnam by Tran (2015) on capital mobilization for startups highlights the current situation of capital raising activities of startups and clarify differences between startups and establishing a business. According to Nguyen (2019), capital mobilization activities of Vietnamese startups exist in many forms and have not been clearly recognized by businesses and investors. There is an information asymmetry phenomenon, which leads to difficulties in accessing investment capital of startups. According to Le and Nguyen (2017),

factors affecting enterprises capital mobilization activities come from characteristics of the founders, enterprises, and environmental and institutional factors.

In these studies, industry variables were only tested as control variables. There are a few papers concentrating on impacts of specific industries on fundraising activities, especially in startups. This study will analyze how to segment the industry for startups and explore its impact on the potential and capacity of raising capital.

2.2 Industry classification

An industry is a group of companies that provide similar products or services and they are related based on their primary business activities. These companies often have similar production processes, organizational behaviours, sales behaviours and markets. In modern economies, there are dozens of industry classifications, which are typically grouped into larger categories called sectors. Individual companies are generally classified into an industry based on their largest sources of revenue. Similar businesses are grouped into industries based on their primary products produced or sold, thus, creating industry groups that can be used to isolate businesses from those who participate in different activities. Investors and economists often study industries to better understand factors and limitations of corporate profit growth. Companies operating in the same industry can also be compared to each other to evaluate the relative attractiveness of a company within that industry.

Industries are often categorized in a variety of ways. At the top level, economic activities are often categorized into three sectors: primary sector (raw materials), secondary sector (manufacturing), and tertiary sector (services). In addition, the criteria for sub-sectors are often based on product functions and similarity of the markets. For example, classification based on products such as construction, chemicals, petroleum, automobile, electronics, electricity, software, fisheries, and textiles. The market-based classification has the Global Industry Classification Standard and Industry Classification Standard, which are commonly used for financial markets. Classification systems that apply this classification method include International Standard Industrial Classification of all economic activities of the United Nations, the Standard Industrial Classification of the United States, and Vietnam System Industrial Classification (VSIC) in 2007.

VSIC is divided into five levels including: Primary sector consisting of 21 industries coded by the alphabet; Secondary sector consisting of 88 industries coded by a two-digit code according to the corresponding primary sector; Tertiary sector consisting of 242 industries coded by a three-digit code according to the corresponding secondary industry sector; Quaternary sector consisting of 486 industries formed by each corresponding tertiary sector and encoded by four-digits code; Quinary sector consisting of 734 industries formed by each corresponding quaternary and encoded with five-digits code. VSIC divides economic sectors based on three priority criteria: manufacturing processes and technologies delicate; input materials that economic activities use to create products; and characteristics of output of the economic activities.

Emerging economic industries are characterized by great growth potential, which differentiates with normal growth rate of firms. In these emerging economic industries, the growth potential is still forecasted, but these industries often grow faster than the common. These industries often have the following characteristics to identify: (i) Formed on the basis of new products, new services, and new ideas resulting from changing customer needs, and often use key enabling technology; (ii) Include entirely new industries, or more commonly restructuring, integrating and converting old industries into new industries; (iii) Tend to research in-depth knowledge of the industry, because their appearance is often the result of creativity and innovation; (iv) This industry often has a combination of entrepreneurship and innovation; (v) They activate and allow changes in market structure, creating new suppliers, new customers, new business models, new products and services; (vi) Disruptive innovation, the emergence of this industry often creates breakthrough changes and affects the existence of other industries; (vii) In the emerging industry, firms tend to be geographically focused. For examples, Silicon Valley in San Francisco USA was supposedly paradise of startups over the world, and it draw a lot of emerging technologies such as: educational technology, information technology, biotechnology (biotech), new materials technology, automation technology and artificial intelligence.

According to a recent report by the European Union on emerging industries, these industries are often categorized according to the emerging technology that they apply. Seven main types of industries include (i) environmental technology – eco; (ii) creative; (iii) maritime; (iv) mobility; (v) life science; (vi) information technology; and (vii) services. In which eco-industry includes businesses providing innovative products and services that have a positive impact on the environment. Creative industries include creative advertising, architecture, art, design, fashion, film, performance art, software, toys and games. Maritime industry include firms providing innovative products and services related to the traditional maritime. Transportation industry include products and services that optimize the time and journeys of goods and people. Information technology industry include firms providing new communication solutions.

As a result, this study focuses on startups that major in agriculture technology, educational technology, fintech, biotech and health, e-commerce, service technology and information technology.

