







The Role of Student Engagement in the Success of Study of Scholarship Awardee Students of Bogor Agricultural University, Indonesia

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Abstract

This study aims to analyze the effect of student characteristics, internal factors and external factors on student engagement and the success of scholarship awardee's study in Bogor Agricultural University. The theory used in this study is that the success study of the scholarship awardee is affected by the student characteristics, internal and external factors and that the student engagement has a role in mediating between the influencing factors and the success of the study. This study was conducted using a survey design of 345 scholarship awardee as respondents using the instrument to measure the internal and external factors as well as student engagement. A Structural Equation Modelling (SEM) was constructed to analyze the effect between variables. Exogenous latent variables in this study include student characteristics, internal factors and external factors, whereas endogenous variables include student engagement and success of study. Student engagement is also the intervening variables that mediate between the success factors and the student success studies. The results of the study proved that the student characteristics and the internal factors affected the student engagement and the success of study. In this study, it was found that external factors affected on student engagement and did not affect on the success of the study. The result also show that the student engagement affected significantly on the success of study of the Bogor Agricultural University's scholarship awardee. The results of this study have various implications for the practice of higher education implementation, especially to improve the student engagement and the success of student's study.


Keywords: Higher education, Student engagement, The success of study, Structural equation modeling (SEM).

JEL Classification: I21, I23.

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1. Introduction

In the era of globalization, the competition becomes more intense in all sectors including in higher education industry. Higher education is a service provider that will produce qualified human resources. The increasing of public demand for formal education, especially higher education, makes universities as a strategic sector to produce superior human resources. This high level of competition leads to the competition among higher educations in getting students as consumers. Frolich and Stensaker (2010) said that higher educations compete one with another in many things, including in funding, reputation, fund and research output and also in getting the qualified candidates to become their students. The channel of admissions is essential to improve the competitiveness and the diversity. The study of Vander (2009) revealed that the comprehensive management program of new student admissions covers five components: institutional marketing, recruitment or new student admissions, retention programs, planning and coordination models. Based on both studies, the higher educations must plan and organize an effective process of new student selection to get qualified student candidates as well as to handle the competition that happens.

The cost problem and low quality to compete in certain areas become one of barrier factors to get education access. Various types of scholarships and or tuition assistance either from the central government or local governments, or from the business or industry have been launched. Providing scholarships can improve the access to higher education (Mardiyanti, 2014). One of the policy goals related to higher education in the National Medium Term Development Plan (RPJMN) of Ministry of Research, Technology and Higher Education in year of 2015-2019 is the improvement and the equitable access of higher education through the strategy of effectiveness development of affirmative policy and the provision of scholarships for the poor (Kemendikdik, 2005). In realizing this strategy, required an active participation of higher education institutions. Bogor Agricultural University (IPB) as one of the universities in Indonesia that provides opportunities and a broad access for people to get high education, one of them through the program of Regional Representative Scholarship (BUD) and as one of the universities appointed by the government as the organizer of Bidikmisi Scholarships. BUD is a student admissions program through institutional cooperation mechanism between IPB and other institutions to give an opportunity to the central and local government and also private companies to provide scholarships for students with good academic achievement. While Bidikmisi scholarship is a scholarship program organized by the government as a national wide program and intended for the poor.

Scholarship awardee are expected to have a good academic record when taking higher education. One of the requirements of BUD program or to get a Bidikmisi scholarship is a good academic achievement in high school. Students who have a good record in high school are expected to have also a good academic achievement when studying at university. In gaining the success of the study, in addition to student characteristics and internal factors owned by students, the higher education institutions need to provide more support and attention to the success of their students study.

In addition to internal and external factors of students, there is one area that is referred to as student engagement (the involvement of students) that can affect learning achievement. Dharmayana *et al.* (2012) stated that student engagement is a process that shows the attention, interest, investment, effort and involvement of students used in learning. Student engagement is positively associated with student achievement and plays a role in the success of the study (Carini *et al.*, 2006; Kuh *et al.*, 2006; Dharmayana *et al.*, 2012; Chi, 2014). The area of student engagement lies between the student's behaviour and the condition of educational institutions, which represents the aspects of student's behaviour and the performance of the institution in which the institution has a role to it Kuh *et al.* (2006). Factors that affect the success of study and the student engagement in the scholarship awardee are important to know so that these awardee can succeed in carrying out their studies in higher education and also have good achievement.

