Academic Interest Determines the Academic Performance of Undergraduate Accounting Students: Multinomial Logit Evidence

Agoestina Mappadang[1], Khusaini Khusaini[2], Melan Sinaga[3], Elizabeth Elizabeth[4]
[1]Fakultas Ekonomi dan Bisnis, Universitas Budi Luhur, Jakarta, Indonesia
[2]Faculty of Teacher Training and Education, Syekh-Yusuf Islamic University, Indonesia
[3]Fakultas Ekonomi dan Bisnis, Universitas Budi Luhur, Jakarta, Indonesia
[4]Fakultas Ekonomi dan Bisnis, Universitas Budi Luhur, Jakarta, Indonesia

Email correspondence: agustina.mappadang@budiluhur.ac.id

Abstract

Academic performance is important for students as a result of educational experience in colleges to represent knowledge, skills, and attitudes. Academic performance becomes one of the key factors in determining students' success in their future careers. This research aimed to assess student's academic interest, learning attitude, and learning quality as well as control variables for the academic performance improvement of undergraduate students in Indonesia. This research employed a cross-section survey design to 872 samples gained by disproportionate random sampling. The research instruments were tested for their validity and reliability. The multinomial logit regression model was employed to analyze academic performance. The results of the research showed that academic interest was proved to determine significantly the academic performance. However, the learning attitude and learning quality did not contribute to the student's academic performance. High academic interest students possessed a bigger chance to have better academic performance. Meanwhile, learning attitude and learning quality indicated otherwise, decrease the students' academic performance. The results of this study contributed to the universities' management to manage innovative and learning activities to promote accounting students' academic interest in continuing better learning. The universities' leaders should fulfill the infrastructure and learning facilities needed by lecturers to maintain learning quality.

Keywords: *academic interest, academic performance, learning attitude, learning quality*

Public Interest Statement

The issue of performance is not only used and related to the performance of companies, government agencies, and social institutions but is also related to individual performance. One of the individual performances that previous researchers have widely studied is students' academic and non-academic performance. Academic achievement in Accounting reflects the results obtained by Accounting students during their accounting studies and career choices after completing their studies. Good student achievement is the result of good university education inputs and processes. Students are taught accounting concepts and principles to develop strong analytical, language, business, and information technology skills. This study focuses on the determinants of academic performance of undergraduate accounting students.

Introduction

Academic performance is considered an important achievement for students during the educational process in the university. The achievement of the performance affects the students' current and future life (Kell et al., 2013), as well as portraying students' inherent productivity and ability (Hanushek, 2020; Sothan, 2019). Students are taught accounting concepts and principles to be capable of improving a strong analytic skill, language skill, business,

information and communication technology, competence, and higher education's value (Lemos et al., 2011; Papageorgiou, 2017; Papageorgiou & Callaghan, 2020). However, other researchers confirmed that students' academic achievement is a "net outcome" from both cognitive and non-cognitive attributes (Khine, 2016; J. Lee & Shute, 2010).

Previous studies related to determining factors for the academic performance of accounting students (Ahinful et al., 2019; Arthur & Everaert, 2012; Duff & Mladenovic, 2015; Everaert et al., 2017) are inconclusive (Fallan & Opstad, 2014; Maksy & Zheng, 2008). Students' performance is determined by the willingness to change, adaptability, complex decision making, learning from mistakes, the change of controlled belief and choices (Feldman et al., 2016). Meanwhile, other researchers claimed that there are factors correlated to students' academic performance such as locus of control, learning method, learning resources (Litasari & Pustikaningsih, 2019), expectation, volition, academic interest, learning attitude, learning approach (Ahinful et al., 2019; Byrne & Flood, 2005; Everaert et al., 2017; Maksy & Zheng, 2008; Pérez-López & Ibarrondo-Dávila, 2020), gender, interest, working status (Garkaz et al., 2011), personality, parents' style, (Beatson et al., 2019; Fallan & Opstad, 2014; Nouri & Domingo, 2019; Papageorgiou & Callaghan, 2018), grade (Jansen & de Villiers, 2016), as well as attendance and teaching quality (Paisey & Paisey, 2004; Pérez-López & Ibarrondo-Dávila, 2020). However, there is inconsistency in these findings; therefore it is needed to carry out analysis to these factors in-depth. This research examined learning attitude, academic interest, and learning quality as the main determining factors of academic performance, and additional control variables.

The students' academic interest, for each course, is correlated with academic outcomes. Previous studies confirmed that the academic interest is correlated with academic performance (Ahinful et al., 2019; Fallan & Opstad, 2014; Garkaz et al., 2011), thus, students with a higher level of academic interest tend to possess higher academic performance (Pérez-López & Ibarrondo-Dávila, 2020). These previous researches showed a correlation between intrinsic interest and students' academic performance in different academic surroundings (J. Q. Lee et al., 2010). In this regard, interest was the variable that affects the students' academic achievement (Blankenburg et al., 2016), furthermore, it becomes a determining factor in choosing accounting major (Tan & Laswad, 2006). In contrast to the finding, other researchers found that academic interest is not correlated to academic performance (Köller et al., 2001; Meyer et al., 2019).

Students' learning attitude is formed by a complex process (Reinig et al., 2014), such as learning effort, classroom attendance, success eagerness, professional skill, and learning habit (Ahinful et al., 2019; Reinig et al., 2014) affect significantly the academic performance (Ahinful et al., 2019). Previous researchers have found that a good learning attitude influences significantly the improvement of academic achievement (Guney, 2009; Nonis & Hudson, 2010). Students with a good learning attitude can organize and access series of good course materials, effective time management, bearing better performance, better material understanding, enhancing skills, as well as having higher confidence in their academic results (Nonis & Hudson, 2010; Şen, 2013). Meanwhile, some studies found an insignificance correlation between students' attendance and effort toward performance in accounting management major (Fallan & Opstad, 2014).

The author recognized that a good learning quality is created in a continuous process due to enhance the knowledge, understanding, and accounting practices. By the increase of knowledge, understanding, attitude, and students' competencies, can accelerate academic performance. The measurement of the learning quality has been conducted by previous researchers (Li et al., 2020; Longobardi et al., 2018; Praetorius et al., 2018; Warwas & Helm, 2018). A significant correlation between learning outcome and learning result was found. In contrast with the finding investigated by (Glewwe et al., 2011). The learning quality

involvement as a research variable would furnish previous findings and relate to the students' performance accomplishment.

