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# Determining factors affecting innovation capacity of students at economic universities in Hanoi

**Dieu Linh Ha[1*], Thi My Linh Nguyen[2], Van Hoang Nguyen[3], Gia Huy Tran[3], Duc Kien Nguyen[3], Khanh Huyen Trinh[3]**

*[1]Trade Union University, 169 Tay Son Street, Dong Da District, Hanoi, Vietnam*
*[2]VNU University of Economics and Business, 144 Xuan Thuy Street, Cau Giay District, Hanoi, Vietnam*
*[3]National Economics University, 207 Giai Phong Street, Hai Ba Trung District, Hanoi, Vietnam*

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***Abstract:***

**This study aimed to explore the factors affecting the innovation capacity of students at the National Economics University, Vietnam. Researchers inherited and developed this work based on previous research to focus on analysing and evaluating dynamics, measuring innovation capacity, and the factors affecting innovation capacity of university students. The innovation capacity model is used based on six factors: creativity, self-confidence, personal energy, risk propensity, leadership ability, and ambiguous problem solving. The empirical analysis used data from the survey data of 250 students from the economic sector in Hanoi with reliable tools (SPSS 26.0 software). The data were analysed by frequencies, percentages, means, Pearson's linear correlation coefficient, exploratory factor analysis, and multi-linear regression model based on the survey data. The research results identified the following factors affecting the innovation capacity of university students: personal energy and leadership ability, which have the strongest impact on student innovation capacity. Self-confidence, risk propensity, and ambiguous problem solving had strong effects on student innovation capacity. Finally, creativity also affected student innovation capacity. There is also a positive relationship between all factors and student innovation capacity. Several recommendations are suggested to enhance innovation capacity for students in Vietnam.**

***Keywords:*** **economic sector, innovation, innovation capacity, university student, Vietnam.**

***Classification numbers:*** **2.1, 4.1**

## 1. Introduction

According to the 2020 Future of Jobs Report by the World Economic Forum, innovation capacity ranks first of the top 10 skills needed by 2025. In addition, Beghetto & Kaufman (2014) [1] indicated that innovation capacity is gaining attention at the university level and beyond, and is identified as an important skill in the 21st century. Therefore, interest in innovation capacity has attracted the attention of many researchers and university administrators. In addition, future challenges require changes in education [2]. We need to educate a generation of young people who are not only proficient at basic skills and specialized knowledge, but also require an open attitude and broad skills to create new solutions that meet the needs of the future in a rapidly changing world [2].

The development of innovation is inseparable from the cultivation of senior talents, and the innovation capacity of senior talents is a key feature for the effective implementation of higher education. This requires higher education to use more innovation elements with the rapid development of science and technology in the 21st century. As an important aspect, the innovation capacity of university students is also a key link to improve their comprehensive quality. As a result, during their continuous reforming, more and more universities have begun to focus on the cultivation and improvement of the innovation capacity of university students, which has gradually become a hot issue in higher education research.

An in-depth study of the factors that affect students' innovative capacity will help students determine

*Corresponding author: Email: linhhd@dhcd.edu.vn

which factors have a strong impact on innovation capacity, thereby focusing more on how to develop those factors. This will help students become more confident when entering the labour market, creating positive effects on the economy and society. This article provides an overview of innovation capacity in university students in Hanoi and the factors affecting this capacity, thereby proposing a number of options and solutions to improve innovation capacity of students in the future.

## 2. Theoretical basis and proposed model

### *2.1. Innovation capacity*

Innovation is one of the main drivers of economic development and national competitiveness improvement. Most people think that the concept of innovation only applies to laboratory technology or research and development (R&D) activities. However, "innovation" is a very broad concept from the macro level, across all fields and industries, to the micro level of organizations and businesses. Innovation capacity can be studied in many ways. J. Schumpeter (1934) [3] supposed that innovation is the intersection between invention and creation to create value for the social economy. Innovation is one of the factors affecting the economy due to technological changes as well as new combinations of existing productive forces to solve business problems. Besides, innovation is the use of new knowledge to create a new service or product that customers want. Indeed, innovation involves the process of invention and commercialization [4]. Moreover, innovation is difficult to measure and requires a tight combination of adequate technical knowledge and excellent market judgment to simultaneously satisfy economic and technological limitations as well as other types of constraints [5]. P. Fan (2010) [6] has studied innovation capacity at the macro level of China and India as these two countries are on the rise. The study showed that China and India have focused on investing resources in R&D and human resources. Since then, the two countries have obtained patents and exported high-tech services/products, demonstrating the importance of the government in enhancing the innovation capacity of businesses and individuals in a country.

