

FACTORS AFFECTING ENTREPRENEURIAL INTENTION AMONG STUDENTS AT THAI NGUYEN UNIVERSITY OF INFORMATION AND COMMUNICATION TECHNOLOGY

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ABSTRACT

Information technology (IT) has been currently the choice of many people starting their business. Information technology development has turned ideas into products and services, creating new jobs. Although some startup projects are done by IT students, the number of IT students participating in these projects is quite small. The purpose of this study is to find out what factors affecting entrepreneurial intention of Thai Nguyen University of Information Technology and Communications (ICTU) students. 285 students participated in the survey. The research used an exploratory factor analysis (EFA) method in combination with the regression analysis method to analyze the influence of factors on student's entrepreneurial intention. The research results found that ICTU student's entrepreneurial intention was influenced by the following factors: Education and training at the University, personal experience, family and friends, individual characteristics; and capital.

Key Words: *Entrepreneurship; Entrepreneurial intention; ICTU.*

1. Introduction

Startup has been playing an important role in the economic development of any country. It is due to startup helps create jobs and reduce the unemployment rate, thus, Government around the world has been keen to provide a supportive environment that promotes existing enterprises and fosters new ventures (Kirby, 2004).

In Vietnam, Government has issued many programs to support and promote entrepreneurship, especially the program for young people to start up their business. Such start-up programs create opportunities for young people and students to promote their creative spirit and self-reliant mind and to apply the acquired knowledge to create feasible start-up projects in business life.

The development of information technology (IT) has turned ideas into products and services, creating new careers, hence, IT has become one of the most popular choices when doing startup among young people and students. Although the percentage of successful projects in the IT field is still low, this is an opportunity for young people to make their dreams come true.

The University of Information and Communications Technology (ICTU) is a member of Thai Nguyen University, with the function of training and transferring technology in the region's main information and communication technology field in the Midlands and the Northern mountainous areas.

In recent years, with the efforts of the University, the number of graduates having jobs reached over 99%. In particular, the University is a pioneer in Thai Nguyen University in supporting and encouraging students to start-up and develop entrepreneurial ideas, namely: the "Smart water" project of the University's students won the first prize of the 1st student entrepreneurship ideas contest in 2017 organized by the Vietnam Central Association of Students; The project "Support system to build escape skills" is a product with the integration of multimedia processing with high social practical significance, addressing hot issues that are of great interest to the society today, this idea can also be developed for a variety of other applications; The project "Multi-dimensional scanning and object scanning system" with highly practical application; The project "the development of Ibee.vn providing solutions and supporting Livestream sales management on Facebook for companies" is developed based on e-commerce to support for business companies, etc.... It can be said that ICTU is a training school of the information technology sector that can create great entrepreneurial potential now and in the future.

Although these projects have shown high interest to ICTU students, the number of students actively participating in these start-up projects is still low, hence, this paper is to find out what factors affect the entrepreneurial intention of ICTU students.

2. Theoretical framework

2.1. Entrepreneurship

2.1.1. Definition of entrepreneurial intention

There are many concepts of entrepreneurial intention. Mariani et al (2013) state that entrepreneurial intention is the process of identifying, evaluating and exploiting business opportunities for each individual. Wenjun Wang et al (2011) suggested that the intention to start a business is the desire to achieve desired goals by taking advantage of business opportunities to get rich. According to Austin et al. (2006), starting a business is taking advantage of business opportunities to get rich by initiating innovative ways of operating under resource-limited environmental conditions.

In Vietnam, the Law on Support for Small and Medium Enterprises, effective January 1, 2018, stated: "Innovative startup of small and medium enterprises is small and medium enterprises established to implement ideas based on exploiting intellectual property, technology, new business models and being capable of rapid growth"

Within the scope of the research, the concept of entrepreneurship is understood as the process of exploring, recognizing opportunities, developing ideas by changing opportunities by establishing a new business.

2.1.2. Factors affecting entrepreneurial intention

Many researchers have been researching on startup and entrepreneurial intention. They have pointed out the factors affecting the start-up intention of students in countries, disciplines, universities such as education and training at university, personal experiences, family, and friends, etc... This study will inherit such a variable as follows:

Education and training at university (GD): According to Ibrahim et al (2002), Souitaris (2007), Linan, et al. 2010), Nguyen Hai Quang and Cao Nguyen Trung Cuong (2017), education and training at universities in the knowledge that students receive from the training activities, which is an important factor in forming the start-up intention for students: The school provides the necessary knowledge for business; The main curriculum at the school equips with skills for starting a business; The University usually organizes orientation activities for students (start-up workshops, entrepreneurship contests); The school develops business skills for students; The school has organizations which are ready to assist students in starting their businesses.

