THE EFFECT OF LEARNING MANAGEMENT AND INDEPENDENT LEARNING SKILLS ON PROCRASTINATION AMONG STUDENTS AT THE OPEN UNIVERSITY OF MAKASSAR

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Abstract

This study aims to analyze the effect of learning management and independent learning skills on academic procrastination among students at the Open University of Makassar. The approach used is quantitative non-experimental with an ex-post facto design, which allows researchers to evaluate the effect of independent variables that have occurred on dependent variables. A sample of 350 non-Pendas students was determined using the Isaac and Michael table with a significance level of 5%. The data analysis technique used Partial Least Square (PLS), which was considered suitable for non-parametric data and small sample sizes. The results showed that independent learning skills had a negative and significant effect on academic procrastination with a moderate effect size. This indicates that the higher the students' independent learning skills, the lower their level of procrastination. The learning management variable did not show a significant effect on procrastination, with a very low effect size. These findings imply that strengthening independent learning skills needs to be the main focus in efforts to reduce academic procrastination among students.

Keywords: Self-directed learning skills, learning management, academic procrastination, students, Partial Least Square (PLS)

1 INTRODUCTION

Procrastination or delay in completing tasks is a common problem among students, including Open University (UT) students who undergo online learning. This delay is not only related to academic problems, but can also affect students' psychological well-being and academic achievement. Continuous procrastination can cause stress, anxiety, and a decline in quality of life, as well as hinder academic success (Harmalis, 2021) . In the context of higher education, especially for students enrolled in distance learning systems such as at UT, time and task management become more complex and require specific skills (Achmad Siddiq, 2021; Lin et al., 2021) .

One factor that can influence procrastination is learning management. Effective learning management includes the ability to plan, organize, and control time and learning resources (Wahidaty, 2021) . Students with good learning management skills tend to be able to manage their time better, avoid delays, and complete tasks according to the specified deadlines

(Muhammad Yusnan, 2021) . Conversely, students who lack effective learning management may be more prone to procrastination due to difficulties in planning and prioritizing their academic tasks (Sofyananjani et al., 2021)

In addition to learning management, independent learning skills are also an important factor that influences procrastination (Walidain, 2020) . Independent learning skills include the ability to take initiative in the learning process, manage time efficiently, and motivate oneself to complete tasks (Gumilar & Hermawan, 2021) . In online learning, where UT students do not have direct supervision from instructors, independent learning skills become very important. Students who have good independent learning skills will find it easier to avoid procrastination because they can motivate themselves to complete tasks without waiting for external encouragement.

Procrastination among UT students can arise from an inability to manage time and tasks well. Frequent delays can be caused by many factors, including feelings of anxiety about accumulated tasks, lack of motivation, or even distractions from external factors such as social media. If left unaddressed, this procrastination can worsen students' academic performance, reduce productivity, and increase stress levels. Therefore, it is important to identify the factors that influence procrastination in order to find effective solutions to reduce this behavior.

Research on procrastination among UT students is very important given the characteristics of online learning, which requires students to be more independent in managing their time and tasks. Success in online learning is greatly influenced by students' ability to manage time, prioritize tasks, and study independently. Therefore, the influence of learning management and independent learning skills on procrastination needs to be studied further, especially in the context of UT students who have different learning challenges and dynamics compared to students at other universities.

Previous studies have shown that factors such as poor time management, lack of independent learning skills, and negative emotional conditions can exacerbate students' procrastination levels. However, despite the abundance of research on procrastination, there is still little research focusing on UT students who undergo online learning. Therefore, this study aims to fill this gap by analyzing how learning management and independent learning skills affect UT students' procrastination and how emotional conditions mediate the relationship between these factors.

2 RESEARCH METHOD

This study uses a non-experimental quantitative approach with an ex-post facto design. Ex-post facto research examines independent variables that have already occurred, then analyzes their influence on dependent variables. This approach was chosen because the purpose of the research was to explore cause-and-effect relationships and describe the circumstances that had occurred in the variables studied, as explained by (Creswell & Creswell, 2017) .

The research will be conducted at the Makassar Regional Open University in the undergraduate program. It will be carried out from April to September 2025. The population in this study consists of 4,997 active non-Pendas UT students enrolled in 2024. Due to the large population size, sampling will be conducted. Since the population size is known, sampling will be determined using the Isaac and Michael table (Sugiyono 2019). The sample size used in this study is 350 with a significance level of 5%. This study uses the component-based *Partial Least Square* (PLS) analysis method, so the sample size does not need to be large. The sample size can range from 30 to 100 (Gio, 2022; Haryono, 2017) . The research variables consist of four variables, namely learning management variable (X1), independent learning skills variable (X2), and proctosis variable (Y) . The research instrument is a questionnaire containing alternative answers compiled using a Likert scale model with four alternative answers. The alternative answers include very appropriate, appropriate, less appropriate, and inappropriate. Each alternative answer was given the following weights: very appropriate "weight 4", appropriate "weight 3", less appropriate "weight 2", and not appropriate "weight 1". After the instrument was created, the validity and reliability levels were measured. This is very important in line with the fact that an instrument, whether a test or non-test, must have evidence of validity and reliability (Mardapi, 2015) .