The research findings, in the change of academic performance, about the correlation between academic interest and learning attitude are inconsistent and inconclusive. The analysis of learning quality variables in the series of measurements was rarely conducted by previous researchers in Indonesia. Meanwhile, the author inferred that learning quality is important (Booth et al., 1999; Parsons et al., 2020). The appropriate method, good learning environment, and students' active involvement create good learning quality through lecturer support (Baumert et al., 2010; Longobardi et al., 2018; Praetorius et al., 2018; Warwas & Helm, 2018), thus, it is expected to affect students' academic result. The previous researchers employed model Knowledge, Attitude and Behaviour/KAB (Al-Sheeb et al., 2019) to predict academic performance, while, this research employs the model of academic interest, learning attitude (Ahinful et al., 2019), and Quality of learning/ALQ (Longobardi et al., 2018). In addition, many previous researchers analyzed the determinants of academic performance using a deterministic model and few built a probability model, especially in private universities in Indonesia. We proposed a multinomial logit analysis model to test the determining academic performance is needed as well. This study contributes to providing additional literature on academic performance models; as well as strengthening the consistency of research findings and variant analysis especially in Indonesia.

Literature Review and Hypothesis Development

Theoretical interest can be used to explain the effect of students' academic interest on academic performance (Longobardi et al., 2018). Interest is an individual mental schema related to the interesting activity or object based on positive emotional experience and individual value system (Köller et al., 2001). Other beliefs claimed that individual and situational interest will increase perseverance in completing the task, paying attention, brainstorming, and optimizing effort (Hidi & Renninger, 2006). Therefore, it encourages the improvement of academic success.

To explain the effect of learning attitude toward academic performance, this study embraces the "theory of reasoned action" (Ajzen & Fishbein, 1980). The theory explains that one's attitude is determined by their willingness to pose the attitude. The behavioral willingness is resolved by attitude and subjective norm (Ahinful et al., 2019). Attitude, subjective norm, and control perceived by the individual affect certain performance achievements (Ajzen, 2011). A positive attitude has been found to determine immediate attitude and will be continued to the performance (Hatane et al., 2020; Khoo & Foong, 2015).

The three basic dimensions of learning quality: classroom management, students support, and cognitive activity (Praetorius et al., 2018) adapted from (Klieme & Rakoczy, 2003) are basic theories in determining learning quality. Classroom management is a condition where students could get attention. The students' support is demanded to strengthen learning motivation. Cognitive activation is a condition where students are involved in knowledge construction and demonstrate students' involvement in high-order thinking (Praetorius et al., 2018). The learning quality concept as proposed by (Li et al., 2020) in *The Classroom Assessment Scoring System (CLASS)* is interpreted as teaching activity through an interaction framework placing three domains of vast interaction among educator and students that hypothesized as an important factor to improve students learning and social development such as affective support, classroom organization, and instructional support.

Another assumption stated that learning quality is educators' effort in creating interaction among students during the learning process to form a positive affective atmosphere, high academic interest, enthusiasm, effort, and eagerness in learning. Consequently, it promotes a positive change in students' cognitive, social, and attitude (Longobardi et al., 2018). Whilst,

(Daryanto, 2011) asserted that learning quality is a learning achievement level in the initial learning objectives including knowledge, skills, and students' attitude. For instance, is arts.

Concerning academic interest, Farruggia, Han, Watson, Moss, & Bottoms (2016) inferred that academic success requires a strong academic mindset. Students who possess high academic interests will expand continually their learning skills on accounting. This is important as the presence of negative perception is known to be an uninteresting course of accounting (Jackling, 2002; Kögler & Göllner, 2018), thus, affect academic performance. Academic interest is also strongly related to self-efficacy, therefore, affect significantly the learning outcomes and academic performance (Fallan & Opstad, 2014). A result of other empirical study found that there is significant correlation among academic interests (Ahinful et al., 2019; Garkaz et al., 2011; Morley, 2014; Pérez-López & Ibarrondo-Dávila, 2020; Reinig et al., 2014). Meantime, (W. Lee et al., 2014) found that there is an indirect relation between interest and achievement.

Opposed to the explained previous research findings, a study conducted by Köller et al. (2001) and Zhang & Wang (2020), related to the mathematics field, found that there is no significant correlation between students' interest and performance. This finding seems inconclusive. It can, however, be hypothesized as followed:

***H1**: There is a significant effect of academic interest toward academic performance of undergraduate accounting students*

The non-cognitive test has been proposed by previous researchers as an alternative standard test in a form of the Scholastic Attitude Test/SAT (Astin & Astin, 1992). The finding of (Al-Sheeb et al., 2019) showed that students' attitudes measured by motivation, commitment, self-efficacy, and consensus are proven to increase significantly the students' academic success. (Ahinful et al., 2019) agreed that students' learning attitude affected significantly the academic performance if it is based on the effect of attitude factors such as learning effort, classroom attendance, and learning pattern. Undergraduate students who enhance a better learning attitude by giving extra effort, attend the class regularly and adopt a good learning pattern (paying attention in the class and write the materials) enhance better learning skills (Guney, 2009; Nonis & Hudson, 2010).

A study, conducted by Fogarty, Reinstein, & Sasmaz (2021), investigated academic attitude (effort) and learning achievement among male and female students. It concluded that effort was not playing a significant role in the academic surrounding, therefore there was no significant difference. (Duff & Mladenovic, 2015) developed cluster analytic approach to examine antecedent and consequence from the learning approach of accounting students in Australia. The finding showed that students' imposition of accounting harms students' learning approach and their interests. Students tend to get difficulty in making learning decisions, consequently derive a negative impact on their performance. Meanwhile, the positive learning attitude supports students to understand the lesson, enhance thinking skill, as well as decrease anxiety which reduces achievement (Şen, 2013).

Students' learning effort and the pattern are reported to strongly affect their knowledge on the taken courses through achievement and structuring new information (Ahinful et al., 2019). It commonly achieved by setting goals, gaining new knowledge, and striving for outstanding performance, in turn, representing their accomplishment (Topală, 2014). (Pérez-López & Ibarrondo-Dávila, 2020) have found that students' positive perception of the courses is strongly and significantly proven to enhance the result of students' final test. On contrary, Fallan & Opstad (2014) found that there is no significant correlation between students' presence and effort toward their achievement. The findings were inconsistent as well. Furthermore, the author formulated the second hypothesis:

***H2**: There is a significant effect of learning attitude toward academic performance of undergraduate accounting students*

Previous literature related to effective learning represents learning quality. The quality of learning results depends on the quality of the institution members (Tahar & Sofyani, 2019). In other words, it can be interpreted that the quality of classroom organization depends on the quality of educators and students in the classroom. Educators need to create a positive classroom atmosphere around affective factors, to support students' engagement in the teaching and learning process, to show greater teaching interest, enthusiasm, and effort (Longobardi et al., 2018) so that the learning objective can be achieved. International evidence on educational performance illustrated positive progress, affected by educator individual capacity and collectivistic related to the school resource capacity to enhance learning quality (Stoll et al., 2006). The strong evidence about how participation and learning in the professional community impact the small classes' learning activity and different arrangement of the education in general correlated significantly to academic achievement (Lomos et al., 2011).