2.3 Hypothesis development

A startup generally has an uncertain future, which is a risk for investors due to asymetric information. In consequence, investors seek for many signals to eliminate risks. One of those signals can be industry. According to a report of venture capital investor's requirements, investors can assess startups according to the market they aim to operate with rapid growth so that the investors can get a better return on investment (Rea *et al.*, 1985; Kaplan and Strömberg, 2000). Market opportunities influence all types of investment. In fact, they are more essential in early-stage investment because startups have not yet shown a proven record in that stage. De Haan and Kakes (2011) argue that investors in the Netherlands show a

special interest in startups in markets in which they are familiarized. As a result, investors target companies in specific industries.

Multiple studies show different chances of attracting funding in different industries. Hellmann and Puri (2000) discover that companies in the telecom and medical have more chance to attract funding, while this is less likely for companies in the computer industry. Chang (2004) recognizes two categories of internet startups, which are e-commerce companies and internet platforms. The market for e-commerce companies proved to be more mature than the investment market for internet platforms. Puri and Zarutskie (2012) find that companies in electronics industry and biotech industry are more likely to attract more venture capital. Capital is more abundant in the biotech industry because these companies are mainly targeted for their technology and products (Baum and Silverman, 2004; Haeussler *et al.*, 2012).

In addition, the fintech industry and content media industry were analyzed by scholars as their venture markets have transaction size of around 1,6 billion U.S dollars (McKinsey and Company, 2015; SparkLabs, 2016). Nevertheless, online media and content is only a small share of the total industry. Moreover, the size of the Fintech industry is expected to grow by 65% (SparkLabs, 2016) and the media industry by 5% (McKinsey and Company, 2015). Fintech refers to financial technology, which consists of businesses that use software to provide financial services (FinTech Weekly, 2016). The funding of fintech companies has risen by 215% in Europe between 2014 and 2015, of which the Nordics and the Netherlands are important sources (Skan *et al.*, 2015). Consequently, industries that startups belong to have influence on venture market and investors' decision. Thus, the following two hypotheses are established:

H1: The economic industry has a positive impact on the potential of startups to raise capital.

H2: The economic industry has a positive impact on the startup's amount of funding.

2.4 Conceptual model

Based on the theoretical basis and measurement of the potential to raise capital and the capacity of capital mobilization, the hypotheses are mentioned above. The research model is visualized as bellow.
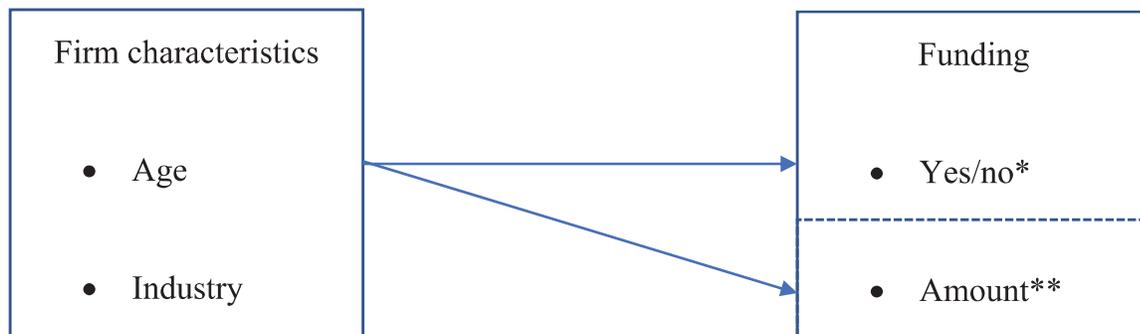

Figure1. The research model

Source: Author's compilation

The study uses the potential to raise capital and the capacity of capital mobilization to measure capital mobilization activities of startups. In addition, the observed variable is the number of years of operation of a firm.