In the Partial Least Squares (PLS) approach, the path analysis structure for all latent variables consists of three sets of relationships: (1) an internal model that describes the interrelationships between latent variables (structural model); (2) an external model that maps the relationships between latent variables and their indicators or manifest variables (measurement model); (3) weight relationships where case values of latent variables can be estimated (Ghozali, 2014) . Outer models involving reflective indicators are assessed through the convergent and discriminant validity of these indicators, as well as the composite reliability of the indicators. Meanwhile, outer models with formative indicators are assessed based on their content substance, namely by comparing relative weights and observing the significance of these weights (Chin, 1998a; Vinzi et al., 2010) . The following is the *outer* model fit test.

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Table 1. Table of Outer Model Values After Modification

Variable	Indicator Code	Factor Loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Independent Learning Skills	KB1	0.846	0.955	0.957	0.961	0.713
	KB10	0.857				
	KB2	0.857				
	KB3	0.847				
	KB4	0.833				
	KB5	0.863				
	KB6	0.826				
	KB7	0.835				
	KB8	0.838				
	KB9	0.842				
Learning Management	MB1	0.823	0.841	0.981	0.868	0.528
	MB10	0.669				
	MB12	0.584				
	MB2	0.634				
	MB3	0.878				
	MB4	0.727				
Proctoscopy	PRK1	0.832	0.949	0.950	0.956	0.685
	PRK10	0.817				
	PRK2	0.789				
	PRK3	0.854				
	PRK4	0.831				
	PRK5	0.844				
	PRK6	0.834				
	PRK7	0.832				
	PRK8	0.834				
	PRK9	0.808				

Table 4.5 shows the results of the outer model evaluation after modification of the variables of independent learning skills, learning management, and procrastination. After modification, the independent learning skills variable continued to show excellent measurement quality. All indicators had high factor loadings, ranging from 0.826 to 0.863, with a Cronbach's alpha of 0.955 and a Composite Reliability (rho_c) of 0.961, both of which were above the minimum desired values. The Average Variance Extracted (AVE) value of 0.713 indicates that more than

71% of the indicator variance is explained by this construct, which indicates excellent convergent validity.

In the learning management variable, modifications were made by removing several indicators that previously had low factor loadings. After modification, the remaining indicators, such as MB1 (0.823) and MB3 (0.878), showed higher factor loadings. The composite reliability (rho_a) for this variable increased significantly to 0.981, indicating excellent internal consistency. Cronbach's alpha of 0.841 and AVE of 0.528 also indicate that learning management now meets the required reliability and validity standards, with AVE exceeding the threshold of 0.5. For the procrastination variable, the modification results show excellent measurement quality. The factor loading values for each indicator range from 0.789 to 0.854, with a Cronbach's alpha of 0.949 and a Composite Reliability (rho_c) of 0.956, indicating high internal consistency. The AVE value of 0.685 also indicates good convergent validity, meaning that the procrastination construct is able to explain more than 68% of the variance in its indicators.

Overall, the results after modification show significant improvement in the learning management variables, with all variables now meeting the necessary reliability and validity testing criteria. Thus, this model is now ready to proceed to the structural analysis stage to test the relationships between variables in this study.

Table 2. Heterotrait-monotrait ratio (HTMT)

	Self-Directed Learning Skills	Learning Management	Proctosis
Independent Learning Skills			
Learning Management	0.149		
Proctosis	0.406	0.096	

Table 4.6 shows the results of the Heterotrait-Monotrait Ratio (HTMT) test to measure the discriminant validity between constructs in this research model. The HTMT value is used to ensure that each construct measured in this study is different and does not overlap. Based on the results shown, Independent Learning Skills and Learning Management have an HTMT value of 0.149, which indicates that these two constructs have excellent discriminant validity, because the HTMT value is well below the generally accepted threshold of 0.90. The same applies to Independent Learning Skills and Procrastination, with an HTMT value of 0.406, which still shows a clear difference between the constructs, even though the relationship between these two variables is slightly stronger than that between independent learning skills

and learning management. Finally, the relationship between Learning Management and Procrastination has an HTMT value of 0.096, which is very low, indicating that these two constructs also have excellent discriminant validity. Overall, all the low HTMT values in this table indicate that the constructs tested in this research model have good discriminant validity, with each construct being clearly distinguishable without any multicollinearity issues.

