

UNDERGRADUATE STUDENT PERFORMANCE

The Doan Truong and Xiem Thuy Cao

National Economics University Hanoi Vietnam

DOI: 10.46609/IJSSER.2023.v08i09.006 URL: <https://doi.org/10.46609/IJSSER.2023.v08i09.006>

Received: 2 September 2023 / Accepted: 18 September 2023 / Published: 20 September 2023

ABSTRACT

The purpose of this research is to examine factors influencing undergraduate student performance. Two research questions are what student performance is, and what factors influence student performance in public universities in Hanoi. The research model was tested on survey data using Smart PLS software version 4.0.8.9. Five verified factors influencing student performance include student self-motivation, student self-efficacy, engagement in a university environment, student satisfaction with the university, and luck. In addition, one controlled variable that negatively affects student performance is club membership. Based on the findings several managerial implications were proposed. This research contributes information on student performance to the literature.

Keywords: Student performance, engagement in university life, student self-efficacy

1. Introduction

Human resource quality is one of the most important factors determining the prosperity of a nation. The development of high-quality human resources is impossible without education. In recent years, the perspective of education systems has changed from “How should we teach students” to “How should we help students learn”, the purpose of this article is to answer two questions, what is undergraduate student achievement or performance, and what factors affect undergraduate student performance. The article's main parts are a literature review, an empirical analysis of factors influencing undergraduate student performance in public universities in Hanoi, and management implications.

2. Literature review and the research model

2.1. Literature review

Student performance is a complex concept that is hard to find a uniform definition (Mills et al., 2009; Toutkoushian et al., 2001). There are various definitions of undergraduate student performance in literature. Kim et al. (2010) define college success as “acceptable grade averages, retention toward a degree and attainment of productive life skills” (p. 112). Hunter (2006) considers college success as the whole student development and having many dimensions beyond cognitive and academic factors. Finn and Rock (1997) argue that the academic achievement of students is to graduate on time with good grades. The definitions mentioned above refer to college student success as not grades, but emotional, social, cognitive, and academic development. The factors influencing student success have been interpreted by various theories or models. The *expectancy-value theory* holds that motivation is an important factor for student success. Motivation is the direct source of expectations for success (Wigfield, 1994). According to Tinto's model of academic and social integration, engaging in a new environment, the university environment affects student success. The more engaged students are in university, the higher their achievement is (Tinto & Pusser, 2006). Another theory of student success is the achievement goal theory, which emphasizes setting goals, a high goal set leads to high achievement (Canfield & Zastavker, 2010).

According to Aydin (2017), personal factors affecting student success include own self-efficacy, learning organization and learning attention, time use, communication in the classroom, and engagement in college life. Pritchard and Wilson (2003) argue that due to the fact that students have to adjust to the university environment, emotional and social factors are crucial to student success, and so do psychological factors. According to Kuh et al. (2005), factors affecting student success are student behavior, attitudes, expectations, and engagement in university life. Saud (2021) found that student achievement is mainly influenced by external support from family, friends, and society, followed by decision-making and determination, ambition, hard work, and perseverance. The main factors hindering student success are discouragement followed by irresponsibility, sloppiness, laziness, poor time management, failure, and frustration.

Changing the perspective of education systems from “How should we teach students” to “How should we help students learn” so that they develop and maintain their achievements shows that student achievement is relevant to the responsibility of the faculty and the school as a whole (Hunter, 2006). Direct interaction between faculty and students results in an increase in student achievements (Crisp et al., 2017).

According to Kuh (2001), student success is created by pre-university experience (background and college readiness); student engagement (learning skills, engagement in social life and the university environment); and graduate outcomes (grades and work-related issues). Kim et al. (2010) clarify factors affecting the success of students into three groups, the first group of variables is the learning outcome at high school, the second group of variables is demographical,