Therefore it is necessary to analyze the success level of scholarship awardee and the factors that affect student engagement and success of study of scholarship awardee. The following research objectives have been established to find the role of student engagement in the success of the study so that the higher educational institutions have strategic steps in boosting the success study of their students.

1.1. Research Question

1. What factors (i.e. student characteristics, internal factors and external factors) affect the student engagement and the success of the study?
2. How is the role of student engagement to the success study of the scholarship awardee?

1.2. Research Objectives

1. Analyze the factors (i.e. student characteristics, internal factors and external factors) that affect student engagement and the success of the study
2. Analyze the role of student engagement to the success study of the scholarship awardee.

1.3. Conceptual Model

The theory used in this study is that the success study of the scholarship awardee is affected by the student characteristics, internal and external factors (Hawadi, 2001) and that the student engagement has a role in mediating between the influencing factors and the success of the study (Kuh *et al.*, 2006)

Based on Figure 1, the main purpose of this study is to analyze the factors (i.e. student characteristics, internal factors and external factors) that affect the student engagement and the success of the study and also the role of student engagement to the success study of the scholarship awardee. In this study, the factors that are assumed to influence the success of the study include the student's characteristics that consist of age, parent's education, parent's income, number of family members and student's spending patterns. The internal factors are achievement motivation, interest in the major, and academic self-concept.

