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# Self-Regulated Learning, Satisfaction, and Educational Performance: A Study of Undergraduate Accounting Students

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## Abstract

This research aims to prove two associations. The first is between self-regulated learning (SLR) and student satisfaction. The second is between SLR and educational performance. Indeed, undergraduate accounting students are utilized as a population, and samples are determined using snowball sampling. Furthermore, this research utilizes the covariance-based structural equation model designed for examining hypotheses; therefore, it needs at least 200 students. Then, this research can collect 212 students from numerous higher education institutions in Indonesia as samples. After examining the data, this research demonstrates a positive influence of SLR on student satisfaction and educational performance. At the end of this paper, the practical and academic suggestions exist.

**Keywords:** Educational Performance, Satisfaction, Self-Regulated Learning, Undergraduate Accounting Students

## 1. Introduction

The COVID-19 pandemic has become a substantial challenge for the global higher education community, forcing them to pivot to online teaching and learning. As a result, the related institutions try to achieve this virtual learning excellently (Kim & Kim, 2021). Compared with onsite learning, online education is effective, especially in time and place (Waschull, 2001). In Indonesia, these activities are carried out through Zoom meetings, Google Classroom, Edmodo, and Microsoft Teams (Nuriansyah, 2020), supported by a learning management system (Wulandari et al., 2023).

Students are customers for higher education (Calma & Dickson-Deane, 2020). Therefore, the campus must satisfy or delight them with its learning experience (Shahsavari & Sudzina, 2017). This circumstance will happen if it can perform at least similar to or more substantial than the student's expectations, respectively (Kotler & Armstrong, 2021). Furthermore, to attain this ideal situation, the campus should apply self-regulated learning (Lysitsa & Mavroeidis, 2024; Yoo & Jung, 2022).

The students must have excellent educational attainment, reflected by a grade point average. This point average describes the assessment of the lecturer after the students take courses during their study (Kumar et al., 2021), reflecting their expertise level in academic work (Fariza et al., 2020). Also, it is essential for students seeking jobs

because the company consistently sets the standard for accepting applicants (Hendikawati, 2011). Furthermore, several researchers suggest that the campus employs self-regulated learning to create a trustworthy educational performance (Barnard et al., 2008; Madihie & Mos, 2018; Nadhif & Rohmatika, 2020; Sutarni et al., 2021).

Based on two circumstances, this research intends to prove the influence of self-regulated learning on student satisfaction and educational performance. Methodologically, this research uses the structural equation model (SEM) based on covariance as Barnard et al. (2008) and Sutarni et al. (2021) perform, differing from Madihie and Mos (2018) employing correlation analysis, Dinh and Phuong (2024) utilizing variance-based SEM as well as Nadhif and Rohmatika (2020) and Yoo and Jung (2022) using multiple regression, and Lysitsa and Mavroeidis (2024) applying logistic regression.

## 2. Literature Review and Hypothesis Development

### 2.1. Self-regulated learning and student satisfaction

Students with respectable self-regulated learning can freely manage themselves to learn and arrange how to attain their learning goals by organizing their time (Fauziyah et al., 2024). As confirmed by Yoo and Jung (2022) and Lysitsa and Mavroeidis (2024), this situation will motivate them to be satisfied with learning. After splitting self-regulated learning (SLR) into its four dimensions, Dinh and Puong (2024) found a non-ideal relationship with a negative impact of environmental structuring (ES) on student satisfaction. Ideally, the positive effect of help-seeking (HS), strategic planning (SP), and time management (TM) on this satisfaction occurs. By mentioning these elucidations, hypothesis one is shaped like this.

H<sub>1</sub>: The association between self-regulated learning and student satisfaction is positive.

### 2.2. Self-regulated learning and educational performance

In the online system, self-regulated learning (SLR) is the essential skill that enables students to adjust their behavior to achieve better academic results (Lim et al., 2020), reinforced by persistence, focus, discipline, and responsibility (Oyelere et al., 2021). After splitting SLR into its four dimensions, Dinh and Puong (2024) find a non-ideal relationship with a negative sign between educational performance and environmental structuring (ES) and strategic planning (SP). Preferably, help-seeking (HS) and time management (TM) influence this performance positively. Furthermore, Barnard et al. (2008), Madihie and Mos (2018), Nadhif and Rohmatika (2020), and Sutarni et al. (2021) prove a positive relationship between SLR and academic attainments without splitting the dimensions. By mentioning these elucidations, hypothesis two is shaped like this.