the third group of variables is student individual characteristics or “psychosocial factors”. According to Newton et al. (2008), psychological factors are attitudes, motivations, use of campus resources, learning methods, etc. In addition, student learning outcomes also depend on the level of student satisfaction with the university - satisfaction with faculty, quality of programs, activities, and university environment, and overall satisfaction with life (Kuh et al., 2005; Pascarella & Terenzini, 2005). Cao and Truong (2022), confirm four factors affecting the student's perceived learning outcomes, which are assessment of learning outcomes, facilities, student interactions in the classroom, and student self-motivation. Nguyễn et al. (2017), found that the level of study (what year student), gender, study time, grades, library, and internet use for learning were factors affecting student success. Đặng (2017) pointed out that student self-efficacy has a direct and positive influence on learning outcomes, class participation, and interaction with lecturers on the subjects, and problems outside the subject (career, job...) do not directly affect student achievement, however, has an indirect impact through the student self-efficacy; The interaction with lecturers on subject-related issues (subject contents, assignments, grades, tests...) has an insignificant effect on student learning outcomes and student self-efficacy. Lê (2016), confirmed that factors affecting student learning outcomes were learning methods, learning persistence, competition in learning, school impressions, school resources, and learning motivation. A recent study by García y García (2021), of attribution, found that college students attribute intelligence as the most important factor influencing their success. Gender differences, through two expressions, calmness, and effort, also have an impact on student achievement. The student success of male students is also influenced by efforts and good teachers, while female students are also affected by liking the teacher, luck, and attention.

The *attribution theory* was developed by Heider (Heider, 1944; 1982). The essential of this theory is that people tend to find causality to explain their own behavior, that of others, and surrounding events. According to Kelley (1967), in order to interpret surrounding events and make inferences, people create causal schemes taking into account three conditions, the individual himself (internal attributes), influences (external attributes), and surrounding circumstances.

The attribution theory does not necessarily find the actual cause of events but rather a subjective causality. Attribution is a hedonic process, it depends on gender, age, and culture, and depends on whether the attribution is made for one's own behavior or that of others (Đigić & Zdravković, 2019; Weiner, 2010b). In education, on both sides student or teacher, the reasons for student success or failure are student self-efficacy, skills, intelligence, the difficulty of homework, and characteristics of teachers and luck (Weiner, 1972). The attribution is conscious or unconscious, it affects student achievement and therefore their motivation, feelings, behavior, and school decisions. To understand the attribution made by students it is necessary to consider at least three

variables involved in the causality scheming process. The first variable is the recognition that attribution is subjective, showing bias, and according to(Weiner, 2010a), it is a hedonic process that tends to find internal factors for the behavior of others and external factors for one's own behavior. Regularly, success is said to be the result of efforts, and internal causes, while failure is attributed to external causes such as luck. The second variable is relevant to students using communications received from teachers to make comments and use them to explain their success (Matteucci & Gosling, 2004) . The third variable is the management of impressions that students make to influence others' beliefs about the cause and to seek justification, especially if academic goals are not achieved. According to Weiner (2010a), attribution has at least four characteristics: locus or location, controllability, stability, and globality. *Locus or location* is a fact that can be attributed to internal or external factors. People who depend on the environment and others make external attributions to things that happened to them. In contrast, those who trust their own resources and can transform their environments consider what happens to them as a result of their own actions. *Controllability*, there are causes that the actors can manage at will, while others are beyond their control. If school failure is attributed to a lack of effort, students will control their academic success, whereas if it is attributed to the teacher's characteristics, students will hardly control their success or failure. *Stability*, the cause may be stable or unstable over time. Things that are stable over time we can't change, that is, we can't change the cause to change the result. *Globality*, causes can be generalized to situations. If students use luck to blame their failures in school, they may use it to explain their failures in other circumstances.

2.2 Research model

Inherited previous studies, we propose the research model, as shown in Figure 1.

Student self-motivation

Motivation is the direct source of expectations. Students who have high expectations will aim to achieve scholarships, satisfy their parents' expectations, improve themselves, have good jobs in the future, and be able to achieve high academic results. Therefore, the hypothesis is:

H1: Student self-motivation is positively related to student performance.

Student self-efficacy

Self-efficacy is considered an internal factor, that means students can control on their own at will, affecting their success. Students who have good intelligence and learning methods, attention, can manage their time and actively exploit campus resources such as libraries and Wi-Fi to connect to the internet for learning, do not have cheating intentions on exams, learn hard, stay calm on tests and exams over the course will have good success. However, it should be

noted that there are components of learning ability that can be changed, such as effort, proactive behavior, and self-discipline, and things that are hard to change, such as intelligence. Good self-efficacy will lead to good achievement. The hypothesis is

H2: Student self-efficacy is positively related to student performance.

