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## The Analysis of the Learning Efficiency of Bidikmisi Students

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### Abstract

This study aims to determine the factors that influence student learning outcomes and the level of efficiency of the use of these inputs. Respondents in this study were the recipients of the 2015 - 2017 Bidikmisi class at the PIPS Department of the University of Jambi FKIP, namely 53 people. This study uses quantitative methods. Data were analyzed using the Stochastic frontier production function approach. The results showed that, first the use of books / modules had a positive and significant effect on the learning output of bidikmisi recipient students. Second the use of material photocopy material has a positive and significant effect on learning output. And, third, the use of pulses for internet access has a positive and significant effect. The level of student learning efficiency in using learning inputs averaged 94 percent. Student learning inefficiency is influenced by organizational activities and interaction with Bidikmisi managers, significant at  $\alpha = 5$  percent.

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### Abstrak

Penelitian ini bertujuan untuk mengetahui faktor-faktor yang mempengaruhi hasil belajar siswa dan tingkat efisiensi penggunaan input ini. Responden dalam penelitian ini adalah penerima kelas Bidikmisi 2015 - 2017 di Departemen PIPS FKIP Universitas Jambi, yaitu 53 orang. Penelitian ini menggunakan metode kuantitatif. Data dianalisis menggunakan pendekatan fungsi produksi perbatasan Stochastic. Hasil penelitian menunjukkan bahwa, pertama penggunaan buku/modul memiliki pengaruh positif dan signifikan terhadap hasil belajar siswa penerima bidikmisi. Kedua, penggunaan bahan fotokopi memiliki pengaruh positif dan signifikan terhadap hasil belajar. Dan, ketiga, penggunaan pulsa untuk akses internet memiliki efek positif dan signifikan. Tingkat efisiensi belajar siswa dalam menggunakan input pembelajaran rata-rata 94 persen. Inefisiensi belajar siswa dipengaruhi oleh aktivitas organisasi dan interaksi dengan manajer Bidikmisi, signifikan pada  $\alpha = 5$  persen.

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## INTRODUCTION

Every citizen has the right to education as an effort to improve the quality of life. According to the mandate of the 1945 Constitution, the government is obliged to finance education for every citizen. In order to realize such thing, the government issued Bidikmisi program. Bidikmisi is a tuition fee assistance for poor and outstanding academic potential university students' candidates to study in higher education in excellent study programs until they graduate on time. (Dirjenbelmawa, 2017).

In bidikmisi program, students get tuition fee assistance of Rp 2.400.000 and living expenses of Rp 3.900.000 per semester. Those fees are given monthly by the government through Directorate General of Learning and Student Affairs (Dirjenbelmawa, 2017:8). Besides, Bidikmisi students also get trainings and facilities from the management colleges to support their academic and students' activities.

Time and cost limitations require students to be able to use the scholarship effectively in order to support their education. According to Irianto (2013:152) the education funding that supports learning is the purchase of stationary, books or notes, modules, photocopy, and fees for purchasing books. In the same way, Permendiknas No.30 Year 2010 states that education funding assistance is given to books purchase and stationary, food, clothes, shelter, transportation, and information as well as communication. Thus, students' success is prominently determined by their ability to combine learning inputs in order to get optimum achievement. This is in accordance with bidikmisi program demands that bidikmisi students are expected to improve their achievement, covering curricular field, co-curricular, as well as extracurricular, and become graduates who are dependent, productive, and have social care so that they can have a role in an effort to break the poverty chain and community empowerment (Dirjenbelmawa, 2017:8).

Studies on the accuracy of the utilization of learning inputs are really needed in order to repair and improve bidikmisi students' learning efforts. Moreover, learning facilities for bidikmisi students are mostly from bidikmisi scholarship, so the utilization must be done as efficient as possible. The inefficiency of learning inputs utilization is caused by the lack of understanding of good learning efforts in higher education by students. The success of learning effort is determined by the maturity of thinking that is formed by learning process, guidance, and other extracurricular activities. Analysis done to those factors explain the effectiveness of learning process in forming students' mindset that is needed to improve their capacity in running learning effort in order to get optimum and good quality learning achievement as well as can graduate on time.