H<sub>2</sub>: The association between self-regulated learning and educational performance is positive.

### 2.3. Research model

Following Barnard et al. (2008), this research model is based on the covariance-based structural equation. Therefore, the oval and rectangle demonstrate latent and manifest variables, respectively, as Ghozali (2017) informs. In this study context, the model is in Figure 1.

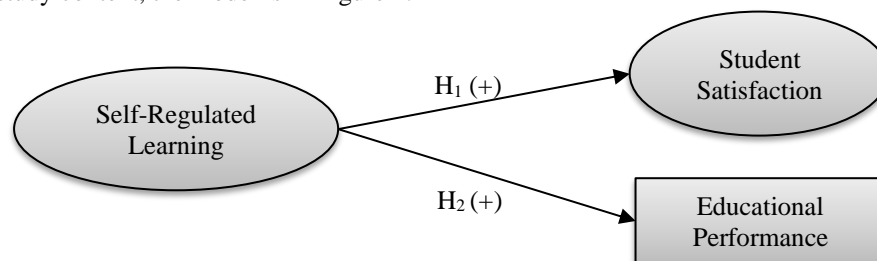


Figure 1. The research model

Sources: Literature Review in Sections 2.1 and 2.2

### 3. Research Methods

#### 3.1. Research Variables

This study uses student satisfaction (SAT) as the first endogenous determinant, based on six items of Gray and DiLoreto (2016): I had a good experience when taking this course (SAT1), learning through the provided platform (SAT2), studying the course contents (SAT3), interacting with online classmates (SAT4) and my instructors (SAT5), and I recommend this online course to other students (SAT6). Besides, the grade point average (GPA) quantifies educational achievement by referring to Barnard et al. (2008) and Madihie and Mos (2018), where this achievement becomes the second endogenous determinant. As the exogenous variable, this study uses self-regulated learning (SRL) by adopting its dimensions and their items from Barnard et al. (2008), followed by Martinez-Lopez et al. (2017). Moreover, the dimensions intended are goal setting (GS), environmental structure (ES), task strategies (TS), time management (TM), help-seeking (HS), and self-evaluation (SE) (see Table 1).

Table 1: The dimensions of self-regulated learning and their items

Dimension	Items
Goal setting (GS)	I establish a standard for attaining my online assignment courses (GS1).
	I establish short-term goals (day-by-day and every week) and long-term goals (every month and bi-annually) (GS2).
	I have a high standard to be achieved for my online courses (GS3).
	I have a standard to manage learning time (GS4).
	I never compromise for not achieving the best online course results (GS5).
Environment structuring (ES)	I choose the distraction-free place to study (ES1).
	I find a relaxing place to study (ES2)
	I can find the place to learn efficiently (ES3)
	I can select time without disturbance to study online (ES4).
Task strategies (TS)	I attempt to make notes during online learning (TS1).
	I read learning substances vociferously to overcome distraction (TS2).
	Before joining the meeting device, I prepare my questions (TS3).
	I do the additional cases to master substances (TS4).
Time management (TM)	I allocate the additional time to study (TM1).
	I schedule the same time every day or every week to study for my online courses (TM2).
	Despite not attending class daily, I still try to allocate my study time (TM3).
Help-seeking (HS)	I can obtain my knowledgeable classmates to discuss the learning substances (HS1).
	I can share material-contend problems with my classmates to solve them (HS2).
	If required, I can meet my classmates onsite (HS03)
	My instructors always assist me through e-mail (HS04)
Self-evaluation (SEV)	I can recapitulate online materials to check my comprehension (SE1)
	I can ask myself my numerous critical questions (SE2)
	Communicating with my classmates lets me know my class performance (SE3).
	Communicating with my classmates lets me know how different I deeply understand substance from them (SE4).

Source: Barnard et al. (2008) and Martinez-Lopez et al. (2017)

This sample comprises undergraduate accounting students in Indonesia, and the snowball sampling technique takes them. According to Augustine and Kristaung (2019), this technique involves multiple effects from the first contacted person to the second person, and this process stops until the required number of samples is obtainable. Because of checking the theory using a covariance-based structural equation model (CBSEM), the samples must be at least 200 respondents, as recommended by Ghozali (2021b), and the model is in equations one and two:

$$\text{SAT} = \beta_1 \text{SLR} + \xi_1 \text{ (Equation 1)}$$

$$\text{EP} = \beta_2 \text{SLR} + \varepsilon_1 \text{ (Equation 2)}$$

Notes: SAT = student satisfaction, EP = educational performance. SLR = self-regulated learning, and  $\xi_1$  and  $\varepsilon_1$  as the errors from SAT and EP as the latent and manifest variables, respectively.