Personal experiences (TN): Linan et al (2011), Nguyen Quoc Nghi et al (2016); Wenjun Wang et al (2011) state that personal experience is one of the demographic factors and personal qualities that help students have enough confidence to start up their own business: experience in business; experience to be an employee; experience to be a manager.

Family and friends (GDBB): Linnan et al (2009), Nguyen Thi Tuyet Mai et al (2009), Wenjun Wang et al. (2011) conclude that family and friends are the factors that significantly influence students' entrepreneurial intention: the support of family, friends, and relatives will influence entrepreneurship decisions; The career of parents, family members, and friends influences students' start-up decisions.

Individual characteristics (TCCN): According to Wenjun Wang et al (2011), Krueger et al (2000); Nguyen Quoc Nghi et al (2016); Linnan et al (2009); Autio et al (2001); Nguyen Thi Tuyet Mai et al (2009); Nguyen Hai Quang and Cao Nguyen Trung Cuong (2017), the individual characteristics decides the start-up intention of students such as be passion in business; do not like to work for other people after graduation; be confident in their ability to start a business; are not afraid of business risks.

The capital (NV): Fatoki et al. (2010), Perera et al. (2011), Theo Amou et al (2014), Nguyen Hai Quang et al (2017); Nguyen Thi Tuyet Mai et al (2009), Luong Ngoc Minh (2019), Le Hieu Hoc et al (2018), the capital is essential for start-up students. It can be self-capital (inheritance, savings, doing a part-time job, ..) or can borrow from relatives, friends and credit institutions.

Entrepreneurial intention (KN): According to Nguyen Thi Tuyet Mai et al (2009); Le Hieu Hoc et al (2018), Mueller (2006); Austin et al. (2006), the intention to start a business is approval for entrepreneurship and/or plan to carry out business acts and/or take advantage of opportunities to start a business.

2.2. Theoretical model and hypotheses

Hypotheses:

H1: Education and training at university has a positive impact on entrepreneurial intention of ICTU students

H2: Personal experiences have a positive impact on entrepreneurial intention of ICTU students

H3: Family and friends have a positive impact on entrepreneurial intention of ICTU students

H4: Individual characteristics have a positive impact on entrepreneurial intention of ICTU students

H5: The capital has a positive impact on entrepreneurial intention of ICTU students

3. Research method

3.1. Data collection

The study used primary data from 291 ICTU students according to Slovic's formula (1984).

$$n = N / (1 + N * e^2)$$

n: sample, N: population, e^2 : error

With $N = 1.704$, $n = 291,451 \approx 291$ with $e = 0.05$

The research process is conducted by distributing questionnaires directly to students. The number of surveys issued is 291 and the valid ones are 285.

3.2. Data analysis

The study used the exploratory factor analysis (EFA) method to analyze the factors affecting ICTU students' start-up intentions in three steps:

1) Evaluate the quality of the scale and the quality of observed variables

- Evaluate the quality of the observed variables: If an observed variable has a Corrected Item - Total Correlation ≥ 0.3 , this observed variable guarantees quality (Nunnally & Burstein, 1994)
- Check scale quality (each factor) with Cronbach's Alpha: If the Cronbach's Alpha coefficient of each scale is ≥ 0.6 then the scales are reliable (Hair et al., 2006).

2) Exploratory factor analysis (EFA)

- Check the suitability of the EFA method: if: $0.5 < KMO < 1$, EFA is considered consistent with the actual data set;
- Check if the observed variables are correlated with each other on a scale: if the Barlett's Test (Barlett's Test) is statistically significant (with Sig. ≤ 0.05), the observed variables are correlated with each other on a scale.
- Examine the explanatory power of the observed variables: if the Total Variance Explained is $\geq 50\%$, at least 50% of the change in the observed variables is explained by the observation variables (Hair and et al., 2006).
- Check the ability to summarize information of factors: if Eigenvalue (representing the variability explained by each factor) > 1 , the drawn factor makes the best summary of information.

