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Factors Influencing Student Learning Outcomes through Learning Motivation: A Case Study at a University in Vietnam

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Abstract

The study analyzes the factors affecting students' learning outcomes through learning motivation with a case study conducted at Nam Can Tho University. The research has developed a model incorporating six main factors: learning methods, family and friends, teaching methods, training program, facilities, and learning motivation. A mixed research approach was employed, integrating both qualitative and quantitative methods. A survey of 300 students was conducted to validate the hypotheses and research model. The structural equation model (SEM) analysis using SmartPls 4.0 indicated that the training program, family and friends, teaching methods, facilities, and learning methods positively influenced students' learning motivation. Among these, the training program had the most substantial impact, and learning motivation played a training program mediating role in improving students' learning outcomes. The findings are expected to enhance educational policies at Nam Can Tho University, aiming to foster student motivation and learning outcomes, thereby improving the quality of human resource training.

Keywords: *Learning Motivation, Learning Outcomes, Nam Can Tho University, Student.*

Introduction

In recent years, many researchers have paid considerable attention to identifying learning motivation and the relationship between learning motivation and learners' academic outcomes (Gopalan et al., 2017). Learning motivation is critical to student success (Lena, 2022). Motivation in learning is defined as an internal condition that arouses, directs, and sustains an individual's learning behavior (Woolfolk, 2019). A learner's motivation determines the results and effectiveness of educational activities (Sugiyanto et al., 2020). If learners have proper motivation, they will be more proactive in their learning, demonstrate greater integrity during examinations, and pay more attention to both learning skills and self-study, thus enhancing the skills necessary for their future.

Student motivation can be influenced by various factors, including emotional, expressive, and affective experiences (Deci, 2014). Learning motivation may be affected by subjective factors such as self-belief, career interest, sense of responsibility, and self-regulation, as well as objective factors such as social environment, learning environment, family, and friends. Several studies have been conducted to explore factors affecting learning outcomes, such as the quality of students' learning experiences (Ngai et al., 2018), student motivation (Li et al., 2016), and students' professional backgrounds (Lo et al., 2019). Although numerous studies have demonstrated that student motivation is a significant factor influencing learning outcomes and other studies indicate that learning driven by motivation positively impacts students, some research gaps remain (Lo et al., 2022).

Nam Can Tho University plays a crucial role in educating and training students. However, students still face numerous challenges maintaining their learning motivation and achieving positive academic outcomes. Therefore, studying the factors influencing learning outcomes through learning motivation is essential to identify the determinants of motivation and academic success. Understanding which factors have the

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strongest and weakest impacts will help propose practical solutions to improve learning outcomes by enhancing students' learning motivation.

Literature Review

Bomia et al. (1997) argued that learning motivation is the desire, eagerness, enthusiasm, sense of responsibility, and passion for the learning process, which drives an individual's actions. Motivation encompasses the reasons underlying human behavior and represents the psychological forces that shape an individual's actions' goals, intensity, and persistence (Wigfield et al., 2021). Learning motivation is the willingness to engage with material presented in a developmental program (Noe, 1986). It explains what individuals are willing to do and influences the direction and effort they invest in learning activities (Noe et al., 1997).

Learning outcomes result from an individual's learning process and are related to changes in the learner, including knowledge, understanding, attitudes, behavior, skills, and abilities (Sailer et al., 2021). Learning outcomes represent a combination of knowledge, skills, and attitudes that individuals acquire through a specific set of educational experiences (Adam & Expert, 2008). Furthermore, learning outcomes encompass comprehensive learning results that meet stringent criteria for clear behavioral objectives (Eisner, 1979). Research suggests that learning outcomes are the most critical reflection of the success of an educational process (Kurucay & Inan, 2017).

Student learning outcomes are influenced by both internal and external factors (Nurhasanah & Sobandi, 2016). Andrini (2016) noted that learning outcomes are affected by two primary factors: the students themselves (70%) and external factors (30%). Andrini (2016) elaborated that internal factors include physiological and psychological aspects (such as intelligence, motivation, and cognitive abilities), while external factors include environmental and instrumental elements (such as teachers, curriculum, and educational programs). According to Lena et al. (2019), the quality of teaching, including classroom characteristics or climate, significantly influences student learning outcomes. Learning outcomes result from learning activities where students can perform tasks related to the lessons.