Minarti (2016:226) states that efficiency is related to the results of quantity of an event. A learning activity can be said efficient when the expected learning achievement is achieved by having minimum efforts (Syah, 2014:123). There are two kinds of learning efficiency to achieve by students, namely: (1) Learning effort efficiency, any efforts in anything used to achieve satisfying learning outcomes, such as power and thought, time, learning equipment, and other relevant things related to learning activities; (2) Learning outcomes efficiency, a learning activity can be said efficient when high learning achievement is achieved through particular learning efforts.

The efficiency of bidikmisi students of PIPS (Social Science Education) in FKIP (Faculty of Teacher Training and Education) of Universitas Jambi showed the level of learning achievement from the learning processes that have been done. In table 1, there were 2.65 percent of bidikmisi students obtained GPA less than 3, and there were 47.79 percent students gained GPA ranged from 3.01-3.50.

According to students' GPA in table 1, it was known that there were several bidikmisi students who were inefficiently did their learning efforts. Syah (2014) states that one factor that influences learning achievement is instrumental factor, namely medium or learning equipment, physical building or classroom physical environment, learning media, teachers, and curriculum or learning materials as well as learning strategies.

Sukardi (2011:230-234) argues that failures in learning achievement may be caused by several factors arisen individually or through interaction methods. These internal factors cover: 1)

health, 2) self-adaptation problem. Meanwhile, external factors cover: 1) environment, 2) bad teaching method, 3) students' parents, 4) surrounding community.

Based on a study done by Zulkifli (2018) regarding factors influencing the learning efficiency of students in Early Childhood Teacher Education (PG-Paud) study program in FKIP of Universitas Riau, it is known that students' learning efficiency is influenced by external and internal factors. In his study, the external factors (71.15 percent) were more dominant than internal factors (68.75 percent) experienced by the students in PG-Paud study program of FKIP Universitas Riau in 2017. For more, external factors include peers, classroom, learning sources, lecturers, academic advisor lecturers, and also economic factors as well as parents' attention. Meanwhile, the internal factors cover health, emotion, academic potentials, and students' learning styles which are unique and individualistic.

A study conducted by Zulkifli (2018) analyzed learning efficiency descriptively. However, descriptive analysis only describes learning efforts done by students. On the other hand, learning efficiency as a particular learning effort to achieve high learning achievement needs analyses which calculate learning efforts with learning achievement gained by students.

Another study from Wulandari, Yanto and Pujiati (2016) in Universitas Negeri Semarang concludes that bidikmisi students need to purchase books wisely so that their scholarship funds can be allocated efficiently. The availability of references are needed to support students' learning success, but students' attitude in fulfilling the learning needs is only based on scholarship funds allocation. Therefore, the suitability of the books use for learning achievement is needed to study so that students can obtain the information of efficient learning patterns.

Susilo's findings (2014) reveal that scholarship recipients have significant and positive relationship between the benefits of scholarship for the recipients. This study is still general since it only studied the real benefits of bidikmisi received by students. It would be more objective and meaningful when it analyzed the utilization of the scholarship in learning efforts so as to give description about the precision use.

Sucahyo and Muhammad research findings (2014) mention that bidikmisi students' academic learning achievement was higher than those who did not get bidikmisi scholarship. Since this study was based on learning achievement, it resulted accidental perception on the findings. In addition, analyses on processes would be more relevant in revealing the real facts so that it would give more comprehensive results.