Table 1. Description of variables

Variable	Description	Expected Relationship
Agri	Equal to 1 if the enterprise belongs to agricultural technology, equal to 0 if not.	+,+
Ed	Equal to 1 if the enterprise belongs to education technology, equal to 0 if not.	+,+
Fin	Equal to 1 if the enterprise belongs to fintech, equal to 0 if not.	+,+
BioHeal	Equal to 1 if the enterprise belongs to biology and health technology, equal to 0 if not.	+,+
Ecom	Equal to 1 if the enterprise belongs to e-commerce, equal to 0 if not.	+,+
Sev	Equal to 1 if the enterprise belongs to services technology, equal to 0 if not.	+,+
LogAge	By Logarithm the years of foundation	+,+
Financing	Equal to 1 if the enterprise belongs to financial technology, equal to 0 if not.	+,+
LogAmount	By Logarithm the value of capital mobilization	n/a

Source: Author's compilation

3. Data and methodology

Data for the study was collected from the CrunchBase database from January 1, 2005 to December 31, 2018. The sample includes startups that have registered business establishment and are in operation to the present time. The sample includes 338 startups with complete information and data on the intended variables included in the regression model. In this study, Y (1) is capital callability, which is a nominal variable and Y (2) is capital capacity by amount of money, which is a value variable.

$$Y(1) = \begin{cases} 1, n = 144 \\ 0, n = 194 \end{cases}$$

$$Y(2) = \begin{cases} non\ disclose, n = 60 \\ \log(a), a = [1000, 133800000], n = 84 \end{cases}$$

The model for analyzing capital callability in this study is the Probit model according to Finney (1952) as the dependent variable is a binary variable. The study examines impacts of industries on the capacity of capital mobilization of creative startups. The startups are classified into seven industries, of which the biotech and health industries are taken as base choices. The proposed research model is as follows:

$$P_i = Pr(Y_i=1) = \frac{1}{1+ e^{-Zi}}, \tag{1}$$

where:

$$Z_i = B_1 + B_2Agri_i + B_3Edu + B_4Fin + B_5Ecom + B_6Sev + B_7LogAge + u_i \tag{2}$$

P_i is the probability when $Y_i = 1$ (having raised capital). Model (2) is used to estimate the correlation between variables of different industries. The observed variable is logarithms of firm's age.

To estimate the capacity of capital mobilization of startups, the model for estimation is as follows:

$$V_i = B_0 + B_2Agri_i + B_3Edu + B_4Fin + B_5Ecom + B_6Sev + B_7LogAge \tag{3}$$

In which: V_i= Log(Funding amount)

The explanatory variables in Models (2) and (3) are as specified in Table 1.

4. Results and discussion

4.1 Descriptive statistics

Overview of the number of startups during the period of 2005-2018 by industries is presented in Table 2.

Table 2. Startups by industries from 2005 to 2018

Industry	Number	Percentage (%)
Agritech	21	6.2
Edtech	32	9.5
Fintech	24	7.1
Biotech and health	26	7.7
Ecommerce	46	13.6
Services	132	39
Information technology	57	16.8
Total	338	100

Source: Author's calculation

The majority of startups focus on technology industry (39%), information technology industry (16.8%), and e-commerce industry (13.6%). The remaining industries account for over 30% of 338 startups. It can be seen that new industries are potential in the Vietnam's market.

Table 3. Number of deals in the period of 2005-2018

Deals	Number	Rate (%)
Number of startups having mobilized capital with announced amount	84	25
Number of startups having mobilized capital without disclosing the amount	60	18
Number of startups having not mobilized capital	194	57
Total	338	100

Source: Author's calculation

It can be seen that the number of active startup deals that we collected in Vietnam were 338. The rate of successful capital-raising deals was 43%, which means that 144 startups completed the fundraising. The number of times a firm calls for capital is often large. Thus, the loop increases but the actual number of businesses is lower than the number of deals. This rate is positive for investors when they decide to invest in startups.

Table 4. Basic statistics of explanatory variables

Variables	α	Std. Dev	Min	Max
Age	5.868613	6.546332	1	14
LogAge	.5553599	.4289468	0	1.272098
Amount	7,728,270	1.880000	1000	133,800,000
LogAmount	6.054553	1.047577	3	8.126456

Source: Author's calculation

The age of startups ranged from 1 to 14 (mean = 5.86), and the oldest was 14 years old but we still consider them as startups because of the time they get the first funds was 2 years old. The largest amount raised was by Momo e-wallet startup with 133.8 million U.S dollars, which have been conducted through four rounds of fundraising.

4.2 Binary logistic regression

A research question of the study is what industries determine whether a startup attracts funding or not. Firm's industries include agricultural technology, educational technology, fintech, biotech and health, e-commerce, technology services and information technology.