The Self-Determination Theory (SDT), proposed by Deci and Ryan (1985), emphasizes the significance of intrinsic learning motivation. According to this theory, when individuals engage in activities that align with their values, interests, and needs, they are more likely to experience intrinsic motivation, leading to better learning outcomes. Intrinsic motivation, therefore, refers to the part of a student's motivation that arises from their internal interest in learning, curiosity, and desire to overcome challenges. Self-determination theory has been widely applied in research on motivational processes in learning across various contexts. Studies have used SDT to explore the motivation of vocational education students, language learning motivation, the impact of ChatGPT on university students' learning motivation, and the role of gamification in enhancing intrinsic learning motivation (Zhou & Li, 2023).

The Achievement Goal Theory (AGT), proposed by Dweck and Leggett (1988), suggests that motivation and achievement-related behaviors can be understood by examining the reasons or purposes individuals adopt when engaging in learning tasks. AGT distinguishes between two goal orientations: (1) learning orientation, which focuses on gaining competence in a subject or skill, and (2) performance orientation, which emphasizes demonstrating competence to others, seeking competition, and comparing achievements.

The Expectancy-Value Theory (EVT), proposed by Eccles and colleagues (1983), highlights the importance of both expectancy and value in learning motivation. Expectancy refers to an individual's belief in their capability to succeed, while value refers to the perceived importance or usefulness of the learning activity. According to EVT, students who believe they can achieve and see value in a learning activity are more likely to be motivated to learn. The study by Wheeler et al. (2023) demonstrated that factors such as self-efficacy in learning and task value significantly influence students' persistence in education, emphasizing the importance of these motivational variables in learning outcomes.

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Learning Methods: The application of active, self-regulated learning methods positively impacts students' learning motivation. Furthermore, when students manage their learning by creating study plans, setting goals, and monitoring their progress, they develop a greater sense of responsibility, enhancing their motivation. Additionally, employing group learning methods and studying together with peers positively affects students' motivation. Moreover, diverse learning methods, combining classroom learning with self-study, also positively impact students' learning motivation (Purwanto, 2022). According to Lena (2022), students who organize their study time scientifically to focus effectively on their learning will likely be more motivated. Therefore, the research proposes hypothesis H1: Learning methods impact students' learning motivation.

Family and Friends: Family circumstances also affect students' learning motivation. For instance, students from impoverished backgrounds may strive to study diligently to escape poverty. In contrast, students from families with a solid educational tradition may work hard to uphold the family's reputation. Furthermore, support from friends during the learning process positively impacts students' motivation. When students receive assistance from friends, such as help with solving exercises or sharing study materials, they feel encouraged and thus more motivated to learn. Additionally, positive relationships and collaboration with friends in the learning process make the learning environment feel friendly and comfortable, further enhancing motivation. Sharing knowledge and learning experiences among peers also positively influences students' learning motivation (Tai et al., 2016; Purwanto, 2022). Therefore, the research proposes hypothesis H2: Family and friends impact students' learning motivation.

Teaching Methods: When instructors employ student-centered teaching methods (such as group discussions, encouraging critical thinking through questioning, and interactive activities), students tend to feel that they play an active role in the learning process, which enhances their learning motivation. Innovative teaching methods like project-based learning, educational games, and real-life scenarios help students feel more engaged and motivated. Creating a conducive learning environment, setting clear learning goals, and the instructor's enthusiasm during lectures can help students find joy and interest in their studies (Anh, 2024; Purwanto, 2022; Valerio, 2012; Thuy, 2022). Therefore, the research proposes hypothesis H3: Teaching methods impact students' learning motivation.