Another study showed a significant correlation between students' interest to join an accounting program and learning approach (McDowall et al., 2015). Meanwhile, learning personalization focussed on educators' teaching strongly proved to increase students' achievement disregarding the students; the level at the beginning (Pane et al., 2017). Subsequently, the educators' ability to manage learning strategy and some features of the learning environment (constructivism, transfer) correlated positively to the students' performance development (Kistner et al., 2010). Finally, learning quality measured with knowledge activation and classroom atmosphere assistance affects significantly the increase of students' competence in accounting programs (Helm, 2015) as well as the long-distance learning implementation effect significantly (Santiago et al., 2021). The approach of action research conducted by (Parsons et al., 2020) showed that the learning activity program, educators' quality, and appropriate method accelerate the accounting skill of the graduates. However, a previous study claimed the opposite finding, that time and learning at school, most of school and educators' characteristics, insignificantly effect on education (Glewwe et al., 2011).

One of the indicators of quality learning in the classroom is the implementation of time management. Findings of the previous studies showed that classroom time management and learning quality from the classroom management dimension does not correlate significantly toward the increase of students' competence in accounting program (Helm, 2015). Learning quality is proven insignificant in affecting the learning result of readings and maths (Stipek & Chiatovich, 2017). Also, long-distance learning is significant as well in affecting students' academic performance (Santiago et al., 2021). Despite advantageous for showing the important role of educators, these studies do not support the educators, affectivity prior to examining students' learning results, moreover, they do not provide information related to the educators' practices whether effective or ineffective. While the face-to-face learning approach decreased students learning performance (Daly & de Moira, 2010). Meanwhile, the higher education institutions have a concern to implement strategies for increasing the competence advancement of the graduates' employability. The graduates' employability and competence development in the world depend on strong innovation and collaboration practices implemented in the university (Abelha et al., 2020). However, there is a lack of studies related to the correlation between learning quality and students' performance of accounting programs; therefore the research references are limited. In addition, the author formulated the third hypothesis as followed:

***H3**: There is a significant impact of learning quality toward the academic performance of undergraduate accounting students*

Methods

This study focused on the registered and active students of the accounting program in Jakarta and Banten Province academic year 2015/2016 – 2019/2020. The criteria for the target population were private universities, grade "B" of institution accreditation, grade "B" of study program accreditation, and active registered students in the forladikti. The target population size is 6.563 students of Accounting study program. This study employed a survey questionnaire distributed through Google form. The minimum sample size of the research was n = 868 (Slovin formula, error sampling 1%). The research variables were Grade Point Average (*GPA*) as the dependent variable, while the independent variables were academic interest, learning attitude, and quality. The author added control variables: motivation, expectation, volition, parents' style, gender preparedness, age, career choice, grade, and living. The academic performance as a dependent variable is measured by the result of Cumulative Grade Point Average/*CGPA* (Abbassi et al., 2018; Ezenwoke et al., 2020; Howell et al., 2014; Pérez-López & Ibarrondo-Dávila, 2020; Shahiri et al., 2015). The data ratio of the GPA is transformed and categorized: if GPA $\geq$ 3.76 = 3 (High), GPA 3.25 – 3.75 = 2 (Average) and if GPA < 3.25 = 1 (Low).

The independent variable of Academic Interest (*AI*) has the indicators of accounting as the main choice, the intensity of learning to the accounting subject, and the inconvenience in reading the accounting courses (Ahinful et al., 2019). Likert scale was implemented ranged 1-5 (Never-Always) and consists of 3 questions. Learning attitude (*LA*) was measured by the length of time in reading accounting subject, learning new knowledge, and the effort to read accounting subject (Ahinful et al., 2019). The Likert scale ranged from 1 – 5 (Never-Always) and consists of 3 questions. The Quality of Learning variable (*QL*) was formed from the classroom management indicators (Range 1-5/ Never-Always) (Glewwe et al., 2011; Longobardi et al., 2018; Parsons et al., 2020; Pianta et al., 2008; Praetorius et al., 2018; Vitiello et al., 2014). The total of research questions was 34 items.

The variable control of Expectation (*Exp*) was measured by the socio-economic motive, confidence, and expected result, the appraisal on ability is given a reward, and students' thinking framework (Ahinful et al., 2019; Arquero et al., 2009). The employed range for this variable is 1-5 (not at all – Very great) and the number of questions is 9 items. The motivation variable (*Mot*) was measured by intrinsic and extrinsic motivation (Arquero et al., 2009). The employed range for this variable was 1-5 (Not at all – Very great) and the numbers of questions were 13 items. Meanwhile, students' volition (*Vol*) was measured by the purposed indicator that wanted to be achieved, the reasons to choose the program, pressure, and learning independence (Ahinful et al., 2019; Dalcı et al., 2013). The employed range for this variable was 1-5 (Not at all – Very great) and the total questions were 8 items. Meanwhile, the personal variable, namely Gender (*Gen*) is measured by the gender indicator: male/female (Aditya & Hasibuan, 2020; Alanzi, 2018; Fallan & Opstad, 2014; Hughes & Devine, 2017; Papageorgiou & Callaghan, 2018; Wijaya & Amah, 2012). The data scale implemented for this variable is nominative (female = 1, male = 0).

Other control variable, which was parents' style (*PS*) is measured by indicators: authoritative, authoritarian, permissive, and negligent (Alkharusi et al., 2011; Elphinstone et al., 2015; Kakinami et al., 2015; Papageorgiou & Callaghan, 2018). This variable ranged from 1-5 (scale 1 – 5/ strongly disagree – strongly agree) with the total number of the question was 16 items. The variable of Preparedness (*P*) was measured by the indicator of initiative and activity preparedness, responsibility, comfort, willingness to collaborate, and self-assessment skill, (Arquero et al., 2009; Byrne & Flood, 2005). Scale 1-5 was imposed with the description

"very unprepared – very prepared". The total question for this variable was 9 items. The grade (*Gr*) variable was calculated by the students' current level/class (Alanzi & Alfraih, 2017). The ordinal scale imposed was level 2,3,4,5 and 6. Academic intelligence (*IQ*) as inherent intelligence, measured by the test result of mathematical economics/Finances (Berberoglu & Tansel, 2014; Helm, 2015; Raidal et al., 2019), was arranged by ratio. The variable age (*A*) was calculated by the ratio (Alanzi & Alfraih, 2017; Raidal et al., 2019).