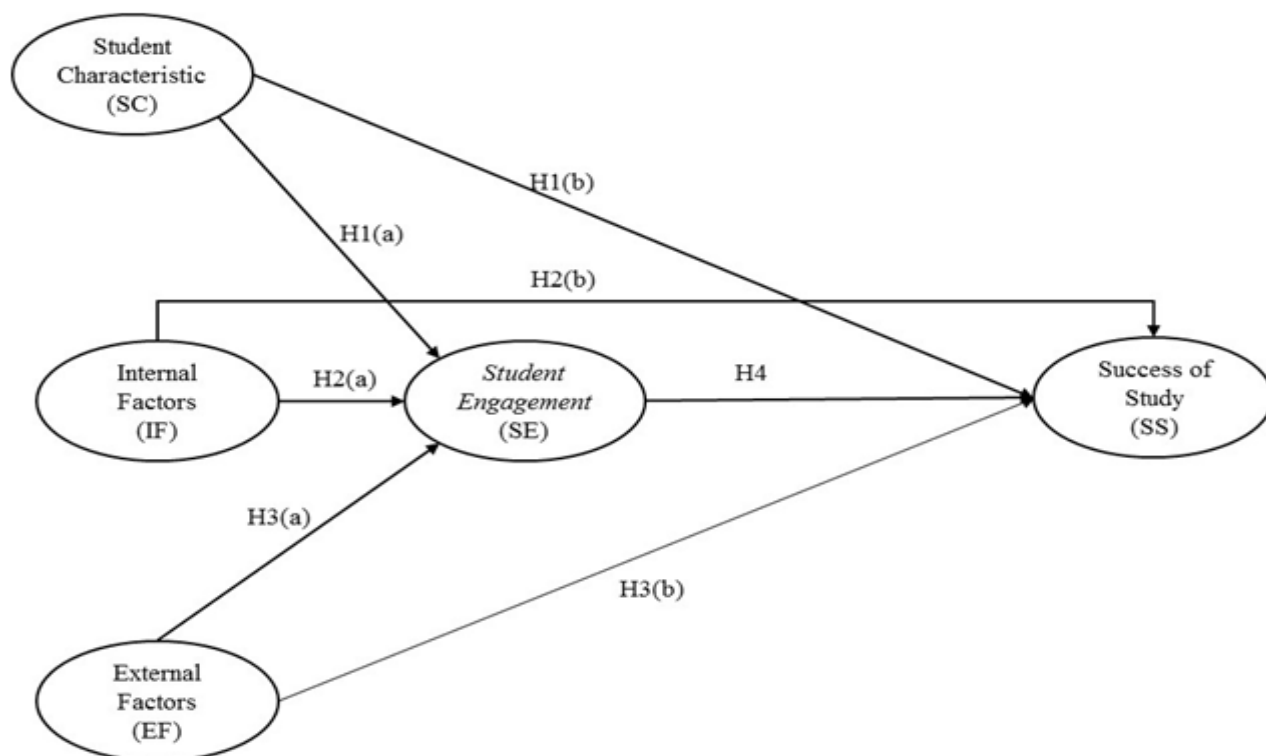


Figure-1. Research framework

Source: Research conceptual model

The external factors are family environment, academic environment, and community environment. The indicator used to measure student engagement based on the Kuh (2001) theory consists of five aspects: (1) academic challenge; (2) active and collaborative learning; (3) the student-lecture interaction; (4) enriching educational experiences and (5) supportive campus environment.

The research hypotheses are as follows:

- H1- There is a positive effect of the scholarship awardee characteristics on the student engagement (a) and the success of the study (b).
- H2- There is a positive effect of internal factors of scholarship awardee on the student engagement (a) and the success of the study (b).
- H3- There is a positive effect of external factors of scholarship awardee on the student engagement (a) and the success of the study (b).
- H4- There is a positive effect of student engagement of scholarship awardee on the success of the study and student engagement will mediate the relationship between factors (i.e. student characteristics, internal and external factors) that affect the student engagement and the success of the study.

2. Methods

This study used a survey design. Sampling technique is used by using proportionate stratified random sampling technique based on the study program or major. The questionnaire-based survey was given to 422 students of BUD and Bidikmisi scholarships awardee who were actively studying in the fifth semester in the academic year of 2015/2016 as respondents. But only a sample of 345 respondents that can be analyzed statistically.

The data and information collecting in this study is done by using structured questionnaire instrument and in depth interview. The instrument for measuring internal factors (achievement motivation, interest in the major, academic self-concept) and external factors (family environment, academic environment, and community environment) was partly adapted from Makarim (2003); Liu and Wang (2005) and Mardiyanti (2014) while the instrument to measure student engagement was partly adapted from the questionnaire of National Survey of Student Engagement (NSSE) 2015 version (Indiana University, 2015). This instrument used a 5-point Likert scale; scale 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always, except for academic self-concept and external factors, scale 1 = very disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = very agree.

The variables in this study consisted of exogenous latent variable, endogenous latent variable, and intervening variable. The exogenous latent variable that forms the dimension of student characteristics (SC), internal factors (IF), external factors (EF), and the endogenous latent variable of student engagement (SE) and the success of the study (SS) is presented in Table 1. The structural model which consist of all variables used in this study is depicted in Figure 2.

The quality of instruments had been measured using validity and reliability test. This study used the analysis of Structural Equation Modelling (SEM) to analyze the relationship and the link between variables used in the study. SEM was used as the primary method for analyzing data. SEM is one kind of multivariate analyses in social sciences that is capable of testing a complex research model simultaneously and analyze the variables that can not be measured directly (Ferdinand, 2002). Furthermore, structural equation modelling is an ultra combination of path analysis and factor analysis that explains the direct and indirect link between variables, but it gives more theoretical and statistical precision validity in the model diagram that is produced (Gay et al., 2011). This procedure of analysis was also done by Rugutt and Chemosit (2005) who examined the factors that affect the success study of students at Midwestern Doctoral University, USA.

Table-1. The variables of the study

Dimension	Variables
Exogenous latent variable	
Student Characteristic (SC)	Age (sc1)
	Father's education (sc2)
	Mother's education (sc3)
	Parent's income (sc4)
	Number of family members (sc5)
	Students' spending patterns (sc6)
Internal Factors (IF)	Achievement motivation (if1)
	Interest in the major (if2)
	Academic self-concept (if3)
External factors (EF)	Family environment (ef1)
	Academic environment (ef2)
	Community environment (ef3)
Intervening variable	
Student Engagement (SE)	Academic challenge (se1)
	Active and collaborative learning (se2)
	Student-lecture interaction (se3)
	Enriching educational experiences (se4)
	Supportive campus environment (se5)
Endogenous latent variable	
Success of Study (SS)	Initial GPA (ss1)
	Final GPA (ss2)