Training program: A training program scientifically designed and tailored to meet students' abilities and needs positively impacts their learning motivation. Furthermore, when the training program aligns with the students' needs and skills, they tend to feel more comfortable and confident in their learning process, increasing their motivation. In addition, curricula that incorporate practical activities and internships also positively impact students' learning motivation (Nga, 2016; Ngan, 2019; Van, 2020). Therefore, the research proposes hypothesis H4: The training program impacts students' learning motivation.

Facilities: Facilities such as comfortable classrooms, modern equipment, and supportive learning tools create favorable conditions that enhance the quality of the learning experience for students, thereby increasing their motivation. Furthermore, library facilities-including the availability of books, learning materials, and comfortable study spaces-positively impact students' motivation. In addition, when students can easily access computer labs, laboratories, and other learning areas, they have more opportunities to practice and apply theoretical knowledge in real-world situations, which increases their interest and motivation. Moreover, a comfortable, clean, and safe learning environment allows students to focus on their studies without interruptions, enhancing their learning motivation (Ngan, 2019; Purwanto, 2022; Tai, 2016). Therefore, the research proposes hypothesis H5: Facilities impact students' learning motivation.

Learning Motivation: When students have intrinsic motivation (passion and love for learning) and study with the desire to improve themselves, their learning outcomes are significantly enhanced. Furthermore, when students recognize that studying diligently will provide them with better career opportunities in the future, they are more motivated to learn and achieve good results. In addition, when students receive encouragement and support from family and teachers, they feel a greater sense of responsibility and higher motivation to study hard and achieve positive results. Moreover, when students set goals and have the desire to achieve high academic performance, they are more likely to dedicate time and effort to their studies, thereby improving their learning outcomes (Phong, 2024; Purwanto, 2022; Lena, 2022; Nur'aini,

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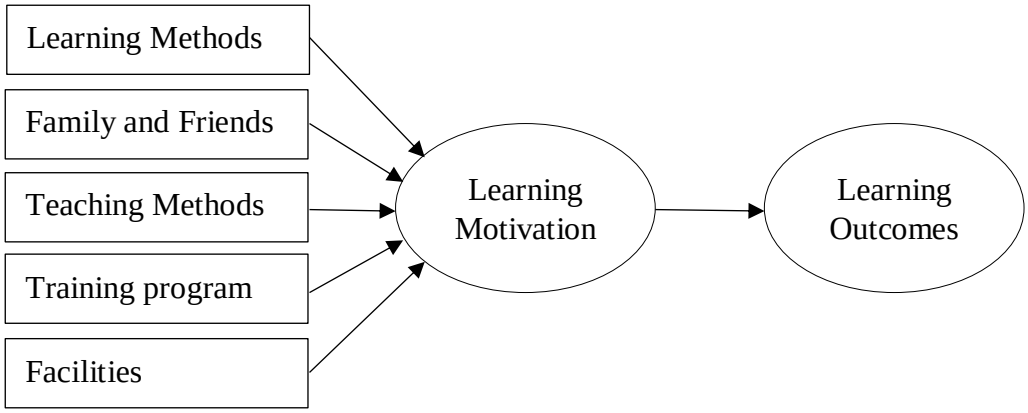
2020). Therefore, the research proposes hypothesis H6: Learning motivation impacts students' academic learning outcomes.

Proposed Research Model: Based on the foundational theoretical framework on student learning motivation, including Self-Determination Theory (Deci & Ryan, 1985), Achievement Goal Theory (Dweck & Leggett, 1988), Expectancy-Value Theory (EVT) (Eccles et al., 1983), as well as both domestic and international empirical studies (Phong, Purwanto, 2022; Lena, 2022; Nur'aini, 2020), the following research model is proposed:

Figure 1: Proposed Research Model



Research Design and Methods

The study utilizes a combination of qualitative and quantitative research methods. The qualitative research aims to identify the factors affecting students' learning motivation, establish the research model, and define the measurement scales. The measurement scales are derived from prior studies (Lena, 2022; Ngan, 2019; Phong, 2024; Purwanto, 2022; Tai et al., 2016). A preliminary study was conducted through quick interviews with 30 students using convenient sampling to validate and refine the scales. Based on this step, the scales were adjusted to construct the official measurement scales for the primary survey.

