



Vocational High School (SMK) Students Accounting Competence Prediction Model by Using ASTIN I-E-O Model

Defi Sri Harwati[✉], Heri Yanto

DOI: 10.15294/dp.v12i2.10826

Economics Education Study Program, Faculty of Economics, Universitas Negeri Semarang, Indonesia

History Article

Received 14 September 2017
Approved 12 November 2017
Published 31 December 2017

Keywords

Accounting Competence;
ASTIN I-E-O Model; Achievement.

Abstract

This research aims to know the descriptive of input, environment, and outcome; analyze the influence of input to outcome; analyze the influence of environment to outcome; analyze the influence of input to environment; and analyze the role of environment in mediating the influence of input to outcome. Student previous achievement consisting of Mathematics and Indonesian National Exam at Junior High School is the educational input. Student engagement consisting of school engagement and class engagement is the educational environment and student accounting competence is the educational outcome. This research was a quantitative research. Data analysis used descriptive and path analysis technique. The total population and sample consists of 128 students of first class accounting. The results and conclusions in this study indicate that accounting competence is still good, student engagement is good, and student previous achievement is very good. There are influences of mathematics National Exam, Indonesian National Exam, school engagement, and class engagement on student accounting competence; there are influences of Mathematics and the Indonesian National Exam on school engagement and class engagement. School engagement mediates the influence of mathematics National Exam on accounting competence, but it does not mediate the influence of the Indonesian National Exam on accounting competence. Then, class engagement mediates the influences of the mathematics and Indonesian National Exam on accounting competencies.

How to Cite

Harwati, Defi sri and Yanto, Heri. (2017). Vocational High School (SMK) Students Accounting Competence Prediction Model by Using ASTIN I-E-O Model. *Dinamika Pendidikan*, 12(2), 98-113.

© 2017 Universitas Negeri Semarang

[✉] Correspondence Author:
Gedung L2 Lantai 1 FE Unnes
Kampus Sekaran, Gunungpati, Semarang, 50229
E-mail: defisriharwati194@gmail.com

INTRODUCTION

Vocational education is part of the economic sector that encourages the growth of the national economy so that the quality of Vocational High Schools (SMK) will reflect the quality of Indonesian workers who need to be continuously built to increase the competitive advantage of human resources (Priyatama, 2013). Therefore, the quality of SMK needs to be developed for the realization of the competence of vocational students who are excellent and have an impact on the quality of Indonesian workers. But the competence of vocational students in Indonesia is still relatively low. Quoted from *detiknews.com* page, Minister of Employment, Hanif Dhakiri said that one of the factors of the high number of unemployed high school graduates is because the competence of vocational students is still low. Based on data from Central Statistics Bureau (BPS) in February 2016, the number of unemployed from SMK graduates has reached 19.20%. This is what underlies the need for increased competence of vocational students.

With regard to the existing majors in SMK, SMK students' accounting competence needs to be improved, especially for students majoring in business management. Accounting is one of the services sectors open to foreign workers of the ASEAN Economic Community (MEA) members but the number of competent accountants in Indonesia is still small. Yanto (2016) mentions the accountant is one of skilled labour who are able to work and practice in all countries in the MEA but the crucial problem faced by the accountants is due to the problem on competence. Proven by the number of registered accountants in Indonesia is only 24,587 of the total population of 255.5 million while Thailand has reached 62.739 of the total population 65.1 million (Gani in Yanto, 2016). Meanwhile, Cahyani (2013) said SMK is also obliged to provide knowledge competence as well as to prepare students to become candidates for junior accounting technicians.

SMK N 2 Purworejo is the favorite bu-

ness and management vocational school in Purworejo Regency with one of its expertise programs is accounting. In the selection of admissions, the school uses the Junior High School (SMP) National Examination (UN) score for the requirement to become a new student. Based on data obtained from the online new students admissions (PPDB) in Purworejo Regency 2016, the average UN score of new students in accounting majors for mathematics, Indonesian, English and natural sciences were respectively 89.04, 87.85, 76.55, and 83.47. Therefore, it is important to know whether there are any influence of the junior high school UN score on the students' achievement, especially students' accounting competence.

The development of SMK students' accounting competence can be constructed through student involvement theory that is involving three elements, namely input, environment and outcome (Astin, 1984). Previous research with Astin I-E-O model shows that student's previous achievement is an important input that can improve student's accounting competence as outcome through student engagement as environment (Yanto, 2011).

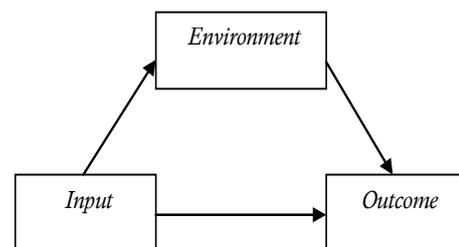


Figure 1. Astin I-E-O Model

Student involvement refers to students' physical and psychological energy involvement in learning in order to gain academic experience (Astin, 1999). Ani (2013) describes inputs are consisting of elements derived from students self such as student demographics, student background, and previous learning experience. While the environment is the student's whole experience during the school, while the outcome includes the characteristics of students, knowledge, attitudes, beliefs, and

values obtained after the students complete their school. The relationship between Input-Environment-Outcome cannot be separated. Outcome of the student is influenced by input and environment. Likewise, in the relationship between environment and outcome, its influence cannot be separated from input.

