

A comprehensive analysis of Innovations and Growth Factor Affecting Startups

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Abstract

Businesses are an important part of every economy. It provides jobs and relieves the financial strain on many families. The number of start-ups launched is quite high, and the number of start-ups that fail is significantly linked. Environmental, social, technological, and political variables are acknowledged to be the most prevalent causes of startup failure. Knowledge in the relevant startup field, leadership skills, finance, marketing, and promotion are all important variables that influence the performance of businesses. The goal of this study is to delve into the elements that impact start-up creativity and to identify characteristics that will aid in getting funding.

Using three distinct models, the pooling model, fixed effect model, and random model, as well as further research using the Hausman test, it was discovered that factors such as funding had a higher impact on innovation.

Keywords: *Financing, Business, Innovation, Startup, Small Business*

I. INTRODUCTION

Businesses are an important part of every economy. It provides jobs and relieves the financial strain on many families. The number of start-ups launched is quite high, and the number of start-ups that fail is significantly linked. Environmental, social, technological, and political variables are acknowledged to be the most prevalent causes of startup failure. Knowledge in the relevant startup field, leadership skills, finance, marketing, and promotion are all important variables that influence the performance of businesses.

The goal of this study is to delve into the demographic characteristics that impact start-up creativity and to identify elements that will aid in obtaining funding. The failure or success of a company is determined by a variety of variables. Literature has found one significant element that influences a business's product design, marketing, innovation, and tactics. Financing has been highlighted as a key component in most businesses' success. Because of the 2008 market crisis, it has been difficult for entrepreneurs to raise funds. Which intentions have had an impact on startup innovation? The focus is on the demographical aspects that influence startup innovation. Most businesses fail not due to a lack of funds, but rather due to a lack of foresight and a competent R&D staff. Financing has been found to be significantly linked with successful innovation. Many businesses failed to exist because they were unable to keep up with the market's innovation cap. Innovation may be viewed as a means of surviving. Fortune Magazine published a list of the 500 biggest corporations in 1955, which has since become synonymous with success. Only 71 of them firms exist now, 60 years later.

Yahoo, Blackberry, Myspace, Border Books, and the whole publishing business are now practically forgotten, yet these were the firms that others looked up to in the early 2000s. Yahoo was the global leader in internet advertising in 2005, with 21% of the market. Despite this, they are now fighting to retain their fourth-place ranking behind Google, Facebook, and Microsoft. In the early 2000s, Blackberry had nearly half of the global mobile phone market, but following the debut of the iPhone, they lost their whole market share since they didn't grasp the fast.

II. REVIEW OF THE LITERATURE

Every successful company in the world relies on innovation. Companies that are unable to spend in research and development will perish in a competitive market. According to (Gompers and Lerner, 2004), (Kaplan and Schoar, 2005), the capital cycle has become the most prominent element of the innovative market (Gompers, Kovner, Lerner and Scharfstein 2008). According to (Rhodes- Kropf, M. 2015), the market plays an important role in financing, and finance is closely linked to innovation. Financing stifles innovation in Europe's small businesses (Ghisetti Et al, 2017). Strong financial assistance for startups can trade off high-level risks, according to (Nanda, R., Rhodes-Kropf, M. 2017) and (Ou, C. 2011). Lack of finance, internal market dynamics, and a lack of innovation are all major causes of business failure. There is worry about the decline of innovation in small and medium-sized firms, particularly in family businesses (Schäfer, D., Stephan, A., Mosquera, J.S. 2017). The study found that family companies struggle to implement new practises owing to a

lack of R&D funds, implying that if adequate funding is provided to such enterprises, their survival and innovativeness will improve. As highlighted by, closing the gap between innovation and financing appears to be too tough (Czarnitzki and Hottenrott 2011; Mohnen et al. 2008; Canepa and Stoneman 2008; Freel 2007). Since there would be no innovation without research, the source of funding for inventive activities becomes the topic of the day.

1. H1 -: Financing is a critical foundation for innovation to flourish.

In most businesses, financing has been found to have a high link with innovation and success. It has also been shown that significant initial investment in startups is the greatest way to trade risk.

H1: The internal market influences innovation to some extent. Aghion, Bloom, Blundell, Griffith, and Howitt, 2002, published a theoretical model explaining the dependency of company innovation activity on the degree of market rivalry. (Berger, 2010) (Berger, 2010) (Berger, 2010) He demonstrated an empirically beneficial link between market competition and innovation in his research. The impact of economies of scale and a better capacity to obtain money for new research is also significant. Openness encourages competition and guarantees that products and services are of high quality.

H1: Turnover has an impact on a company's decision to be innovative.