In addition, topics on innovation capacity can focus on industries and fields. For example, L. Klerkx, et al. (2009) [7] studied how innovation can be made in agriculture in the Netherlands. The authors showed that brokers are necessary for agriculture to develop and that governments and sponsors need to subsidize quality brokers as well as make efforts to improve broker connections with local people and farmers.

Besides, the innovation capacity for enterprises has also been carefully studied. R. Rohrbeck, et al. (2011) [8] pointed out three tasks/roles that enterprises need to accomplish to promote innovation of enterprises: strategic participation for new business areas, increasing innovative ideas and ultimately enhancing the competition, as well as taking on the challenge of competitors to increase the quality of the project or output of the company.

### *2.2. Factors affecting innovation capacity*

Each field and aspect to be evaluated will have different factors. Thus, it will be difficult to find a universal formula for all areas that require innovation. Regarding the factors affecting the innovation capacity of technology enterprises, T. Koc (2007) [9] believed that the formation of ideas and quality human resources will positively affect the innovation capacity of technology enterprises. However, the factor of functional integration (understood here as combined departments with many specialties) will negatively affect innovation capacity. This study shows that the creation of ideas, high-quality human resources, and high specialization will help technology enterprises innovate.

In addition, external factors also affect the innovation capacity of enterprises. Specifically, research by J. Ferreira, et al. (2017) [10] showed that the geographical location of the company also affects the innovation capacity of employees. This group of authors demonstrated that the closer the company's geographical location is to large, busy urban areas, the higher its innovation capacity. This shows that the surrounding environment is also an important factor for innovation.

Besides, according to J.M. Lewis, et al. (2018) [11], leadership is also a factor affecting innovation. Research by D. Cropley, et al. (2017) [12] showed that innovation is a good thing, that is, when innovation increases, other factors also rise positively. However, innovation and women in companies are feeling a negative influence. This means that women are being held back by the working environment and

innovation does not have a positive effect on them and vice versa.

### *2.3. Factors affecting students' innovation capacity*

There are many studies showing the importance of an educational environment to students' innovation capacity. In a learning environment that supports innovation, learning objectives are clearly stated, instruction is geared towards achieving these goals at both school and classroom levels, and students perceive innovative learning as important for future personal and professional development [1]. Such an environment emphasizes the importance of making learning personally relevant to learners by combining in-school instructional activities with out-of-school experiences by engaging students on practical tasks [13].

M.M. Keinänen, et al. (2019) [14] studied whether a learning environment built according to innovative pedagogy could be associated with students' innovation capacity. The survey subjects in this study are third- and fourth-year students of the University of Applied Sciences in Finland. R. Barnett (1992) [15] defines capacity as a set of knowledge, skills, and attitudes related to practical activities, while F.E. Weiner (2001) [16] defines capacity as skills and techniques that can be used or developed during training to deal with specific situations, readiness for social dynamics, and flexible application in different situations.

According to M.M. Keinänen, et al. (2019) [14], innovative pedagogy includes active learning and teaching methods; multidisciplinary learning environment; employment-oriented and integrated research, development and innovation; flexible curriculum; entrepreneurship; and internationalization. In short, innovative pedagogy is the application of theories learned in school to real life through practical activities to help students become future experts in innovation. The research results show that the more students have experience in innovative pedagogy, the greater the innovative capacity of students.

Regarding research related to the factors affecting the innovation capacity of students, E. Chell, et al. (2009) [2] provided a tool capable of measuring the innovation capacity of young people and tested it in the UK. These factors included creativity, self-confidence, personal energy, level of risk taking, and leadership. According to E. Chell, et al. (2009) [2], the group of factors that strongly affected the innovation capacity of young people are creativity, leadership, personal energy, and self-confidence. The factor that has the least impact on young people's ability to innovate was the level of risk-taking. In particular, E. Chell, et al. (2009) [2] proposed that the risk propensity factor should be included in teaching, focusing on economic risk so that today's students understand how they can improve society through innovative efforts and further how societies and economies are shaped through appropriate and ethical risk management. Research by E. Chell, et al. (2009) [2] has built and tested a linear structural model to assess the factors affecting the innovation capacity of students in universities. The survey results of 303 students at universities in Hanoi have identified 5 influencing factors and the degree of influence of each factor on students' innovation capacity. Of these factors, skill factor management and social skills had a significant impact on students' innovation capacity.