3) Multiple variable analysis

- Test the suitability of the regression model: F test in regression function has statistical significance if F has Sig. ≤ 0.05
- Test the statistical significance of each non-standardized regression coefficient, if the t-test value has Sig. ≤ 0.05 , the influence of the corresponding independent variable on the dependent variable is statistically significant.

4. Results and discussion

4.1. Results

Table 1 showed that the Corrected item-total Correlation coefficients of the observed variables were > 0.3 , so the 19 observed variables were of good quality. On the other hand, all factors (scales) had overall Cronbach's Alpha > 0.6 , so all factors met the quality requirements for inclusion in the EFA analysis.

Table 1: Cronbach's Alpha and adjusted variable-sum correlation coefficient

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
<i>Education and training at university</i> Cronbach's Alpha = 0.938				
GD1	12.667	14.505	.674	.978

GD2	12.670	13.546	.910	.911
GD3	12.688	13.342	.914	.909
GD4	12.628	13.319	.932	.906
GD5	12.589	13.433	.906	.911
Individual experiences Cronbach's Alpha = 0.844				
TN1	7.112	3.121	.761	.733
TN2	6.958	3.308	.723	.772
TN3	7.305	3.164	.652	.843
Family and friends Cronbach's Alpha = 0.881				
GDBB1	10.291	5.179	.768	.837
GDBB2	10.277	5.215	.637	.890
GDBB3	10.309	4.911	.808	.820
GDBB4	10.491	5.152	.765	.838
Individual characteristics Cronbach's Alpha = 0.852				
TCCN1	10.747	5.316	.783	.773
TCCN2	10.909	5.421	.649	.832
TCCN3	10.821	5.295	.755	.784
TCCN4	10.533	6.130	.693	.850
The capital Cronbach's Alpha = 0.948				
NV1	6.11	2.661	.912	.907
NV2	6.21	2.646	.898	.920
NV3	6.00	3.046	.871	.942
Entrepreneurial intention of ICTU students: Cronbach's Alpha = 0.968				
KN1	5.895	3.461	.946	.943
KN2	5.951	3.124	.941	.951
KN3	5.867	3.665	.919	.964

Testing the suitability of the EFA

The results of the factor analysis of independent variables showed that KMO was $0.858 > 0.5$, the Barlett's test with Sig. = $0.000 < 0.05$, so the observed variables had a linear correlation with the observation factor and appropriate data for EFA analysis.

Table 2: KMO & Bartlett Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.858
Approx. Chi-Square		5330.839
Bartlett's Test of Sphericity	df	171
Sig.		0.000

Test the interpretation level of observed variables for independent factors

Table 3. Interpretation level of observed variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.536	39.003	39.003	6.536	39.003	39.003	5.785	34.519	34.519
2	3.163	18.872	57.875	3.163	18.872	57.875	2.324	13.866	48.385
3	1.887	11.262	69.137	1.887	11.262	69.137	2.611	15.578	63.964
4	1.293	7.713	76.851	1.293	7.713	76.851	2.160	12.887	76.851
5	.822	4.906	81.756						
6	.653	3.896	85.653						
7	.488	2.911	88.563						
8	.375	2.238	90.802						
9	.303	1.807	92.609						
10	.257	1.532	94.141						
11	.206	1.227	95.368						
12	.165	.988	96.355						
13	.141	.841	97.196						
14	.110	.656	97.852						
15	.103	.613	98.465						
16	.081	.484	98.949						
17	.078	.465	99.414						
18	.063	.374	99.788						
19	.036	.212	100.000						

Table 3 showed that in the Cumulative column, the value of the extracted variance (% cumulative variance) was 76.851. This means that 76.851% of the change in the dependent factor was explained by the independent variables. Eigenvalues of factors > 1 showed that these factors were very good summaries of the component observed variables.

Exploratory factor analysis result

Table 4: Rotated factor of independent variables

	Component				
	1	2	3	4	5
GD1	.701				
GD2	.897				
GD3	.886				
GD4	.902				
GD5	.875				
TN1		.751			
TN2		.688			
TN3		.860			
GDBB1			.693		
GDBB2			.568		
GDBB3			.706		
GDBB4			.727		
TCCN1				.558	
TCCN2				.607	
TCCN3				.589	
TCCN4				.629	
NV1					.673
NV2					.666
NV3					.731

Fromtable 4, the observed variables all hadfactor loading> 0.5, showing that the correlation coefficient between each observed variable and each of its observation variableswere relatively related. Therefore, 5 factors (which are independent variables) represented the observed variables affecting entrepreneurial intention of ICTU students.