The impact of innovation on company turnover and overall growth is significant (Capasso, M., Treibich, T., Verspagen, B. 2015). We want to see if turnover has an impact on a company's choice to invest heavily in R&D.

DATA STRUCTURE

It is a term that refers to the organisation of data. The data is panel data, and the nations that are included are all developed countries. The countries were chosen based on their GDP. Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, the United Kingdom, the United States, Switzerland, Sweden, Russia, and China are among the 13 nations evaluated. Because of the data availability, the years chosen for the analysis were chosen. The data was chosen from the years 2006 to 2015. The mean is used to fill in for missing data. The GDP per capita is expressed in raw values rather than percentages, so that the true value in dollars can be determined.

The information below outlines the elements that were taken into account in the data structure, as well as what each factor represents.

The GDP per capita is expressed in raw values rather than percentages, so that the true value in dollars can be determined.

Models description

The equation for the fixed effects model becomes: $Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$ [eq.1] Where

– α_i ($i=1 \dots n$) is the unknown intercept for each entity (n entity-specific intercepts).

– Y_{it} is the dependent variable (DV) where i = entity and t = time.

– X_{it} represents one independent variable (IV),

– β_1 is the coefficient for that IV,

– u_{it} is the error term

Another way to see the fixed effects model is by using binary variables. So the equation for the fixed effects model becomes:

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \dots + \beta_k X_{k,it} + \gamma_2 E_2 + \dots + \gamma_n E_n + u_{it} \text{ [eq.2]}$$

Where

– Y_{it} is the dependent variable (DV) where i = entity and t = time.

– $X_{k,it}$ represents independent variables (IV),

– β_k is the coefficient for the IVs,

– u_{it} is the error term

– E_n is the entity n . Since they are binary (dummies) you have $n-1$ entities included in the model.

– γ_2 Is the coefficient for the binary repressors (entities)

The random effects model is: $Y_{it} = \beta X_{it} + \alpha + (u_{it} + u_i)$

– Y_{it} is the dependent variable (DV) where i = entity and t = time.

– X_{it} represents one independent variable (IV)

– α is the unknown intercept

– u_{it} is the error term

Descriptive Statistics

Table: 1

	Year	Turnover(1)	Financing (2)	Governmental_support_and_policies (3)	Taxes (4)	Basic_education (5)	Post_education (6)
Min	2006	-15.3700	2.160	1.920	1.500	1.480	2.170
1st Qu	2008	-1.1100	2.690	2.683	2.410	1.992	2.752
Median	2010	0.9700	2.730	2.780	2.540	2.120	2.890
Mean	2010	0.4816	2.785	2.802	2.564	2.128	2.892
3rd Qu	2013	3.2500	2.888	2.938	2.720	2.208	3.015
Std Dev		4.91711	0.2923573	0.3119804	0.4350851	0.3037385	0.2859402
Max	2015	15.7000	3.770	3.960	3.700	3.070	3.710

Table: 2

	R.d(7)	Internal_market_dynamics (8)	Internal_market_openness(9)	cultural_and_social_norms (10)	GDP_per_capital (11)	Employment (12)
Min	2.190	1.840	1.920	2.140	32351	55.53
1st Qu	2.572	2.873	2.723	2.670	36441	64.15
Median	2.660	3.040	2.750	2.890	40592	71.31
Mean	2.705	2.984	2.797	2.899	42054	69.58
3rd Qu	2.728	3.047	2.865	3.025	46011	73.57
Std Dev	0.3062937	0.3118345	0.2759363	0.4254911	6729.732	6.191559
Max	3.730	3.920	3.650	4.120	62557	80.20

Table: 3: Correlation Coefficient

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.00											
2	0.12	1.00										
3	0.07	0.60	1.00									
4	0.01	0.50	0.63	1.00								
5	-0.03	0.43	0.25	0.59	1.00							
6	-0.02	0.56	0.50	0.55	0.48	1.00						
7	0.01	0.67	0.59	0.63	0.42	0.61	1.00					
8	0.10	-0.42	-0.21	-0.38	-0.38	-0.52	-0.42	1.00				
9	-0.03	0.60	0.43	0.53	0.71	0.43	0.60	-0.44	1.00			

10	-0.06	0.32	0.12	0.42	0.58	0.31	0.24	-0.12	0.39	1.00		
11	0.11	0.44	0.28	0.51	0.49	0.39	0.52	-0.29	0.43	0.58	1.00	
12	0.10	0.31	0.34	0.64	0.48	0.22	0.39	-0.14	0.40	0.58	0.57	1.00

The above table shows the summary of all the factors which are considered in the research.