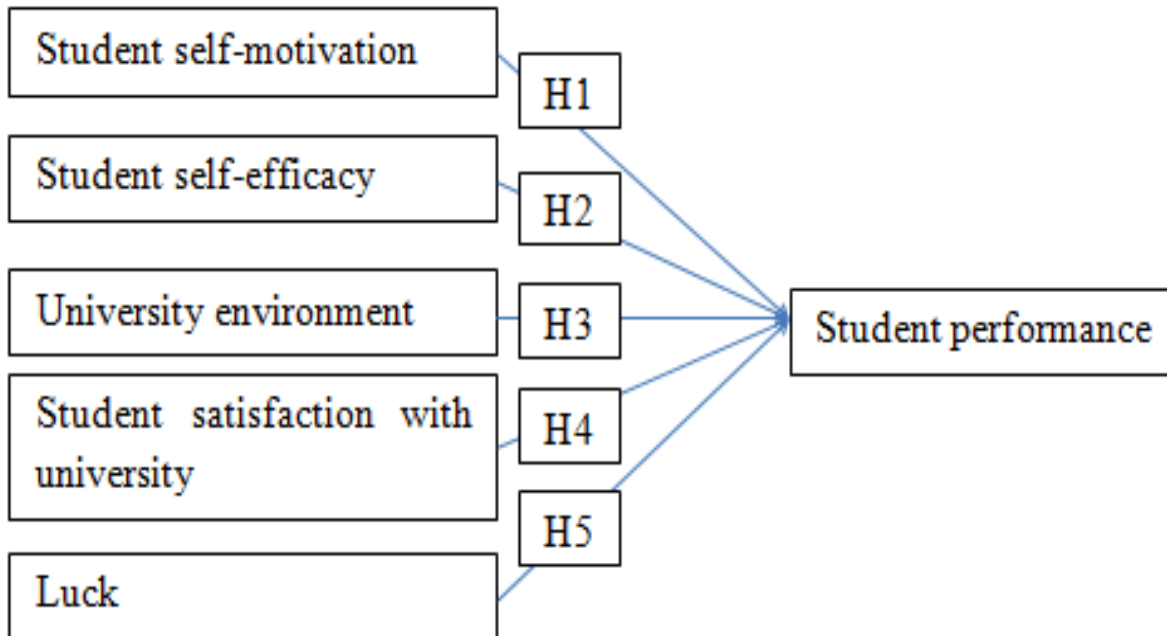


Figure 1. Research model

University environment

The university environment is an external factor, beyond the control of students. The environment can have a positive or negative impact on a student performance depending on the specific circumstances. The university environment has an impact on student learning attention, the implementation of time plans for learning and other activities may be hindered, peer pressure on learning or trends in student life also affect student success, participating in clubs can take time away from learning, while it has a positive impact on engaging into social life, tough family situations that force students to take part-time jobs also affect student’s grades. It is hypothesized

H3: The university environment is positively or negatively related to student performance.

Student satisfaction with university

The level of student satisfaction with the university is an external factor affecting student achievement, beyond the control of students. With good teachers, good programs, good activities

for students and a good university environment, and a good life in general, student's success will likely be high. Therefore, we hypothesize

H4: The student satisfaction with university is positively related to student performance.

Luck

Luck is one of the factors influencing student success. In terms of scores, for students who are fortunate to learn with good teachers, their exam questions often fall into sections they thoroughly learned, have few health problems, and those related to personal feelings during exam time will get high grades. Therefore, the hypothesis is

H5: The Luck is positively related to student performance.

3. Methodology

Five hypotheses were tested by a quantitative survey on the factors influencing student performance, employing structural equation modeling. The research design is provided in the following sections. First, the description of the development of the survey instrument is reported. Second, the test of the measurement model is represented, which includes an estimation of internal consistency and the convergent and discriminant validity of the instrument items, and the report of scale reliability and validity data. This is followed by the structural modeling results.