Sample Size Determination: Hair et al. (2006) state that a minimum sample size requires at least five observations per variable. This study has six scales with 26 observed variables, leading to a minimum required sample size of 130 observations. According to Guilford (1954), the minimum sample size should be 200. This study determines a sample size of 300, which, according to Comrey and Lee (2013), is considered "good." The data collection method involves directly surveying students using a pre-designed questionnaire, employing a 5-point Likert scale. The study adopts a stratified probability sampling method, where the population is divided into smaller proportional or non-proportional subgroups (Tho, 2011). The sample frame is defined as students from the Faculty of Economics at Nam Can Tho University, with proportions corresponding to the ratio of students across different majors. The sample was selected based on the percentage of students from each major, and enough students were randomly chosen to meet the target sample size. After data collection, the data was coded, cleaned, and analyzed through several steps: assessing the reliability of the measurement scales using Cronbach's Alpha coefficient, analyzing the measurement model, and applying Structural Equation Modeling (SEM) to test the research model and hypotheses.

Results

The survey results from 300 students indicate that 141 male students participated, accounting for 47%, while 159 female students participated, representing 53%. This shows minimal disparity in the sample structure based on gender.

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Table 1: Gender

Gender	Frequency	Percent
Male	141	47.0
Female	159	53.0
Total	300	100.0

Fourth-year students accounted for the highest proportion, with 87 students representing 29%; third-year students with 77 students accounting for 25.7%; second-year students with 71 students representing 23.7%; and first-year students with 65 students making up 21.7%.

Table 2: School year

School year	Frequency	Percent
Freshman	65	21.7
Sophomore	71	23.7
Third	77	25.7
Fourth	87	29.0
Total	300	100.0

The students who participated in the survey came from various fields of study, with the highest proportion being Accounting majors, comprising 86 students (28.7%). This was followed by Banking and Finance majors with 82 students (27.3%), E-commerce majors with 52 students (17.3%), Multimedia communication majors with 34 students (11.3%), Public Relations majors with 28 students (9.3%), and lastly, Digital Economics majors with 18 students (6.0%).

Table 3: Student's major

Student's major	Frequency	Percent
Accounting	86	28.7
Banking and Finance	82	27.3
Public Relations	28	9.3
Digital Economy	18	6.0
E-Commerce	52	17.3
Multimedia	34	11.3
Total	300	100.0

Discussion

Reliability Testing Results (Table 4) indicate that all measurement scales have item-total correlation coefficients greater than 0.5, which is considered good. The Cronbach's Alpha coefficients for all observed variables are more significant than 0.6, indicating that the scales are reliable (Hair et al., 2017).

Scale Reliability: The results show that all factor structures have good reliability, with Cronbach's Alpha reliability coefficients ranging from 0.835 to 0.871 and Composite Reliability (rho_c) ranging from 0.845 to 0.873, all exceeding the threshold of 0.7.

Convergent Validity of Measurement Scales: Convergent validity is assessed using the Average Variance Extracted (AVE). The AVE values for the measurement scales range from 0.602 to 0.721, all greater than 0.5, indicating that the scales achieve convergent validity.

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Table 4: Scale reliability

Items	Mean	Outer loadings	Cronbach's Alpha if Item Deleted	Cronbach's Alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
FF1	3.34	0.805	0.763	0.866	0.845	0.887	0.663
FF2	3.34	0.825	0.778				
FF3	3.36	0.807	0.792				
FF4	3.30	0.855	0.809				
TP1	2.68	0.787	0.843	0.866	0.868	0.903	0.651
TP2	2.80	0.815	0.833				
TP3	3.32	0.813	0.832				
TP4	3.38	0.793	0.847				
TP5	3.33	0.825	0.832				
LM1	3.36	0.809	0.799	0.837	0.845	0.891	0.672
LM2	2.86	0.836	0.796				
LM3	3.30	0.813	0.786				
LM4	3.41	0.820	0.795				
FA1	3.40	0.805	0.813	0.841	0.849	0.894	0.678
FA2	3.36	0.825	0.795				
FA3	3.34	0.807	0.798				
FA4	3.32	0.855	0.788				
TM1	3.32	0.700	0.819	0.835	0.847	0.883	0.602
TM2	3.37	0.775	0.808				
TM3	3.37	0.776	0.809				
TM4	3.40	0.835	0.787				
TM5	3.30	0.796	0.786				
LeM1	3.31	0.863	0.783	0.846	0.849	0.897	0.686
LeM2	3.34	0.790	0.824				
LeM3	3.29	0.857	0.786				
LeM4	3.38	0.800	0.824				
LO1	3.34	0.847	0.839	0.871	0.873	0.912	0.721
LO2	3.36	0.870	0.824				
LO3	3.32	0.839	0.842				
LO4	3.35	0.841	0.836				