Afterward, the author established instrument testing (validity and reliability test) to 90 samples for the variables of academic interest, learning attitude, quality of learning, motivation, expectation, volition, and parenting styles. The result of the test for the instrument, using Pearson correlation to find the validity, showed 5 out of 10 questions (4 questions from variable learning quality and 1 question from parents' style) were invalid. Therefore, the 5 invalid questions had been omitted from the final questionnaire. Meanwhile, the result of reliability tests showed that the Cronbach's Alpha coefficient value of academic interest, learning attitude, quality of learning, expectation, motivation, volition, parenting styles, and preparedness variables: Cronbach's Alpha > 0.600, therefore all of the variables were reliable with criteria high and very high reliability (Guilford, 1957).

In investigating the effect of academic interest, learning attitude, quality of learning, and control variables, the authors employed a multinomial logit regression analysis model. Logistic regression is an analysis model employing a dependent variable as a variable response (*Y*) which categorical based on one or more predictor variables (*X*). Nominal logistic regression is used when there is no sequence among the response variable. A category chosen among the response variables is known as the reference category (Hosmer et al., 2013). This model addresses to predict the probability of choosing from every three plans as well as to predict the probability of choosing a plan as a function of covariate and for expressing the result of ratio odds for different plans of choices.

McFadden (1982) proposed a modification of the logistic regression model and defined it as a discrete choice model. Then, the name is often used to represent the model in the business and econometric literature, while in health and life science, it is known as the multinomial logistic regression model (Hosmer et al., 2013). Assumed that variable category, *Y*, is given code 0, 1, or 2. The extension is using $Y = 0$ as a reference, or basis, result and to form a logic function comparing one another's categories with it. It would be shown, later in this section, that the logit function for $Y = 2$ versus $Y = 1$ is the difference between these two logit functions (Hosmer et al., 2013). In building the analytical model, it is assumed that the covariate p and the constant, denoted by vector x, of length $p + 1$, where $x_0 = 1$, thus 2 logit functions can be written as:

$$\begin{aligned} g_1(x) &= ln\left[\frac{\Pr(Y=1|x)}{\Pr(Y=0|x)}\right] \\ &= \beta_{10} + \beta_{11}x_1 + \beta_{12}x_2 + \cdots + \beta_{1p}x_p \\ &= x'\beta_1 \end{aligned} \tag{1}$$

and

$$\begin{aligned} g_2(x) &= ln\left[\frac{\Pr(Y=2|x)}{\Pr(Y=0|x)}\right] \\ &= \beta_{20} + \beta_{21}x_1 + \beta_{22}x_2 + \cdots + \beta_{2p}x_p \\ &= x'\beta_2 \end{aligned} \tag{2}$$

Following that conditional probability of each categorical result referring covariate vector are:

$$\Pr(Y = 0|x) = \frac{1}{1+e^{g_1(x)}+e^{g_2(x)}}, \tag{3}$$

$$\Pr(\mathrm{Y} = 1|1\mathrm{x}) = \frac{e^{g_1(x)}}{1+e^{g_1(x)}+e^{g_2(x)}}, \quad (4)$$

and

$$\Pr(Y = 2|x) = \frac{e^{g_2(x)}}{1+e^{g_1(x)}+e^{g_2(x)}}, \quad (5)$$

Following the term for a binary model, $\pi(x) = \Pr(= j|x)$ for j = 0, 1, 2. Every probability is a function of vector $2(p + 1)$ with parameters $\beta' = (\beta_1', \beta_2')$.

A general formulation for conditional probability in three categorical models is:

$$\pi_j(x) = \Pr(Y = j|x) = \frac{e^{g_j(x)}}{\sum_{k=0}^{2} e^{g_k(x)}} \quad (6)$$

Where vector $\beta_0 = 0$ and $g_0(x) = 0$.

For the multinomial logit regression model, the variables code: if $Y = 0$ then $Y_0 = 1$, $Y_1 = 0$, and $Y_2 = 0$; if $Y = 1$ then $Y_0 = 0$, $Y_1 = 1$, and $Y_2 = 0$; and if $Y = 2$ then $Y_0 = 0$, $Y_1 = 0$, and $Y_2 = 1$. It can be seen that regardless of Y value, the total of these variables is $\sum_{j=0}^{2} Y_j = 1$. By using the notation, the function for conditional likelihood for sample size n independent observation is:

$$l(\beta) = \prod_{i=1}^{n} [\pi_0(x_i)^{y_{0i}} \pi_1(x_i)^{y_{1i}} \pi_2(x_i)^{y_{2i}}] \quad (7)$$

Considering log and fact that $\sum y_{ij} = 1$ for every i, thus log-likelihood function as estimation parameter method. Therefore, the function is:

$$L(\beta) = \ln \sum_{i=1}^{n} y_{1i} g_1(x_i) + y_{2i} g_2(x_i) - \ln(1 + e^{g_1(x_i)} + e^{g_2(x_i)}) \quad (8)$$

The function above is formed based on coding tasks (0, 1, 2) to represent certain observations. Where i is = 1, 2, …, n. y_{01} is the response of i-th observation. The likelihood equation is formed by taking the first partial derivation from L (β) respecting each of the 2 (p + 1) of an unknown parameter. To simplify the notation, supposedly $\pi_{ji} = \pi_j (x_i)$. Furthermore, for the $\hat{\beta}$ maximum-likelihood estimator method, it is obtained by setting the equation equal to 0 and solving for $\hat{\beta}$. The solution requires a similar iterative computation that is used to get the estimate in the case of a binary result.

The first model test is a simultaneous test. (Hosmer et al., 2013) claimed that the significance test conducted simultaneously used the Likelihood Ratio Test to test the comparison of the Likelihood model in the complete model (L_1) with the model in which all the parameter values are 0 (L_0). As for the G test or likelihood Ratio test can be written the equation below:

$$G = -2 \ln \left[\frac{L_0}{L_p}\right] \quad (9)$$

The L_0 is a probability function without an explanatory variable. L_p is a probability function with an explanatory variable. The basis for decision making is $G > X^2_{p(\alpha)}$ or p-value < α, therefore it is concluded there is no independent variable that affects the dependent variable.

The next testing model is the classification accuracy test to show the error probability by the classification function in the multinomial logit model. A good model is a model with a minimum chance of misclassification such as shown in the correct classification table (Hosmer et al., 2013). The classification accuracy table describes the two-way frequencies of predicted

and actual data sets. The value of classification accuracy is measured by the number of correct predictions with the examples' number.

The goodness of fit test is used to determine the model suitability in representing the response variable. One of the employed measuring tools is the goodness of fit indicator. The test equation is written as followed:

$$\hat{C} = \sum_{i=1}^{k} \frac{(O_i - n_i\hat{\pi}_i)^2}{n_i\hat{\pi}_i(1-\hat{\pi}_i)} \quad (10)$$

The O*i* is the observation of the *i*-th group. $\hat{\pi}_i$ is the probability of observed *i*-th group. n_i is the number of observations to the *i*-th group. The basis for decision making is when the value $\hat{C} > X^2_{a,db}$, thus, the model is considered inappropriate or H_0 is rejected with the degree of freedom (*db*) of $p = (k + 1)$.