The purposes of this study were to determine the learning efficiency of bidikmisi scholarship students in batch 2015-2017 of PIPS Department in FKIP of Universitas Jambi and the factors that influenced it. Learning outcomes are the output of learning efforts carried out by students, namely an effort in combining input or learning resources to produce maximum achievement. In the production concept, an effort to combine inputs to produce optimal output is a fron-

Table 1. The Grade Point Average (GPA) of *Bidikmisi* Scholarship Students Batch 2015-2017

Study Programs/GPA	2.00 – 3.00		3.01 – 3.50		3.51 – 4.00		Total
	f	(%)	f	(%)	f	(%)	
Economic Education	1	2.04	15	30.61	33	67.35	49
History Education	-	-	20	80.00	5	20.00	25
Civic Education	2	5.13	19	48.72	18	46.15	39
Total	3	2.65	54	47.79	56	49.56	113

Source: Bureau of Academic and Students Affairs (BAK) of Universitas Jambi, 2018

tier production function. Therefore, the analysis of learning efficiency with the frontier production function approach is a novelty in the study of economic.

**METHOD**

The method used in this study was quantitative in form of Ex Post Facto (Sugiyono, 2013:6), namely investigating cause and effect relationship between the use of a bundle of learning input to produce the best learning output in order to know learning efficiency and analyze factors which influence it. The learning input consists of books/ modules (X<sub>1</sub>), photocopy materials (X<sub>2</sub>), stationaries (X<sub>3</sub>), and credit for the internet access and communication (X<sub>4</sub>). Meanwhile, learning output is students’ academic grades which are achieved at the end of semester. In addition, factors that are indicated to influence students’ learning efficiency are organization activities (Z<sub>1</sub>), the intensity between students with bidikmisi scholarship managers (Z<sub>2</sub>), and study period (Z<sub>3</sub>).

Population of this study were all students who received bidikmisi scholarship batch 2015-2017 of PIPS department in FKIP of Universitas Jambi registered in BAK of Universitas Jambi in even semester in the academic year of 2017/2018 amounted to 113 students, consisting of batch 2015 students of 33 people, batch 2016 students of 35 people, and batch 2017 students of 45 people. According to Sugiono (2013:120) when population members are not homogenous and have proportional strata, sampling is done by using proportionate stratified random sampling. Through this technique, the researchers obtained 53 samples as what is presented in the following table 2.

The learning input and inefficiency learning sources data were collected by using questionnaire. Meanwhile, the learning output data were obtained from the documentation of Bureau of Academic Affairs of Universitas Jambi. The data analysis technique in this study used multiple linear regression analysis with the Ordinary Least Square method and Maximum Likelihood Estimation method with the help of Frontier software Version 4.1C. For more, The Cobb Douglas functional form can be stated as follows:

$$\log Y = \beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \beta_4 \log X_4 + V_i - U_i \quad Y_i = \beta_0 X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4} \exp(V_i - U_i)$$

Where:

Y<sub>i</sub> = Learning Outcomes

β<sub>0</sub> = Intercept

β<sub>i</sub> = first elasticity (i = 1,2,3,4)

X<sub>1</sub> = Books / Modules (Pcs)

X<sub>2</sub> = Photocopy (Sheet)

X<sub>3</sub> = Stationery (Pcs)

X<sub>4</sub> = Credit for internet access (Megabytes)

Table 2. The Population and Samples of the Study

Batch	Number of Population	Calculation	Number of Sample
2015	33	(53/113) x 33	16
2016	35	(53/113) x 35	16
2017	45	(53/113) x 45	21
Total			53

Source: BAK of Universitas Jambi, 2018

$V_i$  = Random model error

$U_i$  = Random change that prescribes the technical inefficiency of the first results learning

To analyze the level of technical efficiency of rubber production, the following formula was used:

$$TE_i = \frac{Q_i}{Q_i^*} = \frac{\beta_0 X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4} \exp(V_i - U_i)}{\beta_0 X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4} \exp(v_i)} = \exp(-u_i)$$

Where:

TE: first learning efficiency

Qi: first learning outcomes (output)

Q\*: Potential learning outcomes /1st learning frontier expectation value of the mean of  $u_i$ , thus  $TE_i \leq 1$ .