In addition, A.R. Ovbiagbonhia, et al. (2019) [17] studied factors affecting the innovation capacity of undergraduate students at 8 Universities of Applied Sciences in the Netherlands. The authors inherited the factors from E. Chell, et al. (2009) [2] and added a new element of complex problem solving. The results were quite similar to the results of E. Chell, et al. (2009) [2] showing that factors of creativity, leadership, personal energy, and self-confidence strongly influenced the innovation capacity of students, while the factors of risk-taking and complex problem-solving had much less of an impact. In addition, according to A.R. Ovbiagbonhia, et al. (2019) [17], the learning environment does not support the improvement of students' innovative capacity, but most students are improving their innovation capacity through activities outside of school.

Research by E. Chell, et al. (2009) [2] or A.R. Ovbiagbonhia, et al. (2019) [17] has shown that creativity is one of the factors that has the strongest influence on students' innovative capacity. In addition, R.A. Beghetto, et al. (2014) [1] argue that creativity's effects on innovation capacity has become a hot topic in education. From President Barack Obama to Amazon's Jeff Bezos to "Newsweek"

magazine, business leaders, major media outlets, government officials, and education policymakers are increasingly advocating to incorporate student creativity into the curriculum.

Therefore, the hypothesis is proposed as follows (Fig. 1):

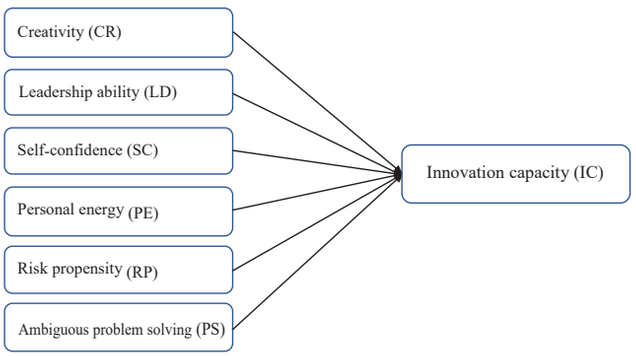


**Fig. 1. Research model.**

H1: Creativity (CR) has a positive influence on students' innovation capacity.

The concept of self-confidence is supported by P. Tierney, et al. (2002) [18] self-efficacy theory, which describes self-confidence as a belief in oneself in terms of having the necessary knowledge, skills, and abilities to perform a specific task. Therefore, confidence is the degree to which a person believes in himself and has creativity in his approach to a subject, as evidenced by action in problem solving.

Research by E. Chell, et al. (2009) [2] or A.R. Ovbiagbonhia, et al. (2019) [17] showed that confidence did not affect innovation capacity too much. In other words, this factor is only at a low level. However, some authors believe that confidence to a significant extent affects innovation capacity. According to T. Kelley, et al. (2013) [19], innovation will not be generated by reading, thinking, or discussing, but innovation will be created by taking action - step-by-step - through one-on-one experiences of a series of small successes and actions. Similarly, E. Chell, et al. (2009) [2] argue that confidence is just as important as creativity to the learning process, believing in an idea, and a desire for its implementation.

Therefore, the hypothesis is proposed as follows:

H2: Self-confidence (SC) has a positive influence on students' innovation capacity.

Personal energy is understood as motivation, enthusiasm, hard work, persistence, and commitment [2]. To fully develop an innovative idea requires a clear vision of the end goal, which in turn requires strength, cooperation, direction, and motivation [20]. Having personal energy combined with collective energy allows the project or work to go faster in terms of time as well as better in terms of quality when the whole team is working towards it [20].

Personal energy in the study of E. Chell, et al. (2009) [2] or A.R. Ovbiagbonhia, et al. (2019) [17] is in third place in terms of the degree of influence on innovation capacity, after leadership and creativity. However, personal energy is still one of the most important factors and has a significant influence on innovation capacity. In addition, having positive personal energy will contribute toward a good personal spirit, from which you can think, create breakthrough ideas, put them to the test, and execute to form innovative capacity in the long run.

According to K. Robinson (2011) [21], if there is no personal energy, the creative idea that must undergo many difficult trials and failures will make the individual tired, depressed, and not further pursue the path of turning that idea into an innovation. Similarly, Thomas Edison famously said: "Genius is 1% inspiration and 99% perspiration." In other words, an inspired thought can be fleeting, while production and exploiting it can take months or years.