Discriminant Validity Assessment Using HTMT: The results indicate that all HTMT values range from 0.240 to 0.828, which are all below the threshold of 0.85, thereby ensuring discriminant validity (Henseler et al., 2015).

Table 5: Discriminant Validity Assessment Using HTMT for Factors

	TP	FA	FF	LM	LeM	LO	TM
TP							
FA	0.322						
FF	0.224	0.267					
LM	0.238	0.318	0.240				
LeM	0.572	0.544	0.502	0.475			
LO	0.560	0.548	0.505	0.514	0.828		
TM	0.305	0.327	0.181	0.176	0.504	0.442	

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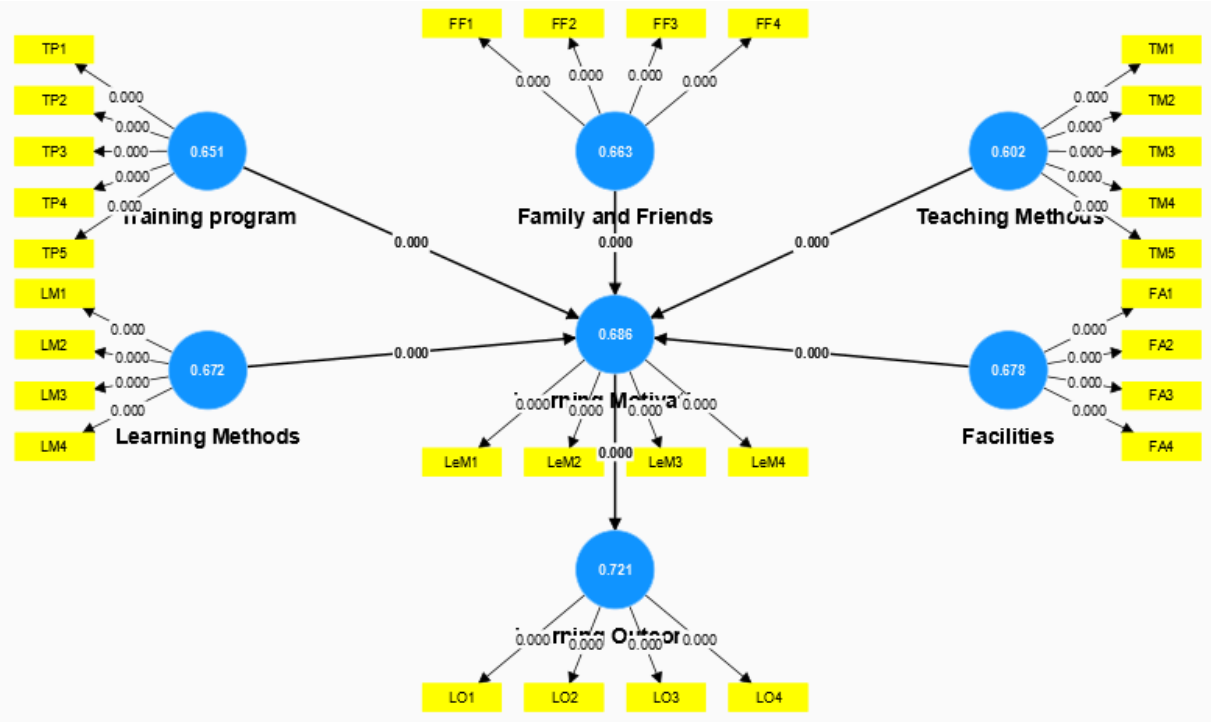
Multicollinearity: The VIF values range from 1.584 to 2.479, all below the threshold of 5. Therefore, no evidence of multicollinearity (Hair et al., 2017).