Table 3. Fornell-Larcker criterion

	Self-Directed Learning Skills	Learning Management	Proctosis
Self-Directed Learning Skills	40.844		
Learning Management	0.138	0.576	
Procrastination	-0.391	-0.124	0.828

Table 4.7 shows the results of the Fornell-Larcker Criterion test, which is used to test discriminant validity in the PLS-SEM model. According to this criterion, discriminant validity is achieved if the root mean square error of approximation (RMSEA) for each construct is greater than the inter-construct correlation (Fornell & Larcker, 1981; Hair, Jr. et al., 2022) . In this table, the of Independent Learning Skills has an AVE value of 0.844, indicating that more than 84% of the variance in the indicators of this construct is explained by the construct itself, and the correlation values with other constructs, namely Learning Management (0.138) and Procrastination (-0.391), are lower than the AVE root, ensuring that this construct has good discriminant validity.

Learning Management, which has an AVE of 0.576, shows that this construct also has fairly good discriminant validity. The correlation values with Independent Learning Skills (0.138) and Procrastination (-0.124) are smaller than the AVE root, indicating no significant overlap between these constructs.

Procrastination has an AVE of 0.828, which indicates excellent discriminant validity, because the correlation values with Independent Learning Skills (-0.391) and Learning Management (-0.124) are smaller than the AVE root of the construct, which is around 0.909. Thus, the results of the Fornell-Larcker Criterion show that all constructs in this research model have good discriminant validity, because the AVE root values of each construct are greater than the correlation values between constructs, indicating no multicollinearity issues between the constructs tested.

The SRMR (Standardized Root Mean Square Residual) test results for both models, saturated and estimated, show the same value, namely 0.039. This low SRMR value indicates that the difference between the observed covariance matrix and that predicted by the model is quite

small, so that the model has a good fit according to Hair et al. ((2021)), who state that an SRMR value below 0.08 indicates a good model fit. Overall, these evaluation results indicate that the proposed model fits the observed data well, as the SRMR, d_ULS, d_G, Chi-square, and NFI values show encouraging results with no significant differences between the saturated model and the estimated model.

Table 4. R Square and Q Square Table

	R-square	Q-Square
Proctosinasi	0.156	0.141

Table 4.10 shows an R-Square value of 0.156 according to Chin, (1998b) . This category is moderate, meaning that this model can only explain about 15.6% of the variation in procrastination, which means that most of the factors that influence learning delays are not covered in this model. This indicates that the relationship between learning management and independent learning skills with learning procrastination is still relatively weak, so many other factors need to be considered to explain learning procrastination behavior more comprehensively. The Q-Square value of 0.141 indicates that this model has low predictive relevance, meaning that this model is less effective in predicting procrastination based on the available data. Based on these two indicators, it can be concluded that the model used in this study has low category accuracy and needs improvement. To improve prediction accuracy, it may be necessary to consider additional variables or refine the existing model.

The results of the path coefficient test show the strength and direction of the relationship between latent variables (constructs) in the structural model. The following are the results of the path coefficient test of the influence of learning management and independent learning skills on procrastination among students at the Open University of Makassar.

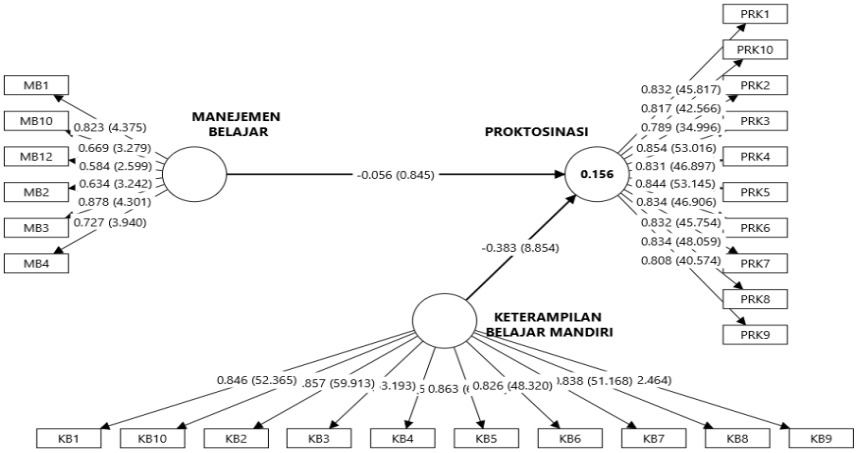

Figure 4.3 Structural model measurement with Bootstrapping (inner model)

Table 5. Path coefficient

Variable	Original sample	T statistics	Confidence intervals		P values	Sig.	F Square
			5	95			
H1. Independent Learning Skills -> Proctosis	-0.383	8.854	-0.467	-0.294	0.000	Significant	0.170
H2. Learning Management -> Proctosis	-0.056	0.845	-0.175	0.143	0.398	Not Significant	0.004

The hypothesis test of independent learning skills on procrastination shows a significant negative relationship with an original sample value of -0.383, indicating that the higher the independent learning skills, the lower the level of procrastination. This relationship is supported by high T-statistics, namely 8.854, which is much greater than the critical value of 1.96, as well as a very small P-value (0.000). The effect size F square is 0.170 according to Hair Jr. et al.,(2017) . Using the effect size scale (0.02 low, 0.15 moderate, 0.35 high), the value of 0.170 is in the moderate category. If independent learning skills are improved at a 95% confidence level, it will reduce procrastination by -0.294. If learning skills are not given attention, it will reduce procrastination by -0.467 at a 5% confidence interval.