Therefore, the hypothesis is proposed as follow:

H3: Personal energy (PE) has a positive influence on students' innovation capacity.

Combining risk taking and risk calculation in decision making as well as risk assessment among options [2], previous studies have suggested that the more people are inclined to take risks, the higher the level of innovation [22].

Risk propensity is a factor that has a low effect on innovation capacity [2]. The reason given is that the University has not focused on guiding and teaching students about risk assessment as well as providing steps to analyse risks and draw appropriate conclusions [17].

According to E. Chell, et al. (2009) [2], the innovation process has uncertain outcomes and, in this sense, innovation leaders are said to have the capacity to accept a high degree of risk. On the other hand, when taking risks or blindly taking risks, an

individual can sometimes get lucky when the risk pays off - but this only happens occasionally.

In contrast, the risk actuary takes steps to manage the risks involved, identify them, and consider ways to reduce them. Taking such calculated risks reduces the risk of failure and promotes the likelihood of achieving the desired goal. Therefore, risk propensity (calculated) is determined to affect innovation capacity.

Therefore, the hypothesis is proposed as follows:

H4: Risk propensity (RP) has a positive influence on students' innovation capacity.

Leadership ability shows vision and ability to mobilize commitment [2]. Similarly, J.H. Dyer, et al. (2009) [23] states that leadership involves having a clear vision of the end goal, networking, cooperation, mobilizing, organizing, and persuading other professionals to goal realization.

Leadership in previous studies is the strongest influence on innovation capacity [2]. According to J.M. Burn (1996) [24], E. Chell (2001) [25] argues that in the context of an innovation process, a leader can effectively communicate their vision to others, persuade others about its quality and potential, gather logical arguments to gain support, and eliminate opponents. One such skill is arguably crucial throughout the innovation process. The person in charge of innovation also requires support and assistance from others, and to gain that support, leadership skills need to be prominent and demonstrated [26].

Therefore, the hypothesis is proposed as follow:

H5: Leadership (LD) ability has a positive influence on students' innovation capacity.

Ambiguous problem solving is a factor representing a person who is willing to change his/her point of view if the current view is no longer relevant. In addition, they think broadly to solve problems well, are willing to solve unprecedented problems, and are not afraid of innovative thinking [27].

Currently, this factor has only been added to the study of A.R. Ovbiagbonhia, et al. (2019) [17]. This study shows that the ability to solve complex problems accounts for low scores when affecting students' innovation capacity, similar to the risk-taking factor. In addition, the authors found that with the current level of development, problems gradually become more complex, and there are many aspects that need to be solved. Improving the ability to solve complex problems will help students acquire solid skills and solve problems quickly in the stage of realizing innovation.

Therefore, the hypothesis is proposed as follows:

H6: Ambiguous problem solving (PS) has a positive influence on students' innovation capacity.

## 3. Results and discussion

### *3.1. Testing the reliability of scales*

#### *3.1.1. Statistics of the demographic characteristics:*

The completed questionnaire was sent to students at universities of economics in Hanoi. There were 250 valid questionnaires received. In order to perform exploratory factor analysis (EFA), the sample size must be at least 5 times the total number of observed variables [28]. Respondent information is presented in Table 1.

**Table 1. Respondent information.**

| Information | | Percentage (%) |
|---|---|---|
| Age | Freshman student | 29% |
| | Sophomore student | 13% |
| | Junior student | 20% |
| | Senior student | 38% |
| University | Banking Academy | 4% |
| | Finance Academy | 4.4% |
| | Foreign Trade University | 26.4% |
| | National Economics University | 32.8% |
| | Other Universities | 32.4% |
| Gender | Male | 20% |
| | Female | 80% |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

#### *3.1.2. Testing the reliability of scales*

This study uses the Cronbach alpha (CA) analysis to determine the reliability of the valid variables for the scales (including creativity, self-confidence, personal energy, risk propensity, leadership ability, and ambiguous problem solving) as well as innovation capacity. The results are in Table 2. Because all coefficients of CA are higher than 0.7 and the values of corrected item-total correlation are higher than 0.4, the reliability test stand was reached [29].