Table 5. Rotated factors for dependent variable

Items	Factor loading
KN1	.976
KN2	.974
KN3	.964

The result of entrepreneurial intention analysis (table 5) showed that: Factor Loading > 0.5 which means the correlation coefficient between each observed variable and each of its representative factors was related. Therefore, the entrepreneurial intention factor (dependent variable) is a good representation of observed variables.

Regression

Regression with the dependent variable is "entrepreneurial intention of ICTU student" (KN); 5 independent variables including "Education and training at university" (GD); "Personal experience" (TN); "Family and friends" (GDBB); "Individual characteristics" (TCCN); and "Capital" (NV).

Table 6. Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.786	0.634	0.601	0.53204

Table 7. ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	197.54	5	33.658	83.71	0.000
Residual	86.46	279	0.276		
Total	284	284			

Table 8. Regression

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	0.002	0.055		0.002	0.000
GD	0.174	0.055	0.174	0.120	0.018
TN	0.420	0.055	0.420	0.297	0.003
GDBB	0.199	0.055	0.199	0.750	0.000

TCCN	0.559	0.055	0.559	0.025	0.000
NV	0.121	0.055	0.121	0.094	0.020

4.2. Discussion

In Table 7, $F = 83.71$, $Sig = 0.000 < 0.05$ so the regression model has statistical significance. Table 8 shows that all non-standardized regression coefficients of 5 independent variables have $Sig = 0.00 < 0.05$, implying that the 5 independent variables included in the model are statistically significant with dependent variables.

The test of multi-collinearity, autocorrelation, heteroscedasticity are satisfied with regression functions and do not violate OLS assumptions.

The unstandardized coefficients are all positive, so these independent variables are positively related to the dependent variables.

Table 6 shows that the $R^2 = 0.634$ and adjusted $R^2 = 0.601$. These mean that the model with 5 independent variables is statistically significant. "Education and training at University" (GD); "Personal experience" (TN); "Family and friends" (GDBB); "Individual characteristics" (TCCN); and "Capital" (NV) can explain 60.1% of the impact on entrepreneurial intention of ICTU students. From Table 8, using the non-standardized regression coefficients, it is:

$$KN = 0.002 + 0.174 GD + 0.422 TN + 0.199 GDBB + 0.559 TCCN + 0.121 NV$$

Besides, the values of Standardized Coefficients (Beta) show that factors affecting the entrepreneurial intention ICTU students as following (from strong to weak): individual characteristics; personal experience; family and friends; education and training at universities; capital. In particular, individual characteristics factors have the strongest impact on entrepreneurial intentions of ICTU students. This is completely easy to explain, because startup business is still very new in Vietnam in general, for students in particular. Therefore, when it comes to starting a business, people think of risky business.

Therefore, almost all students who intend to start a business are students who are passionate and willing to take risks.

For IT students who want to start a business, the capital and education factor at the University will not have a big impact. It is because students can raise capital from friends, family, credit institutions or calling for investment ... Besides, the University helps students improve their understanding of starting a business, support entrepreneurship advice when they are still in school.

5. Conclusion

To enhance the entrepreneurial intention of ICTU students, it is needed to focus on 5 following factors: Education and training at university, personal experience, family and friends, individual characteristics, and capital. The study provides some suggestions as follows:

Firstly, about education and training at ICTU: The school should supplement a study program with start-up modules for students so that it can help students improve their awareness of entrepreneurship.

Secondly, about personal experience: Students' experience must be a long process that each student accumulates from the school and society. Therefore, for students to have confidence in their own experiences, the University needs to organize more creative entrepreneurship contests in their school.

Thirdly, about family and friends: it is a factor that greatly influences the student's intention to start a business. Therefore, it is necessary to raise the awareness of entrepreneurship for the whole community so that it can help students to be confident when starting a business.

Fourthly, about individual characteristics: it is necessary to create a passion for the students while they are in the school about the desire to get rich, about the passion in business, taking risks and confidence.

Finally, about capital: Capital is essential for every startup, so, in addition to the government's policy of supporting loans for startups, the school should have their funds that are ready to support students when they have feasible projects.

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