Assessment of Structural Model Fit: The SRMR (Standardized Root Mean Square Residual) value of the model is 0.051, below 0.08, indicating a good fit for the model (Hair et al., 2017). The R-squared (R^2) coefficient results show that the model's Learning Motivation variable has an R^2 of 0.523, and Learning Outcomes has an R^2 of 0.508. This indicates that the variables in the model explain 52.3% of the variance in Learning Motivation and 50.8% of the variance in Learning Outcomes. Thus, the influence of the component variables on student Learning Motivation is significant.

Figure 2: Model Analysis Results



Assessment of Effect Size (f^2): The analysis results indicate that all exogenous variables impact the endogenous variables, as evidenced by the fact that all f^2 effect size values are non-zero. Notably, the effect of Learning Motivation on Learning Outcomes has the highest f^2 value at 1.032, which is substantial, while the other variables' effects are moderate (Cohen, 1988).

Table 6: Effect Size (f^2) Values

Impact	f-square
Training program -> Learning Motivation	0.146
Facilities -> Learning Motivation	0.075
Family and Friends -> Learning Motivation	0.116
Learning Methods -> Learning Motivation	0.081
Teaching Methods -> Learning Motivation	0.093
Learning Motivation -> Learning Outcomes	1.032

To conclude the research hypotheses, or in other words, to determine whether the arrows in the research model are statistically significant, the analysis results through the "bootstrapping" method focus on (1) testing the statistical significance of the relationships and (2) evaluating the strength and direction of these relationships.

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The results of the Path coefficient analysis indicate that relationships with a p-value less than 0.05 are statistically significant (Hair et al., 2017). The variables affecting Learning Motivation (LeM) are as follows: Teaching Methods (TP, 0.284) > Family and Friends (FF, 0.247) > Teaching Methods (TM, 0.225) > Facilities (FA, 0.208) > Learning Methods (LM, 0.208). The impact of Learning Motivation on Learning Outcomes (LO) is 0.713.

Table 7: Bootstrap estimation results of the structural model

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Result
TP -> LeM	0.284	0.283	0.046	6.153	0.000	accepted
FA -> LeM	0.208	0.208	0.045	4.662	0.000	accepted
FF -> LeM	0.247	0.247	0.046	5.363	0.000	accepted
LM -> LeM	0.208	0.209	0.038	5.443	0.000	accepted
TM -> LeM	0.225	0.228	0.043	5.183	0.000	accepted
LeM -> LO	0.713	0.713	0.029	24.890	0.000	accepted

The analysis results indicate that the hypotheses are accepted (p-value < 0.05). The mediating role of Learning Motivation (LeM) in influencing Learning Outcomes (LO) is confirmed. The impact of Learning Motivation on students' Learning Outcomes is highly significant. Additionally, the latent variables (Teaching Methods, Facilities, Family and Friends, Learning Methods, and Teaching Motivation) also influence students' Learning Outcomes.

Table 8: Total indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
TP -> LO	0.203	0.202	0.035	5.836	0.000
FA -> LO	0.149	0.148	0.033	4.488	0.000
FF -> LO	0.176	0.176	0.034	5.197	0.000
LeM -> LO	0.148	0.149	0.029	5.197	0.000
TM -> LO	0.160	0.162	0.031	5.159	0.000

Table 9: Specific indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
TP -> LeM -> LO	0.203	0.202	0.035	5.836	0.000
FA -> LeM -> LO	0.149	0.148	0.033	4.488	0.000
FF-> LeM -> LO	0.176	0.176	0.034	5.197	0.000
LM -> LeM -> LO	0.148	0.149	0.029	5.197	0.000
TM -> LeM -> LO	0.160	0.162	0.031	5.159	0.000