Survey instrument

Based on the extensive literature review, we conducted the preliminary survey with which students were asked to write down attributions to their achievements. 38 responses received are useful references for designing a questionnaire. The first part of the questionnaire includes questions about a participant's information and the second consists of five multivariate/item scales measuring factors that affect student success, using a 5-point Likert scale with increasing agreement from "Not agree at all" to "Completely agree".

The main survey was conducted virtually using the Google Form application. The online address (URL) of the survey is sent to the participants (students who studying in public universities in Hanoi) via student email and uploaded to groups on social networks (Facebook, Zalo, MS Teams, LMS...). Participants are informed that this survey is anonymous and information they provide will always remain anonymous. Data for this research are collected from a non-probability convenience sample. The survey was carried out from January to March 2023. 480 valid responses have been collected, fulfilling the conditions of sample size(Hair, 2014). The sample's characteristics are provided in Table 1.

Table 1. Characteristics of the sample

| | | Respondents | Percentage |
|--------------------------------|-------------------------|--------------------|-------------------|
| Sex | Male | 336 | 70% |
| | Female | 144 | 30% |
| Study level | First-year students | 271 | 56% |
| | Sophomores, | 189 | 39.4% |
| | Third year | 17 | 3.5% |
| | Fourth-year students | 3 | 0.6% |
| Education program | Traditional | 331 | 69% |
| | Advanced and oriented | 145 | 30,2% |
| | Other | 3 | 0,6% |
| Student residence | Campus | 427 | 89% |
| | Non-campus | 53 | 11% |
| Part-time job | Yes | 257 | 53,5% |
| | No | 223 | 46,5% |
| Club membership | Yes | 285 | 59,4% |
| | No | 195 | 40,6% |
| Student's family residence | Urban | 220 | 45,8% |
| | Rural | 260 | 54,2% |
| Who finance student's studying | Parents | 344 | 71,7% |
| | Student him/herself | 8 | 1,7% |
| | Parents and the student | 122 | 25,4% |

| | | | |
|--|-------|---|------|
| | Other | 6 | 1,2% |
|--|-------|---|------|

Source: authors

Research methods

Structural equation model-based PLS methodology was applied to test the research model represented in Figure 1, using SmartPLS software version 4.0.8.9.

Measurement model estimation

The data analysis started with model estimation. The measurement model was tested by estimating the internal consistency and the convergent and discriminant validity of the instrument items. If reliability measures were above the level recommended of .70 internal consistency is verified(Fornell & Larcker, 1981; Nunnally & Bernstein, 1994). If individual reflective measures correlate more than .70 with the construct they intend to measure then they are considered to be reliable. Table 2 represents reliability measures above .70, ensuring adequate internal consistency, and reliable individual reflective measures.

If the item loads highly (loading is greater than .50) on their associated factors, convergent validity is demonstrated. The AVE ranging from 0.562 to 0.92 (Table 2) were above the threshold of .05(Chin, 1998; Fornell & Larcker, 1981).

Table 2. Convergent and discriminant validity of the model constructs

| Variable | Outer loading |
|---------------|---------------|
| Motivation | |
| IC = 0.866 | |
| AVE = 0.686 | |
| Mot1 | 0.669 |
| Mot3 | 0.906 |
| Mot4 | 0.890 |
| Self-efficacy | |
| IC = 0.876 | |

AVE = 0.703

Effi2 0.868

Effi3 0.845

Effi5 0.801

University environment

IC = 0.875

AVE = 0.778

Evi1 0.866

Evi2 0.898

Student satisfaction with the university

IC = 0.92

AVE = 0.741

Sat1 0.873

Sat2 0.904

Sat3 0.849

Sat4 0.815

Luck

IC = 0.793

AVE = 0.562

Luc1 0.71

Luc2 0.774

Luc3 0.762

Student success

IC = 0.884

AVE = 0.656

| | |
|------|-------|
| Suc2 | 0.757 |
| Suc3 | 0.822 |
| Suc4 | 0.854 |
| Suc5 | 0.803 |

IC = internal consistency (Composite reliability (rho_a); AVE = average variance extracted

Source: authors extracted from the processed data

Discriminant validity assessment was conducted by comparing the square root of the AVE for each construct with the correlation between the construct with other constructs in the model (Chin, 1998; Fornell & Larcker, 1981). Constructs in the estimated model that satisfied the condition of discriminant validity were represented in Table 3.