Decision:

$H_0$ :  $TE = 1$ ; learning efforts undertaken by students have been technically efficient

$H_1$ :  $TE < 1$ ; learning efforts undertaken by students have not been technically efficient

The measurement of technical inefficiencies used in this study reduced the effect model of technical efficiency from Battese and Colli (1995) which was used in goods production activities. In this study, several factors used to estimate the effects of technical inefficiency on student learning efforts were activeness in organization, students' interaction with scholarship managers, and study period. Mathematically it can be written as in the following equation:

Notes:

$u_i$ : the value of technical inefficiencies that are automatically obtained from the Frontier 4.1 program

$Z_1$ : Students' activeness in organization

$Z_2$ : interaction with the scholarship manager

$Z_3$ : study period

$I$  : the sample of learning efforts ( $i = 1, 2, \dots, N$ )

$\delta$  : parameters to estimate

$$u_i = \delta_0 + \delta_1 Z_1 + \delta_2 Z_2 + \delta_3 Z_3 + \varepsilon_i$$

## RESULTS AND DISCUSSION

Bidikmisi is the government's flagship program aimed at improving access and learning opportunities in higher education for students who are economically unable but have good academic achievements. Bidikmisi recipient students are freed from all tuition fees, both registration fees and tuition fees and obtain 8-semester living expenses.

With the bidikmisi program, access and opportunities for students who are economically disadvantaged and have good academic potential to study at Higher Education experience a significant increase. Besides that, its existence has contributed greatly to improving the quality of higher education. Based on the records of the Director General of Higher Education Learning & Student Affairs (2018), there were more than 87 percent of Bidikmisi students getting a GPA above 3.0. In the non-academic field, there were more than 5 students as finalists of outstanding

students and won medals in the National Student Scientific Week (PIMNAS) and won national and international writing competitions.

Bidikmisi recipient students get the opportunity to study in college with the help of tuition fees for 8 semesters. Besides, students who receive bidikmisi must be able to obtain good achievements in the academic and non-academic fields consistently. In addition to academic demands, students receiving bidikmisi must also be active in extracurricular activities or student organizations, such as reasoning activities, talent interests, social /community service as a form of character building and or love for the nation and the State.

By the existence of these terms and demands, the recipient students must be able to take advantage of the time and funds of education that they receive as efficiently as possible so that they can obtain high academic achievement and graduate on time. The consequences of these terms result in the termination of the administration of bidikmisi and must bear the costs of further education. As stated by the Vice Rector for Students and Alumni affairs of Universitas Jambi (2018), "If you cannot maintain academic achievement, then UNJA will evaluate the BidikMisi recipients in each semester".

The tuition fee assistance is an element that greatly determines the continuity of the education of bidikmisi recipient students in universities. Therefore, the utilization must be based on learning needs. According to Irianto (2013: 152), study support costs are the cost of purchasing stationery, notebooks or notes, modules, photocopies, and fees for purchasing books. Provisions on the use of tuition fee assistance as regulated in Article 5 paragraph 1 and 2 of Permen Number 30 Year 2010 state that tuition fee assistance for students is prioritized for the needs of: purchasing books and stationery, food, clothes, shelter, transportation and information as well as communication.

The accuracy of the use of tuition fee assistance can be seen in the utilization of learning facilities and infrastructure that have been obtained in learning efforts to obtain maximum learning output. Based on the research that has been conducted on 53 bidikmisi recipient students in the PIPS Department of the FKIP Universitas Jambi in 2018, an overview of students' learning efforts in utilizing learning inputs to produce learning output is showed in the following Table3.

In table 3, the mean of Bidikmisi recipient students GPA in the even semester of the academic year of 2017-2018 were 3.56, the highest were 3.96 and the lowest were 2.8. Based on the

Table 3. Bidikmisi Recipient Students Learning Efforts of PIPS Department in FKIP of Universitas Jambi

No	Students' Learning Efforts Identifiation	Mean	Max	Min
1	Learning Outcomes (GPA)	3.56	3.96	2.89
2	Books/ Modules (pcs)	8	20	2
3	Photocopy Materials (sheets)	214	400	50
4	Stationaries (pcs)	11	20	3
5	The Internet Credit (mb)	2519	6000	500
6	Organization activeness	3	6	1
7	Interaction with the Scholarship Managers	3	6	1
8	Study Period (smt)	2	5	1

Source: processed primary data, 2018

provisions of the academic achievement of the recipients of Bidikmisi students, the presentation has met the specified minimum standard, namely 2.75. Studies conducted by Hartono (2012); Sucahyo (2014); Arsana (2016), found that the mean of bidikmisi students' learning achievement is above 3 (very satisfying).