**Table 2. Reliability of the survey scale.**

| Factor | Cronbach's alpha | Variables | Corrected item- Total correlation |
|---|---|---|---|
| IC | 0.724 | IC1 | 0.540 |
| | | IC2 | 0.558 |
| | | IC3 | 0.439 |
| | | IC4 | 0.524 |
| CR | 0.782 | CR1 | 0.374 |
| | | CR2 | 0.646 |
| | | CR3 | 0.660 |
| | | CR4 | 0.601 |
| | | CR5 | 0.517 |
| SC | 0.799 | SC1 | 0.642 |
| | | SC2 | 0.576 |
| | | SC3 | 0.595 |
| | | SC4 | 0.631 |
| PE | 0.850 | PE1 | 0.664 |
| | | PE2 | 0.661 |
| | | PE3 | 0.630 |
| | | PE4 | 0.707 |
| | | PE5 | 0.636 |
| RP | 0.861 | RP1 | 0.632 |
| | | RP2 | 0.732 |
| | | RP3 | 0.750 |
| | | RP4 | 0.719 |
| LD | 0.901 | LD1 | 0.719 |
| | | LD2 | 0.765 |
| | | LD3 | 0.763 |
| | | LD4 | 0.737 |
| | | LD5 | 0.740 |
| | | LD6 | 0.655 |
| PS | 0.724 | PS1 | 0.540 |
| | | PS2 | 0.558 |
| | | PS3 | 0.439 |
| | | PS4 | 0.524 |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

### *3.1.3. Exploratory factor analysis*

After analysing Cronbach's alpha, six factors (independent variables) with 32 observed variables, were included for exploratory factor analysis (EFA). From Table 3, the KMO test coefficient calculated from the sample was 0.893<1.0. Thus, the sample size of the survey was eligible to conduct EFA. Bartlett's Test of Sphericity was significant with P-value = 0.00. This value indicates that the observed variables are correlated concerning the total number of observations.

Table 4 shows that 6 factors explain 65.903% (>50%) of the variation of the data set. All observed variables in the table have a factor loading of 0.5. Therefore, the independent variables in the research model have convergent and discriminant values.

**Table 3. KMO and Bartlett's test.**

| **Kaiser-Meyer-Olkin measure of sampling adequacy** | | **0.893** |
|---|---|---|
| Bartlett's test of sphericity | Approx. Chi-square | 3276.778 |
| | Df | 351 |
| | Sig. | 0.000 |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

**Table 4. Total variance explained.**

| Component | Initial eigenvalues | | | Extraction sums of squared loadings | | |
|---|---|---|---|---|---|---|
| | *Total* | *% of variance* | *Cumulative %* | *Total* | *% of variance* | *Cumulative %* |
| 1 | 8.387 | 31.063 | 31.063 | 8.387 | 31.063 | 31.063 |
| 2 | 2.647 | 9.802 | 40.865 | 2.647 | 9.802 | 40.865 |
| 3 | 2.192 | 8.117 | 48.982 | 2.192 | 8.117 | 48.982 |
| 4 | 1.826 | 6.762 | 55.744 | 1.826 | 6.762 | 55.744 |
| 5 | 1.544 | 5.717 | 61.461 | 1.544 | 5.717 | 61.461 |
| 6 | 1.199 | 4.442 | 65.903 | 1.199 | 4.442 | 65.903 |
| 7 | 0.848 | 3.141 | 69.044 | | | |
| 8 | 0.683 | 2.529 | 71.573 | | | |
| 9 | 0.661 | 2.447 | 74.020 | | | |
| 10 | 0.611 | 2.263 | 76.283 | | | |
| 11 | 0.588 | 2.177 | 78.459 | | | |
| 12 | 0.543 | 2.009 | 80.469 | | | |
| 13 | 0.538 | 1.994 | 82.462 | | | |
| 14 | 0.485 | 1.796 | 84.259 | | | |
| 15 | 0.458 | 1.695 | 85.954 | | | |
| 16 | 0.413 | 1.529 | 87.483 | | | |
| 17 | 0.391 | 1.450 | 88.933 | | | |
| 18 | 0.374 | 1.387 | 90.320 | | | |
| 19 | 0.365 | 1.353 | 91.673 | | | |
| 20 | 0.337 | 1.250 | 92.923 | | | |
| 21 | 0.331 | 1.224 | 94.147 | | | |
| 22 | 0.315 | 1.167 | 95.314 | | | |
| 23 | 0.293 | 1.084 | 96.398 | | | |
| 24 | 0.280 | 1.036 | 97.434 | | | |
| 25 | 0.266 | 0.985 | 98.419 | | | |
| 26 | 0.230 | 0.852 | 99.271 | | | |
| 27 | 0.197 | 0.729 | 100.000 | | | |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

### 3.1.4. Correlation analysis

Table 5 shows a linear correlation between the independent and dependent variables because the value of the P-value is less than 5%. In addition, the Pearson coefficient between these variables is positive, indicating a positive relationship. This means that the increase in the value of the independent variable increases the value of the dependent variables.