Table 3. Correlation among construct scores (Discriminant validity - Fornell-Larcker criterion)

| | Self- efficacy | University environment | Student motivation | Luck | Student satisfaction | Student success |
|------------------------|-------------------|---------------------------|-----------------------|--------------|-------------------------|--------------------|
| Self-efficacy | 0.838 | | | | | |
| University environment | 0.388 | 0.882 | | | | |
| Student motivation | 0.331 | 0.41 | 0.829 | | | |
| Luck | 0.346 | 0.34 | 0.26 | 0.749 | | |
| Student satisfaction | 0.274 | 0.487 | 0.486 | 0.378 | 0.861 | |

| | | | | | | |
|-----------------|-------|-------|-------|-------|-------|-------------|
| Student success | 0.459 | 0.507 | 0.546 | 0.405 | 0.531 | 0.81 |
|-----------------|-------|-------|-------|-------|-------|-------------|

Note: The boldface figures in the diagonal represent the square root of the AVE figures. They should be higher than the correlation figures.

Source: authors extracted from the processed data

Table 4. Collinearity statistics - VIF - inner model

| | Student success |
|------------------------|-----------------|
| Self-efficacy | 1.295 |
| University environment | 1.507 |
| Student motivation | 1.426 |
| Luck | 1.279 |
| Student satisfaction | 1.587 |

Source: authors extracted from the processed data

4. Structural model results

R² for dependent construct

The estimated structural model $R^2 = 0.492$ (Figure 2) indicates that 49.2% of the variance in student success is explained by independent variables. According to Falk and Miller (1992), the percentage of variance explained for the dependent variable was greater than 10 percent, indicating the satisfactory value of the PLS model.

Structural coefficients

The results of the estimated model indicated that five constructs hypothesized to affect student success were significant (Table 5).

Table 5. Structure (inner) model results

| | Path coefficients | T statistics (O/STDEV) | Sig. level |
|--|-------------------|--------------------------|------------|
| Effects on the student success (adjusted $R^2 = 0.487$) | | | |
| Self-efficacy | 0.2 | 4.571 | **** |
| University environment | 0.171 | 3.158 | *** |
| Student motivation | 0.274 | 5.788 | **** |
| Luck | 0.126 | 2.967 | *** |

| | | | |
|----------------------|-------|-------|------|
| Student satisfaction | 0.213 | 3.992 | **** |
|----------------------|-------|-------|------|