These learning achievements were obtained from the learning efforts that have been made, namely by utilizing the learning inputs obtained from the use of Bidikmisi, including books / modules, photocopy materials, stationery, and credit for the purposes of internet access. Based on Table 1, the average of books/modules used by bidikmisi recipient students was 8, at most 20 books/modules and at least 2 books/modules. In order to support learning efforts, such as doing assignments and completing study references, bidikmisi recipient students used copy materials whose mean in one semester were as many as 214 sheets, at most 400 sheets and at least 50 sheets. Alternatively, stationeries used to support learning activities had mean as many as 11, at most 20 and at least 3.

In supporting learning efforts, bidikmisi recipient students also used learning materials/resources accessed from the internet. Based on Table 3, the mean of the use of credit to access internet by bidikmisi recipient students in one semester were 2,519 mb, at most 6,000 mb and at least 500 mb.

The accuracy of the use of learning inputs in producing optimal learning outputs was analyzed using the cobb-Douglas production function approach with a stochastic frontier model, namely the use of one input bundle that will produce optimum output. The stochastic frontier model used in this study was the method of estimating maximum likelihood estimator (MLE). This method was conducted in two stages, first using the ordinary least square (OLS) method as an estimator of technological parameters and learning inputs ( $\beta_n$ ). The second stage used the

Table 4. The Results of Analysis of Frontier Learning Functions by Bidikmisi

Recipient Students			
Variables	coefficient	standard-error	t-ratio
beta 0	3.40751	0.0	189.4*
beta 1	0.01672	0.0	8.4*
beta 2	0.00025	0.0	2.3**
beta 3	-0.00353	0.0	-1.1
beta 4	0.00003	0.0	3.7*
delta 0	0.78753	0,2	3.7*
delta 1	-0.15192	0.1	-2.6**
delta 2	-0.14907	0.1	-2.3**
delta 3	-0.07820	0.0	-2.7*
Variance parameter			
$\sigma^2$	0.02	0.01	3.12*
g	0.99	0.01	98.90*
Log-Likelihood OLS	55.52		
Log-Likelihood MLE	85.52		
LR	60.00		
Mean TE	0.94		

Source: primary data processed, 2018

Notes:

\*: real at  $\alpha = 1\%$ ; \*\*: real at  $\alpha = 5\%$ ; \*\*\*: real at  $\alpha = 10\%$

MLE method to estimate the overall learning input parameters ( $\beta_n$ ), intercept ( $\beta_0$ ) and the variants of both the  $V_i$  and  $U_i$  error components ( $\sigma_v^2$  and  $\sigma_u^2$ ). The estimation of stochastic frontier learning function parameters and the effect of technical inefficiency models with MLE was done simultaneously by using frontier 4.1 program by Coelli. The data processed through this software are presented in Table 4.

In table 4, the log-likelihood value using the MLE method (85.52) was greater than the log-likelihood value with the OLS method (55.52). Thus, the production function with the MLE method was better and in accordance with conditions in the field. The  $\gamma$  value that was closer to 1, namely 0.99 indicated that the error term only came from the result of inefficiency ( $u_i$ ) and not from noise ( $v_i$ ). Further, the generalized-likelihood (LR) ratio value of 60 was greater than the Chi Square table at  $\alpha = 5$  percent and  $df = 5$ , which was equal to 11.07, so there were technical inefficiencies in the model.