Furthermore, this study utilizes the six-point Likert scale to measure the indicators of SLR and SAT. According to Nemoto and Belgar (2014), the six points aim to prevent the respondents from choosing the neutral option, i.e., three, when the five points are utilized. By removing this option, they tend to select the positive or negative responses; therefore, their responses are more informative to be analyzed.

The CBSEM needs some requirements. The first is validity testing by contrasting the loading factor and average variance extracted (AVE) with 0.5. The validity is attainable if these values exceed 0.5 (Ghozali, 2017). The second is reliability testing, which compares composite reliability (CR) and Cronbach Alpha with 0.7. reliability testing is attainable if CR exceeds 0.7 (Ghozali, 2017) and CA is higher than 0.7 (Ghozali, 2021a). The third is the goodness of fitness recognition based on CMIN/DF (chi-square divided by degree of freedom), root mean square error approximation (RMSEA), PGFI, PNFI, and PCFI (parsimonious goodness of fit index, norm fit index, comparative fit index) with the guidance in Table 2.

Table 2: Guidance values for goodness of fit quantification

Quantification	Guidance value	Source
CMIN/DF	Fit if it is from 2 to 5.	Ghozali (2017)
RMSEA	Fit if it is between 0.05 and 0.08.	Ghozali (2017)
PGFI	Fit if it is above 0.5	Dash and Paul (2021)
PNFI	Fit if it is above 0.5	
PCFI	Fit if it is above 0.5	

Finally, the hypothesis is tested by contrasting the one-tailed probability of the coefficient with a 5% significance level. The hypothesis is tolerable if this value is under this level (Hadianto et al., 2023).

#### 4. Results

The survey associated with this research occurred in May 2023 and collected 212 undergraduate accounting students from various higher educational institutions (HEI) in Indonesia. Furthermore, these students are grouped based on gender, age, grade point average, and the origin of the HEI, as Table 3 demonstrates. Most students participating in this survey are female (77.51%) and between 20 and 23 years old (60.85%). Importantly, they have a grade point average between 3 and 4 (93.40%) and are from Maranatha Christian University (53.50%).

Table 3: Undergraduate Student Feature

Feature	Depiction	Total	Portion
Gender	Man	71	33.49%
	Woman	141	66.51%
Age	Between 20 and 23	19	60.85%
	Below 20	70	33.02%
	Above 23	13	6.13%
Grade point average	Below 2	1	0.47%
	Between 2 and 2.99	13	6.13%
	Between 3 and 4.00	198	93.40%
The name of a higher educational institution	BINUS University	2	0.94%
	Kalimantan Technological Institute	1	0.47%
	Pelita Indonesia	1	0.47%
	Singapore Institute of Management	1	0.47%
	STMIK LIKMI	3	1.42%
	Salatiga State Islamic University	2	0.94%
	Airlangga University	1	0.47%
	Atma Jaya University, Yogyakarta	1	0.47%
	Bhayangkara University	7	3.30%
Brawijaya University	3	1.42%	

Table 3: Undergraduate Student Feature

Feature	Depiction	Total	Portion
	Diponegoro University	5	2.36%
	The University of Indonesian Informatics and Business	28	13.21%
	Bekasi Islamic University 45	1	0.47%
	State Islamic University of Sunan Ampel Surabaya	1	0.47%
	Parahyangan Catholic University	8	3.77%
	Duta Wacana Christian University	1	0.47%
	Krida Wacana Christian University	4	1.89%
	Maranatha Christian University	113	53.30%
	Langlangbuana University	2	0.94%
	The University of Mathla'ul Anwar Banten	4	1.89%
	The University of Muhammadiyah Surakarta	3	1.42%
	Pelita Harapan University	1	0.47%
	Pembangunan Jaya University	3	1.41%
	Indonesian Educational University	2	0.94%
	Prof. Dr. Moestopo University (Religion)	2	0.94%
	Sangga Buana University	4	1.89%
	The North Sumatera University	2	0.94%
	Tarumanagara University	1	0.47%
	Indonesian Open University	2	0.94%
	Widyatama University	1	0.47%
	Wiraraja University of Madura	1	0.47%
	The National Development University of Veteran Yogyakarta	1	0.47%