Source: Field data

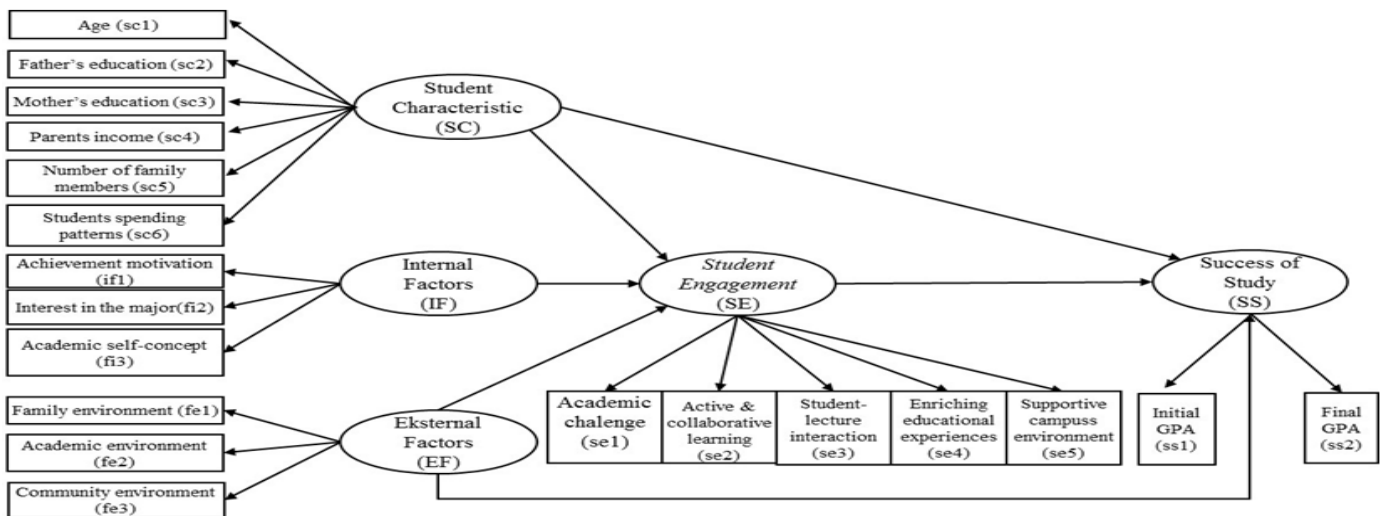


Figure-2. Structural model of the role of student engagement to the success of the study

Source: Development of conceptual model

3. Results and Discussion

3.1. Results

The data analysis using SPSS showed that the value of r count was greater than the value of r statistical tables for all the questions, indicating that all questions were valid according to criteria of Hair *et al.* (2008). Based on Table 2, the value of Cronbach's alpha was greater than criteria suggested by (Arikunto, 2009; Latan, 2012) indicating that a cut-off value of 0.600 was acceptable. Thus, the instrument used was reliable. The majority of respondents were female (62.6%), and most of them (39.7%) were from Java and Bali Province. The sources of financing for university were 68.12% from the central government, 20% from local government and 11.88% from the private companies.

Table-2. The analysis result of the questionnaire validity and reliability test

No	Variables	Reliability (Cronbach's Alpha)	Range of validity coefficient
1	Achievement motivation (if1)	0.759	0.387 – 0.633
2	Interest in the major (if2)	0.906	0.402 – 0.760
3	Academic self-concept (if3)	0.735	0.371 – 0.607
4	Family environment (ef1)	0.602	0.500 – 0.720
5	Academic environment (ef2)	0.805	0.387 – 0.724
6	Community environment (ef3)	0.609	0.595 – 0.597
7	Academic challenge (se1)	0.920	0.385 – 0.826
8	Active and collaborative learning (se2)	0.769	0.381 – 0.719
9	Student-lecture interaction (se3)	0.827	0.440 – 0.601
10	Enriching educational experiences (se4)	0.817	0.367 – 0.729
11	Supportive campus environment (se5)	0.894	0.506 – 0.742