*H<sub>1</sub>: there is a significant influence on the use of books / modules, photocopy materials, stationery and credit on the learning outcomes of bidikmisi recipient students of PIPS Department in FKIP of Universitas Jambi.*

Based on the estimation results of stochastic frontier production function, the use of books / modules and credit had a very significant effect on the 99 percent confidence level, and the use of photocopy material had a significant effect on the 95 percent level of confidence in learning outcomes. On the other hand, the use of stationeries did not significantly affect the level of 95 percent. This explained that the addition of inputs will have an impact on the addition of learning outcomes. Mathematically, the stochastic frontier learning function model is described in the following equation:

$$\log Y = 3,41 + 0,017 \log X_1 + 0,00025 \log X_2 - 0,0035 \log X_3 + 0,00003 \log X_4 + V_i - U_i$$

The use of books / modules. Books/modules are learning references for students. Various explanations about theories and analysis techniques are contained in the book/module. Thus, its utilization can support the learning process for students to achieve maximum learning output. The results of the analysis of the stochastic frontier learning function model showed that an increase in the use of 1 percent of books/modules could increase learning achievement by 0.017 percent. The results of this study are reinforced by the findings of Anisah and Azizah (2016) that increasing the use of textbooks by 1 point will increase learning outcomes by 0.86 points. The influence is statistically significant where  $t_{hit}$  (9,18) produced is greater than  $t_{tab}$  (2,05)

The use of photocopy material. Photocopy materials are generally needed by students to fulfill learning tasks and complete learning materials that are not available in printed form. The completeness of the learning assignments given by the lecturer shows the high integrity of students towards the learning they follows. Thus, the more complete and the quality of tasks made by students will produce maximum learning output. In table 4, it shows that increasing the use of 1 percent photo copy material would increase learning achievement by 0.00025 percent.

The use of credit for internet access. Internet access done by students is generally done through smartphones and laptops. To get internet access, an adequate credit is required. Therefore, the more internet access the more credits you use. Fulfillment of learning materials will be more easily obtained from internet access. The utilization of learning materials will further enhance understanding of the object being studied. Therefore, the support of internet facilities will increasingly have the potential to obtain satisfying learning achievements. Based on the results of the analysis as seen in Table 4, it is explained that increasing the use of 1 percent pulses would increase learning achievement by 0.00003 percent. A study conducted by Ismail (2017)

shows the same results, that the use of the internet has a positive and significant effect on learning outcomes, where  $t_{it}$  (30.89) is greater than  $t_{tab}$  (1.73).

*H<sub>2</sub>: the use of learning inputs is technically efficient in producing learning achievements.*

Based on the results of the analysis as showed in Table 4, the level of efficiency of the use of learning inputs by students who received Bidikmisi in producing learning achievement was 0.94. This meant that the use of learning inputs was not technically efficient because it was still smaller than 1. The level of efficiency explained that there was still a 6 percent chance for students to improve learning achievement by using the required learning inputs. By using a different method, Zulkifli (2018) in his research found a similar tendency that students' learning efficiency was in the high category. The results of his research state that the factors that dominate the level of students' learning efficiency are external factors.

*H<sub>3</sub>: there is a significant influence on the activity of the organization, the interaction with the managers of Bidikmisi and the period of study on the technical inefficiency of students' learning.*

Based on the results of the analysis as showed in Table 4, the bidikmisi recipient students were not efficient in utilizing learning inputs to produce optimum learning output because it was influenced by the activeness in the organization, interaction with the managers of bidikmisi and the study period. These three factors were statistically significant both at 99 percent confidence level and 95 percent influencing learning inefficiency.

Organization activeness. Bidikmisi recipient students are not only required to have good achievements in the academic field. Non-academic activities, such as extra-curricular activities are intended to support the development of student characteristics so as to have intellectual and emotional intelligence. Through extra-curricular activities, students can develop their theoretical knowledge. In addition, students will be more eager to learn because they are facilitated by the expression of their interests and talents. With the development of reasons and thoughts through these extra-curricular activities, students will be wiser in utilizing the learning inputs they have.