The analysis of the Structural Equation Model (SEM) reveals that the factors with the most substantial impact on Learning Outcomes for students are, in descending order, the Training Program, Family and Friends, Teaching Methods, Facilities, and Learning Methods. Additionally, Learning Motivation significantly affects Learning Outcomes. Furthermore, all path coefficients are positive, indicating that the direction of the influence between the factors is positive. These factors not only have a direct effect but also an indirect effect through Learning Motivation, thereby influencing students' academic performance. Specifically:

Training Program: The impact coefficient for the Training Program is 0.284, with p = 0.000; hence hypothesis H4 is accepted. This is also the most vital factor influencing Learning Motivation. This factor

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has been proven to impact Learning Motivation in previous studies (Nga, 2016; Ngan, 2019; Van, 2020). When the training program aligns with the needs and abilities of students, it not only boosts their confidence but also enhances their interest in learning.

Family and Friends: The impact coefficient for Family and Friends is 0.247, with p = 0.000; hence hypothesis H2 is accepted. Family and friends play a crucial role in encouraging students' learning motivation. This factor has also been proven to influence Learning Motivation in studies conducted by Tai et al. (2016) and Purwanto (2022). Support from family and friends helps students feel encouraged while creating a friendly and comfortable learning environment.

Teaching Methods: The impact coefficient for Teaching Methods is 0.225, with p = 0.000; hence hypothesis H3 is accepted. Student-centered teaching methods that incorporate interactive and creative activities also play a significant role in enhancing learning motivation. This factor has been demonstrated to influence Learning Motivation in studies by Anh (2024), Purwanto (2022), Valerio (2012), and Thuy (2022). Methods such as group discussions, project-based learning, and real-life scenario applications help students become more engaged and participate actively in the learning process.

Facilities: The impact coefficient for Facilities is 0.208, with p = 0.000; hence hypothesis H5 is accepted. Facilities also influence Learning Motivation. This factor has been demonstrated to affect Learning Motivation in the studies conducted by Ngan (2019), Purwanto (2022), and Tai (2016). Modern and adequate facilities provide a supportive learning environment for students, enhancing their Motivation to learn.

Learning Methods: The impact coefficient for Learning Methods is 0.208, with p = 0.000; hence hypothesis H1 is accepted. Learning Methods also influence Learning Motivation. This factor has been proven to affect Learning Motivation in Purwanto (2022) and Lena (2022) studies. Effective learning methods significantly impact learning motivation, mainly when students actively manage their learning through planning and goal setting.

Learning Motivation: The impact coefficient for Learning Motivation is 0.713, with p = 0.000; hence hypothesis H6 is accepted. Learning Motivation is also an essential mediating factor influencing Learning Outcomes. This factor has been demonstrated to impact Learning Outcomes in studies by Phong (2024), Purwanto (2022), Lena (2022), and Nur'aini (2020). Learning Motivation is a crucial mediator, encouraging students to strive for better results when they recognize the importance of learning for personal growth and future career development.

Conclusion

The study has confirmed that factors such as the training program, family and friends, teaching methods, facilities, and learning methods all have a substantial impact on students' learning motivation and academic outcomes. The training program significantly influences learning motivation, a critical mediating factor contributing to improved academic performance. The study suggests that to enhance student learning outcomes, Nam Can Tho University should focus on improving the quality of its training programs to ensure they meet the needs and abilities of the students. Additionally, the university should provide adequate facilities and apply student-centered teaching methods. Family and friends also play an indispensable role in encouraging and motivating students to learn. This research hopes to contribute to developing and improving educational policies to enhance student motivation and learning outcomes, thereby improving the quality of the future workforce.

Limitations of the Study: Although the sample size used in the study was 300 students, it needs to be sufficiently large to represent all students from different majors within the university. This limitation may affect the generalizability of the study's findings. Future research should include a more extensive and diverse sample from various disciplines to enhance the accuracy and representativeness of the results.

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