Source: Field data, SPSS output

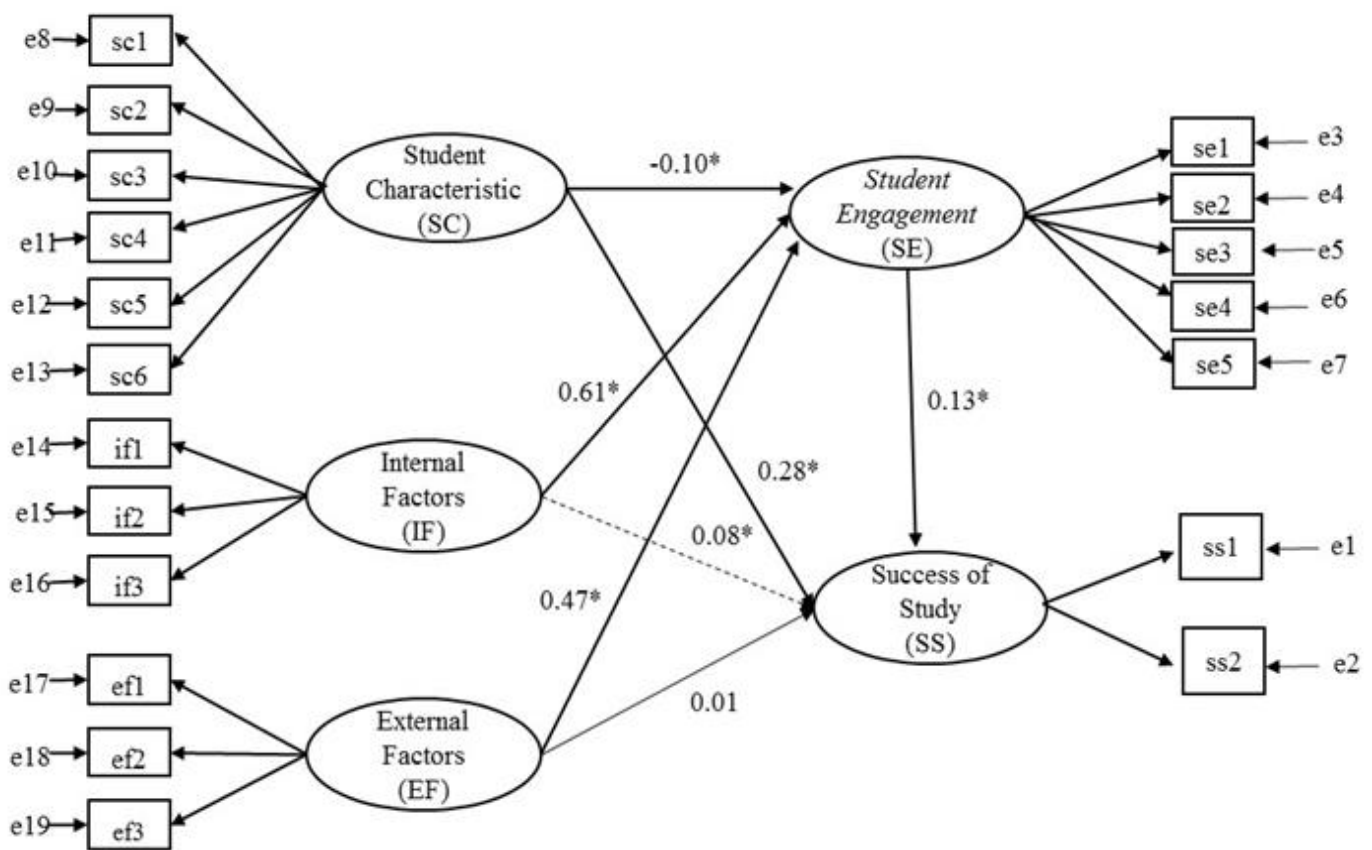
The summary of SEM results is shown in Table 3. The results of the overall criteria of the research model (Goodness of Fit) includes in the acceptable range (Ferdinand, 2002; Wijayanto, 2008). GFI has a range of values between 0 (poor fit) to 1 (perfect fit), the high score in this index indicates that the model was better fit. RMSEA which is less than or equal to 0.08 is the acceptance requirement of the models that shows a close fit criteria of the model based on the degrees of freedom. The relative suitability size of value CFI, IFI and NFI was higher than 0.90. The results shown in Table 3, the overall model than had been constructed had appropriate values (goodness of fit statistic of structural model had met the expected criteria). This indicated that the model could be used to assess the success study of the scholarship awardee based on the variables of indicator used.