Table 5. Potential of startup financing

Financing	α	Std. Dev	z	P-value
Agri	0.0557609	.5287425	0.11	0.916
Ed	0.4271508	.4703964	0.91	0.364
Fin	1.375533	.581254	2.37	0.018**
Ecom	1.133812	.4635294	2.45	0.014**
Sev	0.6450354	.4118661	1.57	0.117
IT	0.2422081	.4443437	0.55	0.586
LogAge	2.427081	.277799	8.74	0.000***
LR-Chi square	140.77			
Pseudo-R Square	0.3730			
Observations	338			

Notes: **,*** correspond to P-value <0.05 and <0.001, respectively

Source: Author's calculation

The model has three significant variables, two variables have P-values smaller than 0.05 are Fin (p = 0.018) and Ecom (p = 0.014), another LogAge variable has P-value smaller than 0.001 (p = 0.000). This indicates that startups in the fintech industry and e-commerce industry have positive impacts on the potential of startups to raise capital and years of operation of startups have positive impact too.

The startups in the fintech industry have a higher probability of raising capital than those in the biotech and financial industries. Parameters of fintech (α=1.37, z = 2.37) means that for startups in the fintech industry the potential to raise capital higher than other 1.37 times. This result is consistent with the theory that the number of investment deals in the financial industry has been increasing in recent years and the market of this industry is still large.

In Table 5, the coefficient of the Ecom variable is positive suggesting that startups in the e-commerce industry have higher potential to raise capital compared to startups in other industries. This result supports the argument of Yang *et al.* (2015) that the potential to mobilize capital of innovative startups in the e-commerce industry is influenced by characteristics of the industry and other environmental factors. This finding also means that startups in the e-commerce industry have better conditions for business operations because of higher potential to raise capital.

The number of years of operation of startups has significant coefficient with p-value less than 0.001. This finding is consistent with previous studies, indicating that for a longer time a startup exists, the better its potential to raise capital for their business.

4.2 Capacity of capital mobilization

Table 6 presents estimation of the capacity of capital mobilization activities of the startups by industries.

Table 5. Capital mobilization capacity of startups

Amount of financing	α	Std. Dev	t-stat	P-value
Agri	-.3991785	.7626101	-0.52	0.602
Ed	.169757	.630623	0.27	0.789
Fin	.8895705	.6702611	1.33	0.189
Ecom	.9185335	.588869	1.56	0.123
Sev	1.062981	.5616084	1.89	0.062*
IT	.7256238	.6213987	1.17	0.247
LogAge	.7938875	.2710732	2.93	0.005**
Prob > F	0.00098			
R- Square	0.2809			
Obs	84			

Notes: **,*** correspond to P-value <0.05 and <0.001, respectively

Source: Author's calculation

According to Table 6, there are two significant variables, namely the Sev variable and the LogAge variable. The Sev variable has P-value smaller than 0.1 (p = 0.062) and the LogAge variable has P-value smaller than 0.01 (p = 0.005). These results suggest that in terms of capital mobilization capacity startups in the service industry mobilize a larger amount of capital than other startups in other industries. The number of deals in the service industry accounts for a large proportion in the total number of deals achieved by the sampled startups in all industries. The financial industry is much narrower than the tourism service and transport industries. Nevertheless, because the transport and tourism industries need more capital than the financial industry, the large amount of capital invested in the service industry is reasonable.

According to the results in Table 6, the number of years of establishment is a strong factor in raising capital. The longer a startup exists, the more investment it needs and the more trust it could build. Therefore, startups with more years in business get faster and the right amount of capital.

Results from analyzing determinants of potential and capacity of capital mobilization show a strong relationship between economic industries and capital mobilization of startups. In the context of the Vietnamese market, industries such as fintech, e-commerce, and service technology attract more investment capital from investors. In addition, the number of years of operation of a startup is positively correlated to both the potential and capacity of capital mobilization of startups in Vietnam.

5. Recommendations and conclusion

Results from this study on capital mobilization activities of startups in Vietnam show the influence of industrial factors on the potential and capacity of startups financing. In addition to important factors of industry, age of startups plays an important role in raising funds. The results show that startups with longer operating time need more capital and are more likely to raise capital successfully. The fintech, e-commerce, and technology service show a great influence on capacity of startups financing in Vietnam. These results provide important implications for the venture capital market and for the government to support development of startups. A capital supporting platform of government will be established in 2020 and controlled by the Ministry of Finance and the Ministry of Planning and Investment. Such platform will provide a facilitating environment for development of startups in Vietnam.