**Table 5. Rotation component matrix-measuring scales of factors.**

| Variables | Component | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| CR2 | 0.821 | | | | | |
| CR3 | 0.830 | | | | | |
| CR4 | 0.773 | | | | | |
| CR5 | 0.718 | | | | | |
| LD1 | | 0.747 | | | | |
| LD2 | | 0.818 | | | | |
| LD3 | | 0.796 | | | | |
| LD4 | | 0.794 | | | | |
| LD5 | | 0.775 | | | | |
| LD6 | | 0.667 | | | | |
| SC1 | | | 0.665 | | | |
| SC2 | | | 0.789 | | | |
| SC3 | | | 0.641 | | | |
| SC4 | | | 0.714 | | | |
| PE1 | | | | 0.698 | | |
| PE2 | | | | 0.695 | | |
| PE3 | | | | 0.670 | | |
| PE4 | | | | 0.700 | | |
| PE5 | | | | 0.769 | | |
| RP1 | | | | | 0.713 | |
| RP2 | | | | | 0.812 | |
| RP3 | | | | | 0.843 | |
| RP4 | | | | | 0.834 | |
| PS1 | | | | | | 0.698 |
| PS2 | | | | | | 0.734 |
| PS3 | | | | | | 0.659 |
| PS4 | | | | | | 0.792 |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

### 3.1.5. Regression analysis

Sig parameter (2-tailed) of the independent variables compared with the dependent variable are all less than 0.05, so the independent variables are all correlated with the dependent variable. Regarding the Pearson correlation, the higher the parameter, the higher the correlation. Therefore, the variable personal energy has the strongest correlation with the variable innovation capacity of students (0.701). Ranked second is the leadership ability variable with a parameter of 0.696. Ranked third is self-confidence with a parameter of 0.615. Ranked fourth is ambiguous problem solving with a parameter of 0.582. Fifth place is risk propensity with 0.561 and finally creativity with 0.155. The results are presented in Table 6.

**Table 6. Correlations between the independent variable and dependent variables.**

| | | CR | LD | SC | PE | RP | PS | IC |
|---|---|---|---|---|---|---|---|---|
| CR | Pearson correlation | 1 | -0.019 | 0.044 | 0.068 | -0.051 | 0.005 | 0.155* |
| | Sig. (2-tailed) | | 0.763 | 0.491 | 0.286 | 0.423 | 0.937 | 0.014 |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| LD | Pearson correlation | -0.019 | 1 | 0.450** | 0.512** | 0.357** | 0.452** | 0.696** |
| | Sig. (2-tailed) | 0.763 | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| SC | Pearson correlation | 0.044 | 0.450** | 1 | 0.577** | 0.355** | 0.379** | 0.615** |
| | Sig. (2-tailed) | 0.491 | 0.000 | | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PE | Pearson correlation | 0.068 | 0.512** | 0.577** | 1 | 0.370** | 0.494** | 0.701** |
| | Sig. (2-tailed) | 0.286 | 0.000 | 0.000 | | 0.000 | 0.000 | 0.000 |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| RP | Pearson correlation | -0.051 | 0.357** | 0.355** | 0.370** | 1 | 0.375** | 0.561** |
| | Sig. (2-tailed) | 0.423 | 0.000 | 0.000 | 0.000 | | 0.000 | 0.000 |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PS | Pearson correlation | 0.005 | 0.452** | 0.379** | 0.494** | 0.375** | 1 | 0.582** |
| | Sig. (2-tailed) | 0.937 | 0.000 | 0.000 | 0.000 | 0.000 | | 0.000 |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| IC | Pearson correlation | 0.155* | 0.696** | 0.615** | 0.701** | 0.561** | 0.582** | 1 |
| | Sig. (2-tailed) | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 250 | 250 | 250 | 250 | 250 | 250 | 250 |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

**Table 7. Model summary.**

| Model | R | R square | Adjusted R square | Std. Error of the estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | 0.873[a] | 0.762 | 0.757 | 0.25452 | 1.976 |

[a]: Independent variable: (Constant) CR, SC, LD, PE, RP, PS

Table 7 shows the level of explanation of the model, it can be seen that the adjusted R2 index is 0.757, which means that 75.7% of the change in capacity is explained by the impact of 6 independent variables (CR, SC, LD, PE, RP, PS).