Table-3. The summary of suitability criteria of research model

Suitability size	Cutt-off-Value	Result	Criteria
RMSEA	≤ 0.08	0.062	Good fit
GFI	> 0.90	0.97	Good fit
IFI	> 0.90	0.98	Good fit
NFI	> 0.90	0.95	Good fit
CFI	> 0.90	0.98	Good fit

Source: Field data, SEM output

Figure 3 shows a path diagram of research structural model from the output of SEM analysis. The figure shows the correlation coefficient between the exogenous latent variables in the SEM and path coefficients between each exogenous variable and endogenous latent variables. SEM model was constructed to analyze the effect of variables of student characteristics, internal factors and external factors on student engagement and success of the study and also to investigate the degree of relationship between latent variables. Latent variable (oval) is a construction that is constructed from measured variables (indicators shown in a rectangular shape). The path of the latent variables (oval) to the measured variable (rectangular) indicates the importance of the relationship of indicator variables to the latent variables. The relationships of the indicator variable to the latent variables (dimension of student characteristics, internal and external factors, student engagement and success of the study) is equal to the value of the variable content on its variable components (not shown in the schematic figure). All weight measurement (loading factor) was significantly different from zero. The path of the latent variables (SC, IF, EF) to the SE and SS indicates the importance of the direct influence of the independent variable on the dependent variable (SS) and intervening variable (SE). The dashed lines indicates the importance of indirect influence of the independent variable on the dependent variable. The exogenous latent variable also takes into account errors or other influences that are not visible (e.g., e1, e2, e3 ...) which may affect the variables outside the latent variables.



Description: * p < 0:05, dashed lines: indirect influence

Figure-3. The result of Structural Equation Modelling (SEM) analysis

Source: Field data, SEM output

The result of SEM analysis indicated that in significance level of 5% ($\alpha = 0,05$), the exogenous latent variable of internal factors (IF) (0.61) and external factors (EF) (0.47) affected significantly positive on student engagement (SE). These result indicated that for every increase in the standard deviation of the IF, the standard deviation of SE would increase 0.61. Whereas, the effect of variable of student characteristics (SC) on SE had negative value (-0.10). These results suggested that for each increase of standard deviation of student characteristics, the standard deviation of student engagement would decrease by 0.10. In other words, SC affected significantly negative on the SE. It was

also found from the result of the SEM that exogenous latent variables of SC (0.28) affected significantly positive on the success of the study (SS). The effect of variable of IF on the SS (0.08) was significantly indirect positive effect through SE. These results indicated that each increase of standard deviation of IF would make SE increase and this made the standard deviation of SS increase 0.08. The interesting result was that external factors (EF) had no significant effect on the success of the study (SS). The results also showed that SE affected significantly on the SS (0.13). Recapitulation of SEM estimation results are shown in Table 4. Hypothesis which has t-test value greater than t statistic table value at significance level of 5% (1.96) shows significant effects.

Table-4. The result of SEM model estimation

Hypothesis testing	Loading Factor		T-test	Result
	Direct effect	Indirect effect		
SC → SE	-0.10*	-	-3.87	Affected significantly
IF → SE	0.61*	-	13.85	Affected significantly
EF → SE	0.47*	-	7.55	Affected significantly
SC → SS	0.28*	-0.01	8.82	Affected significantly
IF → SS	-	0.08*	2.08	Affected significantly
EF → SS	0.01	0.06	0.27	Not affected significantly
SE → SS	0.13*	-	2.01	Affected significantly

* Significant at the level of 5%

Source: Field data, SEM output

3.2. Discussion

This study aimed to analyze the factors (i.e. student characteristics, internal factors and external factors) that affect student engagement and success of the study as well as the role of student engagement to the success study of the scholarship awardee. Being consistent with the results of several previous studies (Naylor and Smith, 2001; Urién, 2003; Rugutt and Chemosit, 2005; Zwic, 2012) the results of this study indicated that student characteristics, internal factors and external factors of students had positive correlation with student engagement and success study of scholarship awardee.