Findings from this study brighten the future development for startups, which have been emerging in recent years and dominating knowledge-based firms with core technologies. Startups should consider fintech, ecommerce, and service industries for their business if they want to better mobilize funds for their projects. In additions, due to asymmetry informations and moral hazards, there is a gap between investor and startup so they need a system of signals to help bridge this gap. Findings from this study also bring a signal for venture investors to make decision on their portfolio of investment. Another recommendation from this study is that the government should establish programs and budgets to concentrate in these industries and support selected incubators respectively.

Research on startups financing in Vietnam is a new research direction. It is difficult for the author to avoid some difficulties during the research process, especially regarding to collecting data. Because of the difficulty in collecting and refining data, the study only analyzes the impact of two main factors, which are industry and age of startups, on capital mobilization. Such limitation leads to weak findings and recommendations. Also, data of Vietnamese startups have not been available causing it impossible to conduct deeper research taking into account characteristics of industries.

References

Acs, Z.J. and Armington, C. (2004), "Employment growth and entrepreneurial activity in cities", *Regional Studies*, Vol. 38, pp. 911-927.

Bates, T. (1990), "Entrepreneur human capital inputs and small business longevity", *Review of Economics and Statistics*, Vol. 72 No. 4, pp. 551-559.

Baum, J.A., and Silverman, B.S. (2004), "Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups", *Journal of Business Venturing*, Vol. 19 No. 3, pp. 411-436.

Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. (2005), "Financial and legal constraints to growth: does firm size matter?", *The Journal of Finance*, Vol. 60 No. 1, pp. 137-177.

Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. (2006), "The influence of financial and legal institutions on firm size", *Journal of Banking & Finance*, Vol. 30 No. 11, pp. 2995-3015.

Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. (2008), "Financing patterns around the world: are small firms different?", *Journal of Financial Economics*, Vol. 89 No. 3, pp. 467-487.

Berger, A.N. and Udell, G.F. (1998), "The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle", *Journal of Banking and Finance*, Vol. 22 No. 6-8, pp. 613-673.

Carpenter, R.E. and Petersen, B.C. (2002), "Is the growth of small firms constrained by internal finance?", *Review of Economics and Statistics*, Vol. 84 No. 2, pp. 298-309.

Chang, S.J. (2004), "Venture capital financing, strategic alliances, and the initial public offerings of Internet startups", *Journal of Business Venturing*, Vol. 19 No. 5, pp. 721-741.

Clarysse, B., Bruneel, J. and Wright, M. (2011), "Explaining growth path of young technology-based firms: structuring resource portfolios in different competitive environments", *Strategic Entrepreneurship Journal*, Vol. 5 No. 2, pp. 137-157.

Cohen, W.M. and Klepper, S. (1992), "The trade-off between firm size and diversity in the pursuit of technological progress", *Small Business Economics*, Vol. 4, pp. 1-14.

Colombo, M.G. and Grilli, L. (2010), "On growth drivers of high-tech start-ups: exploring the role of founders' human capital and venture capital", *Journal of Business Venturing*, Vol. 25 No. 6, pp. 610-626.

Colombo, M., Mustar, P. and Wright, M. (2010), "Dynamics of science-based entrepreneurship", *The Journal of Technology Transfer*, Vol. 35 No. 1, pp. 1-15.

Cressy, R. (1996), "Are business startups debt-rationed?", *Economic Journal*, Vol. 106 No. 438, pp. 1253-1270.

De Haan, L., Kakes, J. (2011), "Momentum or contrarian investment strategies: evidence from Dutch institutional investors", *Journal of Banking & Finance*, Vol. 35 No. 9, pp. 2245-2251.

Denis, D.J. (2004), "Entrepreneurial finance: an overview of the issues and evidence", *Journal of Corporate Finance*, Vol. 10 No. 2, pp. 301–326.

Finney, D.J. (1952), *Probit analysis: a statistical treatment of the sigmoid response curve*, Cambridge University Press, Cambridge.

FinTech Weekly (2016), "Innovative finance ISA 2016: an overview", available at: https://www.fintechweekly.com/magazine/articles/innovative-finance-ISA-2016-an-overview (accessed July 6, 2019).

Haeussler, C., Harhoff, D. and Mueller, E. (2012), "To be financed or not… - The role of patents for venture capital-financing", *ZEW - Centre for European Economic Research Discussion Paper*, Munich School of Management, Ludwig-Maximilians-Universität München, Munich, No. 09-003, available at: ftp://ftp.zew.de/pub/zew-docs/dp/dp09003.pdf (accessed June 8, 2019).