The hypothesis test of learning management on procrastination found a very weak relationship, with an original sample value of -0.056, indicating a negative but insignificant effect. The t-statistic of only 0.845 and the p-value of 0.398 (greater than 0.05) indicate that this relationship is not statistically significant. The effect size F square is 0.004 according to Hair Jr. et al(2017) . Using the effect size scale (0.02 low, 0.15 moderate, 0.35 high), the value of 0.170 is in the low category. If learning management is improved at a 95% confidence interval, it will have an effect of reducing procrastination by 0.143. Furthermore, if learning management is not carried out by students, it will reduce the procrastination value at a 5% confidence interval by -0.175. With these results, it can be concluded that learning management does not have a significant effect on procrastination. The relationship found is very weak. Therefore, the variable of learning management ( ) cannot be used as a strong predictor for reducing procrastination in this model.

3 DISCUSSION

Improving independent learning skills can have a significant effect on reducing procrastination among individuals. Several studies show that individuals who develop independent learning skills tend to have better time management and take more responsibility for their learning, which can contribute to reducing procrastination. This is related to findings that show a correlation between self-directed learning skills and positive academic outcomes (Han et al., 2022; Santos & Henriques, 2024) . With improved learning skills, individuals become more organized and motivated to actively engage in the learning process, thereby reducing the desire to procrastinate.

Self-directed learning skills in higher education are an important concept that can prevent procrastination among students. Procrastination, or delaying the completion of tasks, is often caused by a lack of motivation, time management skills, and proper self-regulation. By applying self-directed learning skills, students can improve their ability to organize, implement, and evaluate their learning process, thereby effectively minimizing the tendency to delay work.

Self-Directed Learning Skills play a crucial role in combating procrastination among students. Procrastination, or delaying tasks, is often a challenge faced by students, especially as they adapt to an increasingly complex and digital learning environment. Self-directed learning skills help create an environment that supports understanding, time management, and intrinsic motivation, all of which are essential for overcoming procrastination.

Students' ability to self-evaluate their self-directed learning skills is a competency that must be developed. Students equipped with the ability to evaluate their own learning progress tend to be more proactive in overcoming obstacles that lead to procrastination (Al-Dawood, 2022) . A regular reflection process helps them recognize ineffective behavior patterns and adjust their learning strategies to improve efficiency and learning outcomes.

This study confirms the importance of developing independent learning skills in an academic context, which has a significant impact on reducing procrastination. Efforts to improve these skills should be prioritized in modern learning strategies, using various tools and approaches to engage students and encourage active interaction in their learning process. Independent learning skills include time management, stress management, and effective learning strategies. Research shows that students with good learning skills can manage their academic activities more efficiently, which directly affects their study outcomes (Li et al., 2023; Loi et al., 2024). Additionally, the ability to apply different learning strategies according to the situation is

crucial, especially in the context of online learning, which requires quick and effective adaptation (Nia et al., 2023) .

Good learning skills also include the ability to collaborate and communicate in a digital learning environment. Students need to learn how to work in groups, both physically and virtually, and these skills have proven to be one of the determining factors for success in completing academic tasks effectively . The development of learning skills is not only important for academic fulfillment, but also for preparing students to face the demands of the future world of work (Furqon et al., 2023) . (Furqon et al., 2023).

Educational strategies that emphasize holistic learning skills development will have a significant impact on students in achieving their academic goals and preparing them for challenges outside the academic environment. The creation of a supportive learning environment, both inside and outside the classroom, is essential to encourage this development (Fadhli et al., 2023).

The development of independent learning skills in higher education is a strategic step in preventing procrastination. By utilizing technology, a supportive learning environment, and active learning strategies, students can not only improve their learning effectiveness but also ensure that they do not get caught in the cycle of procrastination.

4 CONCLUSION

Self-directed learning skills have a negative effect on procrastination with a moderate influence effect, meaning that the higher the students' self-directed learning skills, the lower their level of procrastination. Thus, self-directed learning skills are a predictor in reducing students' procrastination behavior. Learning management has no significant effect on procrastination with a low influence effect, thus learning management is not a predictor in reducing procrastination behavior.

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