The factors that affect student engagement and success of the study. The results of the study showed that the student characteristics, internal and external factors had a significant effect on student engagement. As a result, the hypotheses H1(a), H2(a) and H3(a) were acceptable. These findings were basically understandable, considering that student engagement is a behavior and an attitude that are formed from a combination of various factors that involves in students themselves and the supportive factors outside the student. Fredricks *et al.* (2004) conducted a review of 44 studies about student engagement and said that the student engagement consists of three dimensions: the behavioral engagement which is closely related to the idea of participation or physical involvement. The other dimension is the emotional engagement which involves in positive and negative reactions to the teacher, other students, and classroom and school activities. And the dimension of cognitive engagement, which involves in the desire to make efforts in order to understand complex ideas and to master the difficult skills. Internal and external factors, which have a positive influence on students, will trigger the students to be actively involved in a variety of academic and non-academic activities that will develop the students' potencies. The students who have high achievement motivation, high interest in the major and high academic self-concept will have high student engagement in taking their studies in higher education (Gibbs and Poskitt, 2010; Cazan, 2014). The supports from external factors also become the trigger for students who have high student engagement (Ani, 2013; Rigg *et al.*, 2013; Juwita and Kusdiyati, 2015).

Another result of this study was that the student characteristics affected significantly negative on the student engagement which meant student characteristics that tended to be low would affect on student engagement that tended to be high. These results indicated that the scholarship awardee who are from poor families, which are shown by lower parent's education, lower parent's income and lower student's spending patterns, would have a higher student engagement. The students who have these characteristics tend to have a higher student engagement because they are better motivated to succeed in their studies in order to develop the social status of the family in the future (Urién, 2003).

Student characteristics and internal factors (through student engagement) were shown to correlate positively with the success of the study, as a result, the hypotheses H1(b) and H2(b) were acceptable. These results indicated that, in general, the scholarship awardee with older age and greater number of families will have a better success rate of study. An older age of students shows the more stable of maturity and high academic self-concept (Guay *et al.*, 2003). The better self-concept will also affect on the higher achievement of academic performance. Overall, the age as one of the student characteristics have shown wide variation of results in higher education (Khaira, 2016). Students with a large number of families tend to have a higher success of study. It was assumed that this is because the respondents felt responsible for his family's future. The sense of responsibility encourages respondents to achieve good academic achievement. This result of the study are consistent with the research from Mardiyanti (2014) and Naylor and Smith (2001).

Internal factors which include achievement motivation, interest in major and academic self-concept was proven to have a significant indirect effect to the success of the study of scholarship awardee through student engagement. This result indicates that student engagement is a mediator for the effect of internal factors to the success of the study. The higher the achievement motivation, interest in major and academic self-concept from a student, the better student engagement and so will result in better achievement. Students who have high internal factors will have a high responsibility and strive to realize the goal, which is completing their studies in higher education. This study is aligned and supports other research as conducted by Liana (2013) which proved that the motivation to learn affect positively on academic achievement (GPA) of students. A study by Kpolovie *et al.* (2014) showed that interest in

learning is significantly related to the student's academic performance and can significantly predict the academic achievement. [Arefi and Naghebzadeh \(2014\)](#) proved that academic self-concept is significantly correlated with student achievement.

An interesting finding of this study was that the external factors do not significantly affect on the success of the study, therefore H3 was rejected. This result indicated that the success of the study of the scholarship awardee is not determined by external factors. Conditions around the scholarship awardee like family environment, academic environment and the community environment do not affect the success study of the students.