The partial test (Wald test) was conducted to measure the significance of each independent variable toward the dependent variable. As for the use of Wald test statistics were:

$$W_j = \left[\frac{\hat{\beta}_j}{S\hat{E}(\hat{\beta}_j)}\right]^2 \quad (11)$$

The result of statistical equation (11) is the ratio of the result of statistical test H_0 that adjust the standards normal distribution (Hosmer et al., 2013). The basis for deciding the result is determined by comparing the standard normal distribution (z) and claimed that the significant value if $|W_k| > Z_{\alpha/2}$ or probability value p-value $\leq \alpha$ (0.05), therefore H_0 is rejected. The rejection of H_0 means that there is a significant effect β_j on its dependent variables.

The interpretation of the result of the multinomial logit regression parameter test is used to describe the results of the model estimation by considering the odds ratio. The odds ratio coefficient Ψ compares the number of times the change in the incidence rate $Y=j$ against the comparison category or $Y=1$. The association between the odds ratio value and the model coefficient (β) can be written as the following equation:

$$\Psi = \exp(\hat{\beta}) \quad (12)$$

The model interpretation is based on the value of $\psi < 1$, therefore the variables are declared to have a negative correlation. On contrary, if $\psi > 1$ means there is a positive correlation between variables.

Results and Discussion

After analyzing the data, the results of the research were found. The findings were obtained from the respondents' responses as the result of questionnaire distribution by using *Google Form*. Questionnaire items were sorted. Overall, there were 1.213 respondents participated. However, some responses were incomplete so that the complete questionnaires analyzed were 872 respondents (minimum samples size, n = 868). Then, the characteristics of respondents illustrated in the following table:

Table 1 Respondents' Characteristics

Characteristics	Categories	Number	Percentage
Gender	Male	321	36.8%
	Female	551	63.2%
Prior School	Vocational	414	47.5%
	Non-Vocational	458	52.5%
Age	≤ 18 years	12	2.5%
	19 – 24 years	740	84.8%
	≥ 25 years	120	12.7%
Region	Rural	201	23.1%
	Urban	671	76.9%
Grade	Second	194	22.2%
	Third	240	27.5%
	Fourth	166	19.0%
	Fifth	167	19.2%
	Sixt	78	8.9%
	Non-Semester	28	3.2%
Carrier Choice	Educator Accountant	78	8.9%
	Public Accountant	180	20.6%
	Firm Accountant	345	39.6%
	Government Accountant	246	28.2%
	Others	23	2.7%

Source: data processed

Table 1 described the result of the analysis of respondents' characteristics. It consists of 5 characteristics; gender, university, prior school, age, and carrier choice. It showed that the dominant gender of the respondents was female (77.3%) as male acquire (22.7%). Graduated students of Vocational school were 47.5% and non-vocational students were 52.5%. From the age characteristic, 84.8 % of the students' respondents are in the range 19-24 years old or 740 of 872 students. Meanwhile, the population aged 19 – 24 years in the provinces of Jakarta and Banten who are registered at the University are 25.01% and 21.60%, respectively. Students who were less than or equal to 18 years old were exceptions. They entered elementary school less than 6 years old and had good academic abilities.

Characteristics of respondents according to place of residence, as many as 76.9% of students generally live in urban areas and a few who lived in rural areas. Characteristics of respondents according to grade (grade) were dominated by level 4 and 5 students, each with 38.1%. This condition illustrates that there were many students who are respondents who were preparing their final project. In addition, there were still students who are late in completing their final assignments so they were still recorded at level 6 and non-semester. Meanwhile, in Indonesia the limit of student study period was 14 semesters for undergraduate programs (level 7 or non-semester). From the carrier choice, the highest percentage (39.6%) was graduated students who took carrier as a firm accountant. Then, it continued to government accountant (28.2%), public accountant (20.6%), and educator accountant (8.9%).

Table 2 illustrated the description of the statistics of the research variable covered the mean value and standard deviation. Academic performance variable (*CGPA*) obtained the

mean value (*M*=3.45) and standard deviation (*SD*= 0.27). Categorical variable of Academic performance (*MCGPA*) obtained mean value and standard deviation [*M*=2.07, *SD*=0.59]. The results were interpreted that the outcomes of students' academic performance were in a good category by 86.25%. Academic Interest (*AI*) obtained the mean value and standard deviation [*M* = 10.995; *SD* = 2.59]. These results illustrated that the level of students' interest in learning by 68.59% which means quite high. The mean and standard deviation of the students' learning attitude variables were [*M* = 11.274; *SD* = 2.38]. The data can be interpreted that students' attitude during the learning process by 70.08% as sufficient category. Finally, the last main independent variable was learning quality (*QL*), which obtained mean values and standard deviation [*M* = 111.767, *SD* = 22.94]. These results inferred that learning quality in higher education at Jakarta and Banten Province was quite good by score 68.96%. More detail of the description was shown by the following table:

Table 2 Descriptive Statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
CGPA	872	3.449	0.267	2.38	4.00
MCGPA	872	2.070	0.588	1	3
AI	872	10.995	2.595	3	16.03
LA	872	11.274	2.378	4.22	16.09
QL	872	111.767	22.940	34	162.07
Exp	872	35.399	6.604	9.00	47.40
Mot	872	49.979	9.105	13.00	64.68
Gen	872	0.77	0.419	0	1
PS	872	43.491	8.771	16.65	69.40
P	872	33.669	6.549	9.00	46.89
A	872	22.940	5.062	18	53
IQ	872	3.33	0.568	1	4
Gr	872	3.43	1.030	2	6

Source: data processed

Table 2 showed the expectation variables produced the average value and standard deviation by [*M*=35.399, *SD*=6.04]. It could be interpreted the level of students' expectation to their goals after graduating (the achievement and success) from Accounting Study Program by 74.69%. It showed a fairly large category. Motivation variables (*Mot*) of students' learning produced the value by [*M*=49.979, *SD*=9.11]. The interpretation illustrated that students' learning motivation was fairly high category by 77.28%. The mean and standard deviation of the gender variable (*Gen*) were [*M*=0.77, *SD*=0.419]. The result inferred that there were more female students than male students because the number of female students was 77.33%.

The table also described the average variable value and the standard deviation of Parental Style (*PS*) by [*M*=43.491, *SD*=8.77]. This result illustrated that parents have a fairly democratic, authoritarian, permissive, and negligent educational pattern of their children with a score of 62.66% (flexible enough). Meanwhile, the average value and standard deviation of he students' preparedness to learn (*P*) were [*M*=33.669; *SD*=6.55]. These results illustrated the level of students' preparedness in learning accounting for 71.80%. It is categorized as "quite ready". Furthermore, mean value and standard deviation [*M* = 22.94; *SD* = 5.06] from the

variable age (*A*). This result was interpreted that the average age of students was 22.94 years old.