**** $p < .001$, *** $p < .010$,

Source: authors extracted from the processed data

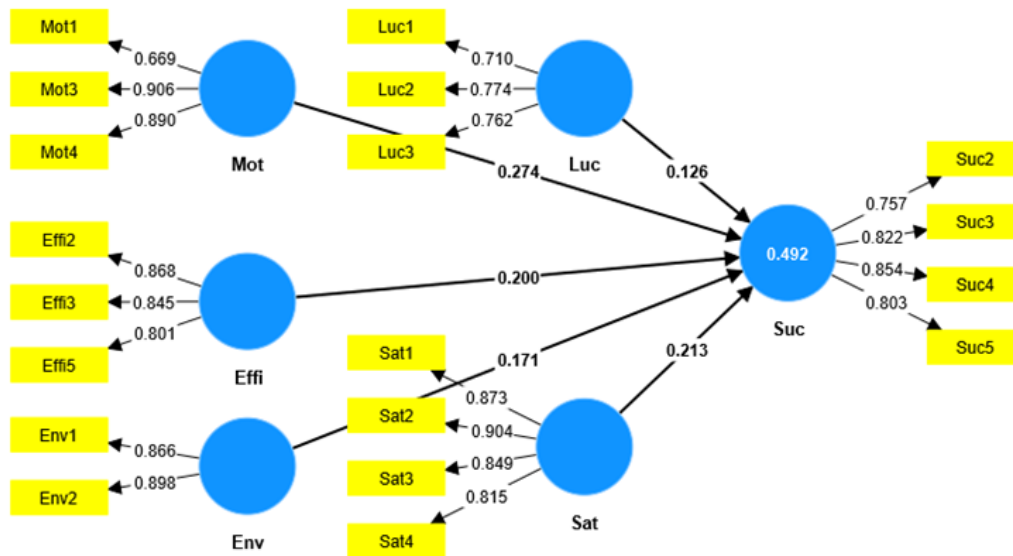


Figure 2. Estimated model

To test whether student sex, level of study, education program, campus residence, club membership, part-time job, student's family residence, and who finances student studying influence student performance or not, these factors were included in the model. The results indicate that only club membership has a significant negative relationship with student performance (Table 6).

Table 6. Structure (inner) model results

| | Path coefficients | T statistics (O/STDEV) | Sig. level |
|-------------|-------------------|--------------------------|------------|
| Effi -> Suc | 0.19 | 4.37 | **** |
| Env -> Suc | 0.18 | 3.315 | *** |
| Mot -> Suc | 0.279 | 5.809 | **** |
| Luc -> Suc | 0.122 | 2.862 | *** |
| Sex -> Suc | -0.086 | 1.071 | ns |
| Lev -> Suc | 0.012 | 0.372 | ns |
| Pro -> Suc | -0.025 | 0.653 | ns |
| Cam -> Suc | 0.1 | 0.931 | ns |
| Job -> Suc | -0.049 | 0.708 | ns |
| Clu -> Suc | -0.175 | 2.732 | *** |
| Fam -> Suc | -0.089 | 1.223 | ns |

| | | | |
|------------|--------|-------|----|
| Fin -> Suc | -0.003 | 0.083 | ns |
|------------|--------|-------|----|

*** $p < .001$, ** $p < .010$, ns = not significant

Source: authors extracted from the processed data

Effect size (*f square*)

f square represents the effect size of independent variables on dependent variables. According to Cohen (2013), *f square* < 0.02 indicates an extremely small effect, $0.02 \leq f \text{ square} < 0.15$: shows a small effect; $0.15 \leq f \text{ square} < 0.35$ implies a medium effect and *f square* ≥ 0.35 : represents a large effect. $0.15 \leq$ all path coefficients < 0.35 (Table 5) demonstrate that *student self-motivation*, *self-efficacy*, *university environment*, *student satisfaction*, and *luck* have a medium effect on student success.

Discussion

This research explored factors influencing student performance. The model was tested on survey data by applying SmartPLS technology. All five hypotheses were supported by the data. Our research verified five factors affecting student performance including (i) student self-efficacy, similar to the findings of Aydin (2017), and (Đặng, 2017); (ii) university environment, similar to the findings of Pritchard and Wilson (2003), and Kuh et al. (2005), Hunter (2006); (iii) student satisfaction with university, similar to findings of Crisp et al. (2017), Kuh et al. (2005), Pascarella and Terenzini (2005); (iv) student self-motivation, similarity to the findings of Cao and Truong (2022); and (v) luck, similar to the findings of García y García (2021).

In contrast with the findings of (Nguyễn et al., 2017), and Lê (2016), we found that student sex, level of study, education program, campus residence, part-time job, student's family residence, and who finances student studying not significantly influence student success, while club membership has a negative relationship with student achievements.

Practical implications

This research found three internal and two external factors affecting student achievements. Internal factors include student self-motivation (for a scholarship, self-improvement, good job in the future), *student self-efficacy* (*good study methods, time management, and attention*), and *student engagement in university life* (*attention, proactively time arrangement for studying and other activities*). External factors, which are out of student control, include *student satisfaction* with the university (highly qualified instructors, high-quality education programs, good student activities, and university environment), and *luck* (*engaging in courses with good instructors, exam questions often fall into the well-learned sections*), less likely to have problems related to health, personal and family feelings in midterm and final exam time). Therefore, in order to

improve student's learning outcomes, it is necessary to organize activities that affect student behavior so that they maintain their self-motivation, such as organizing talk shows whose guest speakers are successful alumni. *Student self-efficacy* and *engagement in university life* are difficult things to change because it belongs to the gifted, however universities can support them through soft skills training courses, facilitating good student campus life, both physical facilities and service quality. *Student satisfaction with the university* is under the university control, respondents revealed that somewhere are staff undertaking their job unprofessionally (instructors abuse student presentations, lack of enthusiasm, dormitory staff is not friendly), and too long class-section time reduces learning effectiveness, this implies the need of improving and ensuring the standardized quality of teachers, training programs, student activities, and physical facilities. Luck is beyond the student's control, however, universities can reduce some of the risks by ensuring the quality of teachers. In addition, this research found that participating in any club negatively affects student academic performance. Therefore, measures guiding clubs to alleviate the effect on students' learning time are needed.