Table 4 presents the validity testing result of self-regulated learning measurement shown by the loading factors after the invalid item of SEV4 with a loading factor of 0.443 is no longer employed. The loading factor of GS1, GS2, GS3, GS4, GGS5, ES1, ES2, ES3, ES4, TS1, TS2, TS3, TS4, TM1, TM2, TM3, HS1, HS2, HS3, SEV1, SEV2, SEV3, and SEV4 is upper than 0.5: 0.669, 0.669, 0.838, 0.738, 0.700, 0.650, 0.751, 0.811, 0.683, 0.631, 0.650, 0.793, 0.806, 0.680, 0.765, 0.692, 0.793, 0.771, 0.693, 0.738, 0.714, 0.684, and 0.747. Hence, the accurate responses exist, affirmed by AVE for GS, ES, TS, TM, HS, and SEV exceeding 0.5: 0.526, 0.528, 0.525, 0.509, 0.562, and 0.520. Besides, these accurate responses are reliable because the composite reliability is more significant than 0.7 for GS, ES, TS, TM, HS, and SEV: 0.847, 0.816, 0.814, 0.756, 0.797, and 0.812, and Cronbach Alpha with similar condition: 0.842, 0.814, 0.758, 0.754, 0.758, and 0.766. Additionally, each valid dimension of self-regulated learning exists, as demonstrated by the loading factor of GS, ES, TS, TM, HS, and SEV higher than 0.5: 0.811, 0.624, 0.837, 0.946, 0.670, and 0.929, verified by AVE upper than 0.5: 0.659. Additionally, all dimensions are reliable, mirrored by composite reliability and Cronbach Alpha above 0.7: 0.919 and 0.960, respectively.

Table 4: Loading factor, AVE, composite reliability, and Cronbach Alpha related to self-regulated learning measurement

Note	The relationship	Loading factor	AVE	Composite Reliability	Cronbach Alpha
Dimension → Indicator	GS → GS1	0.669	0.526	0.847	0.842
	GS → GS2	0.669			
	GS → GS3	0.838			
	GS → GS4	0.738			
	GS → GS5	0.700			
Dimension --> Indicator	ES → ES1	0.650	0.528	0.816	0.814
	ES → ES2	0.751			
	ES → ES3	0.811			
	ES → ES4	0.683			
Dimension --> Indicator	TS → TS1	0.631	0.525	0.814	0.758
	TS → TS2	0.650			
	TS → TS3	0.793			
	TS → TS4	0.806			
Dimension --> Indicator	TM → TM1	0.680	0.509	0.756	0.754

Table 4: Loading factor, AVE, composite reliability, and Cronbach Alpha related to self-regulated learning measurement

Note	The relationship	Loading factor	AVE	Composite Reliability	Cronbach Alpha
Dimension --> Indicator	TM → TM2	0.765	0.562	0.797	0.758
	TM → TM3	0.692			
	HS → HS1	0.793			
	HS → HS2	0.771			
Dimension --> Indicator	HS → HS3	0.693	0.520	0.812	0.766
	SEV → SEV1	0.738			
	SEV → SEV2	0.714			
	SEV → SEV3	0.684			
Construct --> Dimension	SEV → SEV4	0.747	0.659	0.919	0.960
	SLR → GS	0.811			
	SLR → ES	0.624			
	SLR → TS	0.837			
	SLR → TM	0.946			
	SLR → HS	0.670			
	SLR → SEV	0.929			

Table 5 depicts the validity testing result of student satisfaction (SAT), exhibited by the loading factor of SAT1, SAT2, SAT3, SAT4, SAT5, and SAT6, more substantial than 0.5: 0.888, 0.912, 0.922, 0.828, 0.831, and 0.835, confirmed by AVE above 0.5: 0.757. Based on this evidence, precise responses occur. These reliable responses also happen since composite reliability and Cronbach Alpha are more substantial than 0.7: 0.949.