Before investigating the analysis, the authors tested the classic assumptions of the response variable normality, multicollinearity, model fitting information, goodness of fit test, and Likelihood Ratio test. The normality test of the response variable result, calculated with the *Shapiro-Francia* test, showed that the p-value was greater than 0.05 so that the data is normally distributed. However, the results of the multicollinearity test with Variance Inflation Factor (*VIF*) produced a *VIF* value < 10 and an average value of *VIF* = 1.672. These results can be concluded that the model was free from multicollinearity problems. The fulfillment of these requirements contributed to continuing the next step of measurements.

The first step was testing the simultaneous hypothesis with the model fitting information. It was tested to determine the model used employing independent variables which were able to predict the dependent variable or simply a Constanta. The result of analysis by using SPSS 25 was described in the following table:

Table 3. Model Fitting Information

Model	Model Fitting Criteria			Likelihood Ratio Test		
	AIC	BIC	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	837.035	845.349	833.035			
Final	789.134	888.901	741.134	91.902	22	0.000

Source: data processed

The data in table 3 illustrated that Chi-Square [X^2 (22) = 91.902, $p < 0.01$], it inferred that the suitability of the full model (pseudo predictor) was significant compared to the model without predictors (intercept only). It meant, at least one independent variable significantly explained the improvement of students' academic performance. Furthermore, the Goodness of fit test (*g.o.f*) from multinomial logit was investigated. The "Goodness of Fit" table contained the Deviance and Pearson chi-square tests, which were useful for determining whether the model showed good appropriateness with the data. The test results showed as in the following table:

Table 4. Goodness of Fit

Type of Test	Chi-Square	df	Sig.
Pearson	959.833	1.720	0.176
Deviance	741.134	1.720	1.000

Source: data processed

An insignificant result is an indicator that the model fits the data (Field, 2009; Petrucci, 2009). Table 4 showed the results of Pearson and Deviance chi-square tests obtained *p*-value > 0.05. It indicated that the empirical data of the study and the model employed for analysis were appropriate or feasible. Besides goodness of fit, the goodness of the model also investigated the coefficient of determination (Pseudo R^2) value in the form of Cox and Snell R^2, Nagelkerke R^2, and McFadden R^2 in the following table:

Table 5. Pseudo R-Square

Criteria	R^2 value
Cox and Snell	0.177
Nagelkerke	0.213

McFadden	0.110

Source: data processed

Table 5 above showed the greatest Pseudo R^2 value is Nagelkerke R^2 by 0.213 or 21.3%. It was caused by the McFadden R^2 and Cox and Snell R^2 values by only 11.0% and 17.7%. These results were interpreted that the diversity of data from the independent variables used in this research were able to explain academic performance by 21.3%. Meanwhile, the remaining 78.7% was explained by other independent variables that were outside of this research model.

The goals of the partial hypothesis test results by using the *Likelihood Ratio* Test for the *Multinomial Logit* model were to investigate the effect of academic interest, learning attitude, learning quality, and control variables on academic performance. The assumption of the reference category was low-level academic performance. The partial test result was illustrated in the following table 6:

Table 6. Likelihood Ratio Test

Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	746.254	5.120	2	0.077
Academic Interest	746.828	5.694	2	0.058
Learning Attitude	748.075	6.941	2	0.031
Quality of Learning	743.379	2.246	2	0.325
Expectation	741.541	0.408	2	0.816
Motivation	743.987	2.853	2	0.240
Parental Style	742.1459	1.011	2	0.603
Preparedness	741.436	0.302	2	0.860
Age	750.177	9.043	2	0.011
Grade	760.571	19.438	2	0.000
Intelligent Quotient	767.122	25.988	2	0.000
Gender	744.539	3.405	2	0.182

Source: data processed

Table 5 illustrated the main independent variables namely academic interest (*AI*) and learning attitude (*LA*) influenced significantly on improving students' academic performance by the 5%, and 10% significance levels. It could be seen from the each *p*-value of $0.058 < 0.064 < 0.1$ and $0.031 < 0.05$ (H_1 and H_2 were proven). Meanwhile, the learning quality (*QL*) produced p-value = $0.325 > 0.05$ (H_3 not proven). It could be inferred that learning quality did not have a significant effect on improving academic performance. Then, the control variables that significantly partially affected academic performance: age (*A*), grade (*Gr*), and academic intelligence (*IQ*) with significance levels of 1%, 5%, and 10%. The partial control variables did not affect significantly academic performance namely expectation (*Exp*), motivation (*Mot*), parental style (*PS*), and preparedness (*P*), and gender (*Gen*).

In a probabilistic model, the importance of odds ratio (*ExpB*) existence is to determine the probability level of an independent variable affecting the dependent variable. The results of the calculation of odds ratio for the Logit 1 and Logit 2 models with a reference category of students' academic performance with a low category can be seen in the following table:

Table 7. Parameter Estimate: "Low Academic Performance as Reference Category"

Variable	Logit 1	Exp(B)	Logit 2	Exp(B)
Intercept	0.284		-3.009	
	(1.436)		(1.868)	
Academic Interest (*AI*)	0.168**	1.183	0.230**	1.259
	(0.081)		(0.102)	
Learning Attitude (*LA*)	-0.119	0.888	-0.282**	0.754
	(0.088)		(0.110)	
Quality of Learning (*QL*)	-0.012	0.988	-0.011	0.989
	(0.008)		(0.010)	
Expectation (*Exp*)	-0.006	0.994	0.013	1.013
	(0.032)		(0.040)	
Motivation (*Mot*)	0.022	1.023	0.047*	1.048
	(0.023)		(0.028)	
Parental Style (*PS*)	0.006	1.006	-0,009	0.991
	(0.019)		(0.023)	
Preparedness (*P*)	0.017	1.017	0.013	1.013
	(0.031)		(0.037)	
Age (*A*)	-0.070***	0.932	-0.072**	0.931
	(0.024)		(0.034)	
Grade (*Gr*)	0.143	1.154	-0.422**	0.656
	(0.139)		(0.177)	
Intelligent Quotient (*IQ*)	0.495***	1.640	1.486***	4.419
	(0.262)		(0.326)	
Gender (*Gen*)	-0.013	0.987	0.632	1.881
	(0.342)		(0.463)	

Note: * sig < 0.1, **sig. < 0.05, ***sig < 0.01

Table 7 illustrated, in the *Logit 1* model, the main variable that affected significantly students' academic performance of the Accounting Program at Jakarta and Banten Province was Academic Interest (*AI*). The positive coefficient value by 0.168 and the *p*-value = 0.039 < 0.05, so that the hypothesis 1 was proven (***H1*** was proven). The result of the *odds ratio value* was 1.183, which interpreted if there was an improvement of academic interest by 1 unit, it would increase the probability of academic performance in a medium category by 1.183 times probability, then the students of the low academic performance category. The learning attitude variable (*LA*) has negative coefficient value by 0.119, an odds ratio by 0.888, and a *p*-value = 0.175 > 0.05, so it revieves H_0. These results rejected hypothesis 2 (***H2***) because the coefficient value was negative. In other words, the learning attitude did not a signficant effect on the academic performance in the medium category than the students of the low academic performance category.