**Table 8. Coefficients.**

| Model | Unstandardised coefficients | | Standardised coefficients | t | Sig. |
|---|---|---|---|---|---|
| | *B* | *Std. Error* | *Beta* | | |
| (Constant) | 0.010 | 0.164 | | 0.058 | 0.954 |
| CR | 0.109 | 0.023 | 0.148 | 4.695 | 0.000 |
| LD | 0.244 | 0.028 | 0.339 | 8.726 | 0.000 |
| SC | 0.156 | 0.038 | 0.165 | 4.147 | 0.000 |
| PE | 0.208 | 0.034 | 0.262 | 6.114 | 0.000 |
| RP | 0.168 | 0.025 | 0.236 | 6.652 | 0.000 |
| PS | 0.128 | 0.033 | 0.148 | 3.892 | 0.000 |

Source: Authors' calculation from the survey results "Determining factors affecting innovation capacity of students at economic universities in Hanoi" with sample size of 250.

It can be seen in Table 8 that personal energy is considered to be the strongest influence on students' innovation capacity. This shows that students in the economic sector in Hanoi have positive and abundant resources. This can provide a few hypotheses such as a favourable learning environment, teachers creating favourable conditions for students to develop, and neither forcing nor creating stereotypes. Not only that, but the family environment can also create conditions for children to develop, freely choose according to the framework, and create other environments such as clubs and jobs to help students develop and have the ability to self-motivation to overcome difficulties.

Next, the leadership ability of students also has a strong influence on innovation capacity. The university environment of economics students in Hanoi with group exercises, class, or club activities encourages students to engage and choose leadership positions. In a leadership position, the responsibility will certainly be higher regarding having to think about and make innovative decisions to lead the development team. In addition, with the dynamism of economics students in Hanoi, they will tend to want to lead others so that they can experience a great development from which their ability to innovate will develop accordingly.

Self-confidence, ambiguous problem solving, or risk propensity is only in the latter group, affecting students' innovation ability because confidence can be caused by a low level of confidence. Therefore, it has not had a strong impact on the innovation capacity of students. As for the students' ability to solve complex problems, the skill is still low because the level of practice is not high, mainly because the learning environment stops at theory. Regarding the level of risk propensity, it is because economics students in particular and Vietnamese people in general have a low level of risk propensity that the results are different from Western countries because the certainty in thinking from the past also affects today.

Finally, the creative variable has the lowest influence on students' innovation capacity because students are still studying in theory and have less opportunities to improve their creativity. There are few challenges for students to change and be creative. Therefore, with so much academic scholarship, it is understandable that creativity has the least influence on the innovation capacity of economics students in Hanoi.

## 4. Conclusions

As the country's digital transformation has changed the way we live and work, businesses need to strengthen their innovation capabilities. Innovation is a must for today's business to remain competitive. In addition, innovation is also considered the "key"

to recovering the post-COVID-19 economy. It can be said that it has become an objective factor, a basis, a driving force, and a way for businesses to survive and develop in the context of economic integration and increasingly fierce competition. Therefore, students who are the future high-quality workforce of businesses and organizations also need to equip and train themselves with a very good creative and innovative capacity.

The objective of this study is to provide an overview of student innovation and the factors influencing this capacity. The study successfully clarified and systematized the theory of innovation in general and innovation capacity of students in particular as well as established equations and built correlation models of the influence of 6 factors on students' innovation capacity. At the same time, this study analysed the 6-factor model to clarify and evaluate the influence of 6 factors: personal energy, risk propensity, leadership ability, ambiguous problem solving, self-confidence and creativity to the innovative capacity of students.

Based on the research results, the authors have proposed a number of solutions to improve students' innovation capacity such as: increasing extracurricular activities outside the classroom (volunteer programs, groups, quizzes, academic, talented, etc.); implement new teaching methods that encourage students to voice their opinions and personal thoughts on the topic of the lesson; organize many creative contests, and create a healthy playground for students to practice and express their personal creativity.

## CRediT author statement

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## COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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