These findings might occur because scholarship awardee students have had the good experience and academic quality before entering the university level as well as at the time in university, so that external factors do not influence their academic achievement. Some researches on the influence of external factors on the success of the study shows results that support this research. [Williams \(2010\)](#) who had examined the impact of internal and external factors to the success of African-American student's studies proved that there was no significant relationship between GPA and family relations, but the campus environment (including relationships with friends and lecturers) contributed to the success of the study.

Another study which was conducted by [Principe \(2005\)](#) showed that the extra-curricular activities, family and work did not affect student's academic performance in both state and private universities in Puerto Rico. These results of this study are different from the results of research conducted by [Crosby \(2011\)](#); [Khan \(2014\)](#) and [Saleh \(2014\)](#) which states that factors of family, campus environment and activities in the organization (community) significantly affect on the success of the student's study.

Such differences may be due to the different environmental conditions of the family and community for each study. Cultural factors will affect on how family and people give support to the students.

The role of student engagement to the success study. Besides the results that student engagement contribute positively to the success of students study through internal factors, the study also found that student engagement directly affects significantly on the success of the study.

Therefore thus the hypotheses H4 was acceptable. Which means that the increasing student engagement will enhance the success study of the scholarship awardee. The success of the study shown by high academic achievement requires high engagement ([Fredricks et al., 2004](#); [Carini et al., 2006](#); [Dharmayana et al., 2012](#)). [Trowler \(2010\)](#) revealed that student engagement is related to the interaction between time, effort and other relevant resources invested by the students and the educational institutions which are meant to optimize the student's experiences, to improve the result of learning and the development of student's performance, and the reputation of the institution. These functions underlie the positive contribution of student engagement to the success of study.

Scholarship awardee who have high student engagement also had also proven to have good academic achievements. These academic achievements were gained from the effort, the involvement of participation and commitment of the students to participate in all educational activities at the University. The more students involved (engaged) in the activities of education, the more they controlled and were able to achieve the success of the study.

4. Conclusion and Implications

4.1. Conclusion

This study showed that student characteristics, internal factors and external factors were proven to be a predictor of the success rate of the scholarship awardee's study. Models which were constructed can be used as a model of the success of scholarship awardee's study.

The student engagement has an important role in the success of the study. Institutions of higher education can improve the success of their student's study by increasing their student engagement level. The student engagement is also proved to be a mediator for the effect of internal factors to the success of the study.

4.2. Implications

The institutions of higher education have an important role in generating good levels of student engagement ([Kuh et al., 2006](#)) because student engagement represents aspects of the student behaviour and the performance of institution. One way to increase the student engagement can be done by improving the internal factors that even starts before becoming the university's student.

The highest motivation from student candidates to choose a university is the study program or major ([Solikhah, 2016](#)). This could be done by increasing the interest of student candidates to majors in IPB; what can be done are vigorously informing the superiority of IPB in various mass media channels, increasing the utilization of social media to communicate with stakeholders and increasing the frequency of canvassing activities or doing socialization to the remote areas, especially in potential areas (having a number of qualified IPB students, potentially providing scholarships and having large potential resources in the agricultural sector in the broader sense).

Relating to external factors, higher educations can increase its support to the student achievements by improving academic facilities and infrastructures as well as student services and organizing monitoring activities and intensively motivating the scholarship awardee. The academic challenge becomes a key factor and contributes greatly to the increase of student engagement and the success study of student's.

The academic challenge is a significant GPA predictor of first year students ([Fursman, 2012](#)). One of activities that can facilitate this is to hold more scientific competitions in IPB. Students will feel challenged and excited if they are always given the things that cognitively challenge them to develop their potencies and their scientific level.

The student engagement can also be improved by increasing student's interaction with lectures. One of activities is to increase the student involvement in lecture research projects, so that the students can have the opportunity to learn applying their knowledge through research.

Limited time availability of the lecturers to provide guidances, mentorings or discussions with the students is thought to be one of reasons of why the interaction between students and lectures is not good enough. The

institutions of higher education can improve these conditions by organizing a sharing session program as many as two to three times in one semester.

The participants are students, their lecturers and their academic counsellors. In this activity, it is expected that students have an opportunity to present their academic and non-academic problems which they face and therefore the lecturers can help provide guidance and solutions to the students. This program can reduce the distance or gap that appears between students and lecturers.

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