The estimation of *Multinomial Logit* result, described in table 7, model *logit 1* produced coefficient of learning quality variable (*QL*) by negative 0.012 and *p*-value = 0.137 > 0.05. These results could be stated that learning quality did not have a significant effect on improving the academic performance of students in the medium category which means the third hypothesis (***H3***) was not proven. Meanwhile, the entire control variables consist of expectation (*Exp*), motivation (*Mot*), parental style (*PS*), preparedness (*P*), age (*A*), grade (*Gr*), academic

intelligence (*IQ*), and gender (*Gen*) insignificantly affected the students' academic performance in a medium category rather than students' academic performance in the low category.

Logit model 2 compared the determinants between the high category students' academic performance and low category students' academic performance. The coefficient value of the academic interest (*AI*) variable was 0.230 and the odds ratio (*ExpB*) was 1.259 with a *p*-value = 0.024 < 0.05 so that H_0 was rejected (***H1*** was proven). The result was interpreted that the improvement for 1 unit of academic interest derived the probabilities enhancement of academic performance by 1.259 times more possible rather than the low category of students' academic performance by 5% significant level (see table 7). The learning attitude (*LA*) variable had a negative coefficient value of 0.282, an *odds ratio* of 0.754, and a *p*-value = 0.011 < 0.05, so that it rejected H_0 at the 1% significance level. However, these results rejected hypothesis 2 (***H2***) because the coefficient value was negative. In other words, it could be stated that each learning attitude increased by 1 unit, so the possibility of decreasing academic performance in a high category by 0.754 times lower than the academic performance of students in the low category.

The estimation results of the *Multinomial Logit*, in table 7, *Logit 2* model obtained the coefficient of the learning quality variable (*QL*) by negative 0.011 and the *p*-value = 0.272 > 0.05. It could be inferred that learning quality did not influence significantly the possibility of students' academic performance improvement in the high category. The third hypothesis (***H3***) was not proven. Meanwhile, control variables, academic intelligence (*IQ*) and gender (*Gen*) contributed significant effect on the possibility of increasing academic performance in the high category compared to the low category of students' academic performance but age (*A*), and grade (*Gr*) contributed negative and significant effect. Besides, expectation (*Exp*), motivation (*Mot*), parental style (*PS*), gender (*Gen*), and preparedness (*P*) were not proven significantly affected to the students' academic performance in the high category compared to the students' academic performance in the low category.

Furthermore, the author investigated the classification statistical calculations to determine which group members were best for the prediction of the model. This result illustrated in the following table:

Table 8. Classification Statistic

Observed	Low	Moderate	High	Percent Correct
Low	7	109	6	6.1%
Moderate	6	534	28	94.1%
High	2	146	35	19.2%
Overall Percentage	1.7%	90.5%	7.8%	66.1%

Source: data processed

The data in table 8 illustrated the low category of students' academic performance predicted by the model 6.1%. The model predicted a medium level of students' academic performance of 94.1% and a high level of 19.2%. In general, the predicted a students' academic performance of 66.1%. It inferred that the model employed for students' academic performance analysis was quite good.

The result of hypothesis 1 testing (H_1) regarding the effect of academic interest on improving students' academic performance was proven significantly. The result illustrated the

higher of student academic interest level in learning, the greater possibility of increasing performance. Students enjoyed studying Accounting and reflected the enjoyment in the Accounting Study Program. It was caused by the students' psychological feeling of happiness, comfort, and enjoyment in learning. Furthermore, it encouraged students to maintain their learning motivation to study continuously. Besides, students gained better comprehension and developed their intellectuals for the chosen study program. It promoted the enhancement of their academic performance. Internal interest or concern allows the students to continually involve and commit to their subjects.

Besides, interest is a mental resource to support students' focus in learning the taken courses, to maintain their longer learning, and withstand any difficulty in the task completion (Ahinful et al., 2019). The results confirmed the previous result stated that the high academic interest contributed significantly to improving performance (Ahinful et al., 2019; Blankenburg et al., 2016; Fallan & Opstad, 2014; Pérez-López & Ibarrondo-Dávila, 2020; Reinig et al., 2014). In contrast, this research unconfirmed the research conducted by (Köller et al., 2001; Meyer et al., 2019; Zhang & Wang, 2020) that concluded academic interest did not affect significantly their performance.

Furthermore, students' attitude in learning becomes an important factor to achieve their performance. However, the results of hypothesis 2 testing (H_2) failed to prove that students' attitude in learning influenced students' academic performance (H_2 not proven). In logit 1, the negative relationship was not significant and the logit 2 model was significant negative. These results indicated that the probability of a good student learning attitude in a subject could reduce a student's academic performance was higher than that of a lower student. In other words, the attitude of learning did not change the increase in student performance. The findings of this study certainly contradicted the theory and general assumption which stated that a good learning attitude has an impact on the achievement of learning outcomes. The results of the researchers differentiated the findings of previous research which concluded that learning attitudes were not correlated significantly with performance (Fallan & Opstad, 2014). Students had not developed an optimal positive attitude due to their lack of attendance in class, lack of learning new things, and lack of reading books sequentially. Students were less aware that these things have an impact on academic performance. Building a positive attitude will help them to achieve better performance results (Şen, 2013).

Research findings did not support previous research conducted by (Ahinful et al., 2019; Dalcı et al., 2013; Guney, 2009; Nonis & Hudson, 2010). The previous findings described that students' attitudes in learning have a significant effect on students' academic performance. In fact, (Ahinful et al., 2019) stated firmly that students with a good learning attitude promoted learning the subject in depth. It also encouraged students to organize the learning materials very well and prepare their examination before the test to obtain good results. It differed to (Topală, 2014) which that stated acquiring new knowledge and striving for better performance reflect the academic performance by constructing a positive attitude.

The result of hypothesis 3 testing (H_3) illustrated that learning quality did not influence significantly students' opportunities to improve their academic performance. It indicated the researcher failed in proving the previously formulated hypothesis. In other words, H_3 was proven. The failure in proving the relationship between these variables was caused by the fact that students' perceptions of the quality of learning in class still need to be improved. The learning process in the classroom was not in accordance with the predetermined standards. The absence of quality learning was not reflected in good classroom management, student optimal

support in learning, and lecturers' ability to develop students' competence during the teaching and learning process. These results did not confirm the theory that the quality of classroom organization depends on the quality of both educators and students in the classroom. Educators should be able to create a positive emotional atmosphere in the classroom. Students should be more involved in the learning process actively, and show more interest, enthusiasm, and effort (Longobardi et al., 2018) so that learning objectives can be achieved. As stated that the quality of an institution depends on the quality of its members (Tahar & Sofyani, 2019) and was obliged to provide students with an understanding of accounting concepts and financial reports (Ullah et al., 2018).