Based on the results of the analysis in table 4, the organization activeness of bidikmisi recipient students had a negative and significant effect on learning inefficiencies at the 95 percent confidence level. This meant that the more active bidikmisi recipient students would result the more efficient learning efforts. A study conducted by Pradayu (2017), states that in the short term, organization activeness will change attitudes, behaviors and personalities so that students are mature in facing every challenge in carrying out organizational activities carried out. In the long run, the learning efforts carried out by students have an impact on academic achievement.

Interaction with Bidikmisi managers. To support academic and students' activities, bidikmisi recipient students receive guidance and facilities from universities. Guidance in the academic field directs students to utilize learning inputs efficiently so as to obtain optimum learning frustration. Thus, the higher the interaction between students and the management of Bidikmisi will create better learning efforts. The results of the study as showed in table 4 show that the interaction of students with Bidikmisi managers had a negative and significant effect on learning inefficiencies at the 95 percent confidence level. It showed that higher interaction between students with the bidikmisi managers would further improve learning efficiency.

Study period. Studying in college requires adjustments from the system of learning units to the semester credit system. The increase in student study period will further enhance maturity in learning. Students who are in a higher semester better understand the concept of study based on credit system, and academic norms so that it will be more efficient in utilizing the learning inputs possessed to produce optimal learning achievement. Eryanto and Rika (2013) in their study explained that, students who have cultural capital, namely the understanding of conceptual and normative codes that are dominantly written in a culture that includes knowledge, expertise and family will obtain higher academic achievement. The results of the study, as showed in table 4,

revealed that the study period had a negative effect and was significant at the level of 99 percent confidence on the learning inefficiencies of bidikmisi recipient students. This meant that the longer the study period of bidikmisi recipients would result more efficiency in using learning inputs in producing optimal learning achievement, but until at certain time limits the use of learning input would be inefficient. This is in line with the results of a study conducted by Djudin (2018) that the longer the study period students will reduce learning outcomes.

The use of books/modules. Books / modules are learning references for students. Various explanations about theories and analysis techniques are contained in the book/module. Thus, its utilization can support the learning process for students to achieve maximum learning output. The results of the analysis of the stochastic frontier learning function model showed that an increase in the use of 1 percent of books / modules could increase learning achievement by 0.017 percent. The results of this study are reinforced by the findings of Anisah and Azizah (2016) that increasing the use of textbooks by 1 point will increase learning outcomes by 0.86 points. The influence is statistically significant where  $t_{it}$  (9,18) produced is greater than  $t_{tab}$  (2.05)

The use of photocopy material. Photocopy materials are generally needed by students to fulfill learning tasks and complete learning materials that are not available in printed form. The completeness of the learning assignments given by the lecturer shows the high integrity of students towards the learning they follows. Thus, the more complete and the quality of tasks made by students will produce maximum learning output. In Table 4, it shows that increasing the use of 1 percent photo copy material would increase learning achievement by 0.00025 percent.

The use of credit for internet access. Internet access done by students is generally done through smartphones and laptops. To get internet access, an adequate credit is required. Therefore, the more internet access the more credits you use. Fulfillment of learning materials will be more easily obtained from internet access. The utilization of learning materials will further enhance understanding of the object being studied. Therefore, the support of internet facilities will increasingly have the potential to obtain satisfying learning achievements. Based on the results of the analysis as seen in table 4, it is explained that increasing the use of 1 percent pulses would increase learning achievement by 0.00003 percent. A study conducted by Ismail (2017) shows the same results, that the use of the internet has a positive and significant effect on learning outcomes, where  $t_{it}$  (30.89) is greater than  $t_{tab}$  (1.73).

*H<sub>4</sub>: the use of learning inputs is technically efficient in producing learning achievements*

Based on the results of the analysis as showed in Table 4, the level of efficiency of the use of learning inputs by students who received Bidikmisi in producing learning achievement was 0.94. This meant that the use of learning inputs was not technically efficient because it was still smaller than 1. The level of efficiency explained that there was still a 6 percent chance for students to improve learning achievement by using the required learning inputs. By using a different method, Zulkifli (2018) in his research found a similar tendency that students' learning efficiency was in the high category. The results of his research state that the factors that dominate the level of students' learning efficiency are external factors.