Hellmann, T. and Puri, M. (2000), "The interaction between product market and financing strategy: the role of venture capital", *The Review of Financial Studies*, Vol. 13 No. 4, pp. 959-984.

Hustedde, R.J. and Pulver, G.C. (1992), "Factors affecting equity capital acquisition: the demand side", *Journal of Business Venturing*, Vol. 7 No. 5, pp. 363-374.

Kaplan, S.N. and Strömberg, P. (2000), "How do venture capitalists choose investments", Working Paper, University of Chicago, Vol. 121, pp. 55-93.

Le, T.P. and Nguyen, T.H. (2017), "Determinants of fundraising for Vietnamese startups", *International conference for young researchers in economics and business*, ICYREB 2017, October 30th 2017, Da Nang, Vietnam, pp. 543-552.

Mason, C.M. and Harrison, R.T., 2000, "The size of the informal venture capital market in the United Kingdom", *Small Business Economics*, Vol. 15 No. 2, pp. 137-148.

McKinsey and Company (2015), "FinTechnicolor: the new picture in finance", available at: https://www.mckinsey.com/~/media/mckinsey/industries/financial%20services/our%20insights/bracing%20for%20seven%20critical%20changes%20as%20fintech%20matures/fintechnicolor-the-new-picture-in-finance.ashx (accessed July 8, 2019).

Minniti, M., Arenius, P. and Langowitz, N. (2005), "The 2005 global entrepreneurship monitor special topic report: women in entrepreneurship", *Babson Park, MA: Center for Women Leadership, Babson College*, available at: http://genderinbusiness.com/uploads/1/2/8/5/128558688/women_entrepreneurship_2005-global_monitor_report.pdf (accessed July 8, 2019).

Murray, G. (1994), "The second 'equity gap': exit problems for seed and early stage venture capitalists and their investee companies", *International Small Business Journal*, Vol. 12 No. 4, pp. 59-76.

Nguyen, T.H. (2019), "World experience of financing capital for stapups, and some suggestions for Vietnam", *Economy and Forcast Review*, Vol. 32, pp. 91-95.

Ooghe, H., Manigart, S. and Fassin, Y. (1991), "Growth patterns of the European venture capital industry", *Journal of Business Venturing*, Vol. 6 No. 6, pp. 381-404.

OECD (2006), *The SME financing gap (Vol. I): theory and evidence*, OECD Publishing.

Puri, M. and Zarutskie, R. (2012), "On the life cycle dynamics of venture capital and non-venture capital financed firms", *The Journal of Finance*, Vol. 67 No. 6, pp. 2247-2293.

Rea, D.K., Leinen, M. and Janecek, T.R. (1985), "Geologic approach to the long-term history of atmospheric circulation", *Science*, Vol. 227 No. 4688, pp. 721-725.

Skan, J., Dickerson, J. and Masood, S. (2015), "The future of fintech and banking: digitally disrupted or reimagined?", available at: https://www.accenture.com/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_11/Accenture-Future-Fintech-Banking.pdf#zoom=50 (accessed July 8, 2019).

SparkLabs (2016), "FinTech Industry Report 2016", available at https://www.slideshare.net/bernardmoon/fintech-industry-report-2016 (accessed February 3, 2019).

Stanworth, J., Gray, C. (1991), *Bolton 20 years on*, Paul Chapman, London.

Storey, D.J. (1994), *Understanding the small business sector*, Routledge, London.

Storey, D.J. and Wynarczyk, P. (1996), "The survival and non-survival of micro firms in the UK", *Review of Industrial Organization*, Vol. 11 No. 2, pp. 211-229.

Timmons, J.A. and Bygrave, W.D. (1986), "Venture capital's role in financing innovation for economic growth", *Journal of Business Venturing*, Vol. 1 No. 2, pp. 161-176.

Tran, T.T.H. (2015), "Mobilizing capital for startups", Working Paper in Startups National Conference, ISBN: 978-604-67-0811-7, Nguyen Tat Thanh University, Hochiminh city, Vietnam.

Viettonkin Consulting (2019), "Startup ecosystem in Vietnam, Report No. 001-19, Viettonkin consulting", availabe at: https://www.viettonkin.com.vn/wp-content/uploads/2019/04/Startup-report_compressed.pdf, (accessed July 8, 2019).

Yang, Z., Shi, Y. and Wang, B.(2015), "Search engine marketing, financing ability and firm performance in E-commerce", *Procedia Computer Science*, Vol. 55, pp. 1106-1112.