The findings differ significantly from previous results that concluded active participation in the professional community influenced the learning process in the classroom as the small scope and unlike educational setting in general; it correlated significantly to academic achievement (Lomos et al., 2011). Another previous study unconfirmed with these current findings that described learning process focused on teaching activity, learning strategies, learning environment, distance learning which proven significantly in improving students' achievement regardless of the level of students' academic achievement at initial entry (Kistner et al., 2010; Pane et al., 2017; Santiago et al., 2021). Finally, learning quality was measured with knowledge activation, carrying capacity of classroom atmosphere, and educator quality affected significantly the improvement of student performance in accounting (Helm, 2015) The current research findings also unconfirmed the previous research conducted by (Parsons et al., 2020) stated that learning program activities, educators' quality and appropriate method could improve the accounting skills for graduate students.

However, the research findings in agreement with (Glewwe et al., 2011) stated that spending time for school activities and learning activities, as the characteristics of school and educator, statistically insignificant to influence the educational outcomes. Time management and learning quality from classroom management dimension uncorrelated significantly to the improvement of students' competence at Accounting Study Program (Helm, 2015; Stipek & Chiatovich, 2017). Even though it was useful to show that educator has an important role, this research did not contribute in identifying effective educator. It caused that this research did not measure students' initial learning outcomes and it did not discuss the information about effective and ineffective teaching practices by the educator. Meanwhile, the face-to-face learning approach decreased students' performance (Daly & de Moira, 2010).

Although there was an inconsistency of research findings, the researcher argued that the improvement of learning quality in the classroom determines the students' learning outcome. Lecturers have a strategic role in delivering the materials, using appropriate methods, designing interesting and pleasing learning activity also providing students' assessments directly. Intensive interaction also contributes to the additional points in improving students' academic performance so that students are able to absorb and train the knowledge, ability, and skills instilled by the lectures during teaching and learning activities in the classroom. Also, students have the competencies needed in the job market (Abelha et al., 2020). One of the ongoing challenges in the teaching and learning process with limited face-to-face learning was that lectures have to ensure the entire students or participants know what should be done in any situations and what kind of expected learning outputs. Communication between educators and students is needed. This requires frequent and well-planned communication with each other. However, if the communication does not run well, it will contribute to a negative effect on the students (Parsons et al., 2020).

Conclusion

The current research investigated the influence of academic interest, learning attitude, learning quality, and control variables on the academic performance of undergraduate students in the Accounting Study Program. We concluded that the academic interest contributed significantly in determining the possibilities of the students' academic performance improvement. Students agreed that their decision in taking an Accounting major was based on their eagerness. However, a learning attitude does not contribute to improving academic performance. It means, the lack of students' positive attitude in the learning process contributes minimum impact on the learning outcome. Likewise, there was no evidence that quality of learning contributes to determining the academic performance of accounting students in big province. It can be inferred that learning management in the classroom is not good. The lack of a harmonious relationship among students, students- lecturers, and lecturers has not been able to encourage the growth of knowledge, skills, and attitudes of the Accounting Study Program's students.

The findings inferred that students' psychological conditions, as one of academic interest, contribute significantly to improving academic performance. The finding indicated that the higher academic interest implicates students to optimize their learning for better results. Students' experience, ability, and competence during higher education promote benefits for their future. Therefore, this research provides recommendations about the importance of maintaining students' academic interests. It will be useful to become a reliable accountant. Related to findings of insignificant learning attitude implicate that students should reconstruct their positive attitude to obtain a better result. Consequently, students need to maintain and pay attention to their attendance level as well as consider starting new learning methods and re-arrange course material to build sequential learning.

Although the findings showed the quality of learning insignificant to improve performance, lectures should try to increase the quality of learning, create better and beneficial communication as well as improve their ability to activate students' cognitive. It is caused by future challenges that it will be tougher to become an accountant. For universities, it is recommended to set a strategy in developing and adapting the curriculum to suit the demands of the financial job market. In addition, universities have to establish steps to encourage the quality improvement of the teaching and learning in computing, digital technology, big data analytics, environmental and integrated reporting to improve student performance in accounting, so that graduates will be able to seize global financial jobs opportunities.

As the theoretical contribution, the findings partially strengthen the previous findings which consider that academic interest contributes to improving students' academic performance so that increasing the strength of these variables in the academic performance literature. Furthermore, the results of this study also add to the existing literature on measuring student performance as a result of the educational process and the factors that influence it.

However, some weaknesses were found in the current research. There were insignificant variables, namely learning attitude and learning quality, as well as the decrease of the population used in the research. Both of these variables require re-testing in the future. Therefore, in further studies, it is recommended to reuse these two variables and add other variables such as personality (Papageorgiou & Callaghan, 2020), family socioeconomic status (Liu et al., 2020), class participation, attendance (Pérez-López & Ibarrondo-Dávila, 2020), and leisure activities (Ezenwoke et al., 2020). Also, it is advised to reduce the criteria for the target population to obtain a wider and larger population.

There are many sub-indicators of the learning quality variable that cause respondents unmotivated in answering questions. Therefore, it is necessary to reduce the sub-indicators of the variable for researchers who are interested in this topic. The use of the learning quality

variable becomes the strength or advantage in research compared to previous studies (despite the results did not significant). For further researchers, it is also advised to use more varied models, such as multinomial probit and different tests in academic performance according to certain characteristics.

About the Author

Dr. Agoestina Mappadang, M.M is an Assistant Professor at Postgraduate Program Magister Accounting, Faculty Economic and Bisnis, Universitas Budi Luhur, Jakarta, Indonesia. The author background and interest research in Education, Corporate Governance, Accounting, Tax, Audit and Financial Management field. ORCID: https://orcid.org/0000-0002-5813-8438.
Khusaini, M.Akt is a Lecturer at Islamic Syekh-Yusuf University, Tangerang, Indonesia. He is interested in Education and Accounting field research and part of our project as a statistical expert.
Melan Sinaga, M.Akt is a Lecturer at Faculty Economic and Bisnis, Universitas Budi Luhur, Jakarta, Indonesia. Her interest in Accounting, Auditing and Financial Management.
Elizabeth, M.M is a Lecturer at Faculty Economic and Bisnis, Universitas Budi Luhur, Jakarta, Indonesia. Her background in Marketing and Bisnis and Consumer Behaviour.

Author: Agoestina Mappadang

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