Table 5: Loading factor, AVE, composite reliability, and Cronbach Alpha related to student satisfaction measurement

Indicator	Loading factor	AVE	Composite Reliability	Cronbach Alpha
SAT1	0.888	0.757	0.949	0.949
SAT2	0.912			
SAT3	0.922			
SAT4	0.828			
SAT5	0.831			
SAT6	0.835			

Table 6 exhibits the goodness-of-fit model quantification results. For CMIN/DF and RMSEA, they are 2.247 and 0.077, still in the required range from two to five and from 0.05 to .080, respectively. Thus, the model fits the data, as confirmed by PGFI, PNFI, and PCFI, more substantial than 0.50: 0.669, 0.725, and 0.797.

Table 6: The result of the goodness of fit quantification

Quantification	Value	Guidance value	Meaning
CMIN/DF	2.247	Fit if it is from 2 to 5 (Ghozali, 2017).	The model fits the data because the related quantifications are acceptable.
RMSEA	0.077	Fit if it is between 0.05 and 0.08 (Ghozali, 2017).	
PGFI	0.669	Fit if it is above 0.5 (Dash & Paul, 2021).	
PNFI	0.725		
PCFI	0.797		

Table 7 demonstrates the estimation result of CBSEM, covering the one-tailed probability of critical ratio for the positive coefficient of SRL → SAT and SLR → EP of 0.000 and 0.000, one-to-one. The first and second hypotheses are satisfactory because these values are underneath a 5% significance level.

Table 7: The estimated result of CBSEM

Hypothesis	Relationship	Coefficient	Standard Error	Critical Ratio	Probability (1-tailed)
One	SLR → SAT	1.014	0.137	7.405	0.000
Two	SLR → EP	0.482	0.054	9.002	0.000

#### 4. Discussion

This research accepts the first hypothesis, stating the positive relationship between self-regulated learning (SLR) and student satisfaction. This tendency happens because the students can set the goal, strategy, and learning time based on their needs. Also, they can develop metacognitive skills to arrange and evaluate themselves to grow the confidence to face obstacles. These situations will exist if the higher education institution is equipped with technology and access to information. With this positive propensity, this study confirms Yoo and Jung (2022) after investigating 94 students taking nursing education programs in Seoul and Gyeonggi (South Korea) and Lysitsa and Mavroeidis (2024) after studying 122 graduate students attending three different distance learning in Hellenic Open University (Greece).

This research recognizes the second hypothesis, which declares the positive association between self-regulated learning and student satisfaction. Students with high perceived autonomy support are likely to engage more in online and virtual classroom activities, experience autonomous types of motivation, have better control over learning, and improve their academic performance. Therefore, this positive tendency aligns with Barnard et al. (2008) after investigating 204 students enrolled in 24 academic degree programs in the United States and Madihie and Mos (2018) once inspecting 80 students in the Faculty of Cognitive Science and Human Development in Malaysia. Finally, this positive fact confirms that Nadhif and Rohmatika (2020) and Sutarni et al. (2021) from Indonesia, after studying 22 first-grade students at Madrasah Aliyah Al-Islam in Ponorogo learning about English subject and 137 public higher education students in Bandung when taking a course of Introduction to Management, separately.

#### 5. Conclusion

Time higher education students deserve virtuous service for learning services from the campus. One of them is self-regulated learning (SRL). Therefore, this study, conducted with 212 undergraduate accounting students, appears to verify its relationship with satisfaction and academic performance. After processing their response statistically, this study finds that SRL effectively increases satisfaction and academic performance if managed better to serve students. Regarding satisfaction, the accounting department should regularly conduct a learning survey of students to detect their level by applying closed-question items and recognizing their learning expectations through open questions. Concerning self-regulated learning, the accounting department should arrange the curriculum to stimulate this learning by allowing students to explore the substance of courses, solve cases, and finish independent projects on time based on their creativity. Furthermore, the accounting department must conduct academic counseling and hold workshops on time management and effective learning strategies through its lecturers and the invited competent speakers to support it.

Despite numerous responses and two meaningful relationships, this study still has restrictions. Firstly, only one determinant of student satisfaction and educational performance is used, i.e., self-regulated learning. Secondly, the simple model is applicable. Therefore, the succeeding scholars may utilize other determinants of student satisfaction and educational performance, such as internet self-efficacy, student-tutor interaction, and digital learning environment, to handle the first restriction. They should also apply student satisfaction to mediate the influence of self-regulated learning, internet self-efficacy, student-tutor interaction, and digital learning environment on educational performance to overcome the second restriction.

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