Table 4

r.d_new	Oneway (individual) effect WithinModel	Oneway (individual) effect Random Effect Model (Amemiya's transformation)	Pooling Model
(Intercept)		0.31058204*** (0.01198474)	3.0046e-01*** (1.0832e-02)
governmental_support_and_policies	0.01091746** (0.00380124)	0.01090914** (0.00362893)	1.0607e-02** (3.6448e-03)
post_education	0.00123711 (0.00387672)	0.00318249 (0.00374367)	9.1690e-03* (3.8721e-03)
internal_market_openness	0.01227183** (0.00439171)	0.01219112** (0.00415338)	1.1548e-02** (4.0613e-03)
Financing	0.01649622*** (0.00410108)	0.01614343*** (0.00405445)	1.4502e-02** (4.5339e-03)
Turnover	-0.00018619 (0.00015877)	-0.00016615 (0.00015795)	-9.5977e-05 (1.8239e-04)
Adj. R-Squared	0.43574	0.51033	0.57373
theta		0.5676	

Hausman Test data: $y \sim x$

chisq = 15.477, df = 5, p-value = 0.008507 alternative hypothesis: one model is inconsistent

From the Hausman Test above, the appropriate model to be used is the One Way (individual) effect Within Model (Fixed Model)

MODEL WITH DUMMIES

r.d	Oneway (individual) effect Within Model	Oneway (individual) effect Random Effect Model (Amemiya's transformation)	Pooling Model
(Intercept)		-1.5396e-01 3.8586e-01	-1.1049e-01 (4.6878e-01)
governmental_support_and_policies	1.7199e-01* (7.3691e-02)	1.9298e-01** (7.3328e-02)	2.2375e-01** (8.0298e-02)
post_education	5.7325e-02 (7.8335e-02)	1.0251e-01 (7.6352e-02)	1.9297e-01* (9.5114e-02)
internal_market_openness	3.4897e-01*** (8.5494e-02)	3.1042e-01*** (8.4832e-02)	2.2503e-01* (9.1789e-02)
Financing	3.5590e-01*** (8.7421e-02)	3.0036e-01*** (7.8848e-02)	2.3381e-01* (1.1116e-01)
Turnover	-1.7438e-02** (5.8830e-03)	-3.4795e-03 (3.0784e-03)	-1.0856e-02 (7.6100e-03)
Adj. R-Squared	0.53554	0.53671	0.60847
theta		0.6924	

HYPOTHESIS	STATUS
Financing	Supported By all the models
Post Education	Supported by just Fixed Effect Model
Internal Market Openness	Supported by all with models

Model:

$$=1.7199e-01 * X1 + 5.7325e-02 * X2 + 3.4897e-01 * X3 + 3.5590e-01 * X4 + 1.7438e-02 * X4$$

$$(7.3691e-02) (7.8335e-02) (8.5494e-02) (8.7421e-02) (5.8830e-03)$$

Governmental_support_and_policies =x1

Post_education =x2

Internal_market_openness=x3

Financing =x4

Turnover =x5

Hausman Test data: $y \sim x$

chisq = 16.617, df = 7, p-value = 0.02004 alternative hypothesis: one model is inconsistent

III. DISCUSSIONS

A number of intriguing aspects of invention were brought to light by the literature. We utilised R.D NEW as our independent variable in Table x. The first hypothesis was confirmed by a relatively high t-value, indicating that finance has an impact on innovation.

According to (Schäfer, D., Stephan, A., Mosquera, J.S. 2017), family companies are not creative due to a lack of funding. This research result backs up their results. This means that financial assistance is critical for a company to be creative. Many businesses fail due to a lack of funding, which makes it difficult for them to develop new creative products and services. As a result, firms with the resources to support research activities are more likely to be at the forefront of the market. This also allows a company to control a market for a longer length of time. Financing might be considered the cornerstone of any successful business.

The second theory is that the internal market influences innovation to some extent. With the Fixed effect model in table x, openness was shown to be positive. This supports another conclusion by (Berger, 2010), according to which market openness creates competitiveness, which forces leaders to focus more on innovation. Because the market is open, it draws a large number of players, which fosters innovation and progress. Leaders become hesitant with inventiveness when there is little competition. Because of the intense rivalry in the smartphone industry, firms who were still stuck in the past, such as Nokia, were left behind. Facebook is still Facebook after a decade because it understands the competition and strives to eliminate it. For example, Facebook purchased WhatsApp because they noticed people were diverting their focus to WhatsApp at the time of purchase. Good leaders stay on their toes by being open, which reawakens their inventive impulses. Every economy benefits from competition. It was discovered that turnover has little impact on a startup's ability to innovate.

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