*H<sub>5</sub>: there is a significant influence on the activity of the organization, the interaction with the managers of Bidikmisi and the period of study on the technical inefficiency of students' learning*

Based on the results of the analysis as showed in Table 4, the bidikmisi recipient students were not efficient in utilizing learning inputs to produce optimum learning output because it was influenced by the activeness in the organization, interaction with the managers of bidikmisi and the study period. These three factors were statistically significant both at 99 percent confidence level and 95 percent influencing learning inefficiency.

Organization activeness. Bidikmisi recipient students are not only required to have good achievements in the academic field. Non-academic activities, such as extra-curricular activities

are intended to support the development of student characteristics so as to have intellectual and emotional intelligence. Through extra-curricular activities, students can develop their theoretical knowledge. In addition, students will be more eager to learn because they are facilitated by the expression of their interests and talents. With the development of reasons and thoughts through these extra-curricular activities, students will be wiser in utilizing the learning inputs they have. Based on the results of the analysis in Table 4, the organization activeness of bidikmisi recipient students had a negative and significant effect on learning inefficiencies at the 95 percent confidence level. This meant that the more active bidikmisi recipient students would result the more efficient learning efforts. A study conducted by Pradayu (2017), states that in the short term, organization activeness will change attitudes, behaviors and personalities so that students are mature in facing every challenge in carrying out organizational activities carried out. In the long run, the learning efforts carried out by students have an impact on academic achievement.

Interaction with Bidikmisi managers. To support academic and students' activities, bidikmisi recipient students receive guidance and facilities from universities. Guidance in the academic field directs students to utilize learning inputs efficiently so as to obtain optimum learning frustration. Thus, the higher the interaction between students and the management of Bidikmisi will create better learning efforts. The results of the study as showed in Table 4 show that the interaction of students with Bidikmisi managers had a negative and significant effect on learning inefficiencies at the 95 percent confidence level. It showed that higher interaction between students with the bidikmisi managers would further improve learning efficiency.

Study period. Studying in college requires adjustments from the system of learning units to the semester credit system. The increase in student study period will further enhance maturity in learning. Students who are in a higher semester better understand the concept of study based on credit system, and academic norms so that it will be more efficient in utilizing the learning inputs possessed to produce optimal learning achievement. Eryanto and Rika (2013) in their study explained that, students who have cultural capital, namely the understanding of conceptual and normative codes that are dominantly written in a culture that includes knowledge, expertise and family will obtain higher academic achievement.

The results of the study, as showed in Table 4, revealed that the study period had a negative effect and was significant at the level of 99 percent confidence on the learning inefficiencies of bidikmisi recipient students. This meant that the longer the study period of bidikmisi recipients would result more efficiency in using learning inputs in producing optimal learning achievement, but until at certain time limits the use of learning input would be inefficient. This is in line with the results of a study conducted by Djudin (2018) that the longer the study period students will reduce learning outcomes.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, it is concluded that (1) learning inputs that significantly influence the learning outcomes of students receiving bidikmisi cover the use of books / modules, photocopies and credit for internet access; (2) students who received bidikmisi technically are not yet efficient in utilizing learning inputs to produce optimum learning achievement; (3) the factors that significantly influence the learning inefficiencies of the recipients of Bidikmisi are organization activeness, interaction with Bidikmisi managers and study period.

Based on the conclusions of the study findings, it is recommended that bidikmisi recipient students should improve the efficiency of the use of learning inputs. The ability of students to utilize learning inputs in producing optimal achievement is determined by the level of maturity in learning which is formed through active organization, following trainings both in the academic and extracurricular fields and enhancing the learning experience of the semester that has been taken. The bidikmisi manager should improve coaching and mentoring programs for bidikmisi recipient students.

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