Limitations and directions for further research

This research was unfunded, so the survey was conducted in a convenient way, which may cause the results to be biased. Further research in the future would use better samples.

References

- Aydin, G. (2017). Personal factors predicting college student success. *Eurasian Journal of Educational Research*, 17(69), 93-112.
- Canfield, C., & Zastavker, Y. V. (2010). Achievement goal theory: A framework for implementing group work and open-ended problem solving. 2010 IEEE Frontiers in Education Conference (Fie),
- Cao, X. T., & Truong, T. D. (2022). Factors Affecting Students' Perceived Outcomes and Satisfaction in Virtual Classrooms. *Vietnam Journal of Education*, 6(2), 161-171.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
- Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences*. Elsevier Science Burlington.
- Crisp, G., Baker, V. L., Griffin, K. A., Lunsford, L. G., & Pifer, M. J. (2017). *Mentoring Undergraduate Students: ASHE Higher Education Report, Volume 43, Number 1*. John Wiley & Sons.

- Đặng, T. H. (2017). Sự ảnh hưởng của các nhân tố đến kết quả học tập của sinh viên hệ liên thông cao đẳng-đại học ngành kế toán, trường Đại học Công nghiệp Hà Nội. *Tạp chí khoa học và công nghệ* 42, 122-128.
- Đigić, G., & Zdravković, M. (2019). Attributions To Academic Success And Failure And The Strategies For Dealing With The Examination Situation As Predictors Of Academic Success [Article]. *Facta Universitatis, Series: Philosophy, Sociology, Psychology and History*, 18(2), 67-80. <https://doi.org/10.22190/FUPSPH1902067D>
- Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of applied psychology*, 82(2), 221.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.
- García y García, B. E. (2021). To What Factors do University Students Attribute Their Academic Success? *Journal on Efficiency and Responsibility in Education and Science*, 14(1), 01-08. <https://doi.org/10.7160/eriesj.2021.140101>
- Hair, J. F., Jr. (2014). *Multivariate data analysis* (7th ed. ed.). Pearson.
- Heider, F. (1944). Social perception and phenomenal causality. *Psychological Review*, 51(6), 358-374. <https://doi.org/10.1037/h0055425>
- Heider, F. (1982). *The psychology of interpersonal relations*. Psychology Press.
- Hunter, M. S. (2006). Fostering student learning and success through first-year programs. *Peer Review*, 8(3).
- Kelley, H. H. (1967). Attribution theory in social psychology. Nebraska symposium on motivation,
- Kim, E., Newton, F. B., Downey, R. G., & Benton, S. L. (2010). Personal factors impacting college student success: Constructing college learning effectiveness inventory (CLEI). *College Student Journal*, 44(1), 112-126.
- Kuh, G. D. (2001). The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties. *Indiana University Center for Postsecondary Research and Planning*.

- Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2005). Never let it rest lessons about student success from high-performing colleges and universities. *Change: The Magazine of Higher Learning*, 37(4), 44-51.
- Lê, Đ. H. (2016). Ứng dụng phương pháp phân tích nhân tố khám phá trong việc xác định các nhân tố ảnh hưởng đến kết quả học tập của sinh viên của khoa kinh tế và quản trị kinh doanh, trường Đại học Lâm nghiệp. *Tạp chí khoa học và công nghệ lâm nghiệp*, 20, 142-152.
- Matteucci, M. C., & Gosling, P. (2004). Italian and French teachers faced with pupil's Academic Failure: The "Norm of Effort". *European Journal of Psychology of Education*, 19(2), 147-166. <https://doi.org/10.1007/BF03173229>
- Mills, C., Heyworth, J., Rosenwax, L., Carr, S., & Rosenberg, M. (2009). Factors associated with the academic success of first year Health Science students. *Advances in Health Sciences Education*, 14(2), 205-217. <https://doi.org/10.1007/s10459-008-9103-9>
- Newton, F. B., Kim, E., Wilcox, D., Beemer, N., Johnson, A., Tseng, W.-C., Shin, K.-H., Yeager, M. E., Downey, R., & Benton, S. (2008). Administration and scoring manual for the college learning effectiveness inventory (CLEI). *Kansas State University, Manhattan*.
- Nguyễn, T. D., Hoàng, T. K. O., & Lê, Đ. H. (2017). Thực trạng và các nhân tố ảnh hưởng đến kết quả học tập của sinh viên khoa kinh tế và quản trị kinh doanh, trường Đại học Lâm nghiệp. *Tạp chí khoa học và công nghệ lâm nghiệp*, 20, 134-141.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed ed.). McGraw-Hill.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research. Volume 2*. ERIC.
- Pritchard, M. E., & Wilson, G. S. (2003). Using emotional and social factors to predict student success. *Journal of College Student Development*, 44(1), 18-28. <https://doi.org/10.1353/csd.2003.0008>
- Saud, W. I. (2021). Success factors at university from students' perspective. *Technium Soc. Sci. J.*, 16, 52.
- Tinto, V., & Pusser, B. (2006). Moving from theory to action: Building a model of institutional action for student success. *National Postsecondary Education Cooperative*, 1(51), 89-125.

- Toutkoushian, R. K., Smart, J. C., Smart, J. C., & Toutkoushian, R. K. (2001). Do institutional characteristics affect student gains from college? *The Review of Higher Education*, 25(1), 39-61.
- Weiner, B. (1972). Attribution Theory, Achievement Motivation, and the Educational Process. *Review of Educational Research*, 42(2), 203-215.
<https://doi.org/10.3102/00346543042002203>
- Weiner, B. (2010a). Attribution Theory. In *The Corsini Encyclopedia of Psychology* (pp. 1-2).
<https://doi.org/https://doi.org/10.1002/9780470479216.corpsy0098>
- Weiner, B. (2010b). The development of an attribution-based theory of motivation: A history of ideas. *Educational psychologist*, 45(1), 28-36.
- Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. *Educational psychology review*, 6, 49-78.

Appendix

Survey questions

Student success

Suc1 = I get high scores.

Suc2 = I understand the content of subjects and can apply it to explain related problems in practice.

Suc3 = I feel confident and satisfied by acquiring knowledge.

Suc4 = I feel I am more mature socially.

Suc5 = I gained more living skills.

Self-motivation

Mot1 = I study hard to get a scholarship.

Mot2 = I study hard to satisfy my parents' expectations.

Mot4 = I study hard to get a good job in the future.

Self-efficacy

Effi1 = I have good intelligence.

Effi2 = I have a good study method.

Effi3 = I manage my time well.

Effi4 = I work very hard.

Effi5 = I can make attention when learning.

Effi6 = I often exploit resources on campus such as libraries, lecture halls, Wi-Fi to connect to the internet for learning objectives.

Effi7 = I don't rely on photocopiers' (cheating) test stuff.

Effi8 = I am calm when taking midterm and final exams.

University environment

Env1 = In the university environment, it is easier for paying attention when learning.

Env2 = Being independent helps me proactively arrange learning and other activities.

Env3 = Peer pressure has a positive effect on my academic performance.

Env4 = I actively take part in clubs so my socialization improved.

Env5 = I don't have a part-time job so my grades are higher.

Student satisfaction with university

Sat1 = I am satisfied with instructors.

Sat2 = I am satisfied with the quality of the education program.

Sat3 = I am satisfied with the student activities and the university environment.

Sat4 = I am generally satisfied with university life.

Luck

Luc1 = I usually engage in courses with good instructors.

Luc2 = Exam questions often fall into the well-learned sections.

Luc3 = I less likely have problems related to health at the time of midterm and final exams.

Luc4 = I less likely have problems related to personal and family feeling at the time of midterm and final exams.