The selection of student engagement as the environment in this research model has been considered appropriate because student engagement is one of the important areas of study of education, especially from educational psychology because the importance and benefits of student engagement are not only for academic, learning, and student's achievement functions, but also for student socialization, welfare, satisfaction with life, and effective learning (Gunuc and Kuzu, 2015). Therefore, it is important to conduct a research on student engagement and its influence on student accounting competence.

The existence of the rules of the use of the previous education's UN score as the acceptance of new students, it needs to be reviewed through determining whether junior high school UN score is a valid predictor of student accounting competence. It aims to find out whether junior high school UN score is only to measure the achievement level of learning (achievement test) or in addition to achievement test, also aims to measure the ability of learner candidates (predictive test). So it is necessary to use student previous achievement as educational input in this research.

Yanto (2011) explains the effect of student previous achievement on student engagement while Dharmayana et al. (2012) explains there is no influence of previous academic achievement which in this case is the junior high school UN score towards student engagement. From the findings of these two researchers, they showed different results. Therefore, it needs to know more about the relationship of previous student achievement on student engagement.

Related to student previous achievement consisting of UN in mathematics, bahasa Indonesia, English, and Science (Regulation of

BSNP No 43/P/BSNP/I2017), A research by Mardiyanti (2007) showed there is positive and significant influence of mathematics ability and language ability to student accounting achievement in which the research used the Junior High School mathematics' UN score as the mathematics ability and the Junior High School bahasa Indonesia's UN score as the language ability. Meanwhile, Cimafranca et al. (2015) mentioned there is a positive and significant influence between the verbal ability and accounting competence but non-verbal ability, in this case is the reasoning to the numbers, is not a valid predictor of accounting competence. The research by Cimafranca et al. (2015) showed different findings from research by Mardiyanti (2007). Therefore it is necessary to prove the correlation between mathematics and language skills towards accounting competence.

Uno (2009) defines the ability or in this case the competence is the performance of a person in a job that can be seen from the mind, behavior, and nature. While accounting is a data processing activities (financial) (input) in order to generate financial information (outcome) that is beneficial to the parties concerned with the company or related economic organization (Wahyudin, 2013). From that understanding, the SMK students' accounting competence is the performance or the ability of processing financial data into financial information that can be measured from the attitude, knowledge, and skills obtained by vocational students. According to Permendikbud No 54 of 2013 on Graduate Competency Standards and Permendikbud No. 24 of 2016 on Curriculum 2013 Core Competency and Basic Competency, the competence of student accounting is measured through student's achievement on basic competence in accounting subjects contained in syllabus (Widihastuti, 2007). The psychological domain chosen is the cognitive domain with the reason of the cognitive domain is the domain most widely assessed by the teachers in the school because it is related to the students ability in mastering the teaching materials content (Sudjana, 2012)

and the most important psychological domain of the students is the cognitive domain (Shah, 2008). For selected subjects is service company accounting because service company accounting is the basic accounting subject and require students' ability to adapt to accounting subjects.

Student engagement is the psychological, cognitive, emotional and behavioral involvement of students on the learning process both in terms of quality and quantity in the classroom or outside the classroom (school) such as academic and social activities to achieve successful learning outcomes (Gunuc and Kuzu, 2015). Student engagement occurs either in the classroom or outside the classroom (Gunic and Kuzu, 2015; Ani, 2013). All these times, studies related to student engagement viewed student engagement as an element of unity that is student engagement and do not distinguish between student's involvement in class and student's involvement in school (Fredricks, 2004; Yanto, 2011; Dharmayana et al., 2012; Ani, 2013; Yanto, 2016). Therefore, in this study student engagement will be differentiated into school engagement and class engagement with the aim to know the effectiveness of both in its influence to student's accounting competence.

Student's previous achievement of Vocational High School (SMK) students is the achievement of student's learning when in SMP/MTs as the education level before the student are studying in vocational education. Based on Permendikbud No. 66 of 2013 on Education Assessment Standards, student's previous achievement used in this study is the students' UN score. The subjects that allegedly influence the accounting competence are mathematics and bahasa Indonesia subject. Cockroft in Abdurrahman (2012) explained that all areas of study require math skills. This indicated that math skills are required in accounting. Then Mercer in Abdurrahman (2012) also mentioned that the ability of language allows a person to master various academic fields, so that with good language skills it is expected that someone will have good accounting com-

petence as well.

METHODS

The type of this research is quantitative descriptive and causality research. The design of this study refers to the Astin I-E-O model. The population in this study consists of 128 students of class X accounting at SMK Negeri 2 Purworejo by using saturation sampling technique with the aim to achieve a very small error rate.

Exogenous/independent variable used in this study are student's previous achievement factors consisting of UN score on mathematics and bahasa Indonesian with documentation instrument. The intervening variables used in this study are student engagement factors consisting of school engagement and class engagement with the data collection tools is by using closed questionnaires. School engagement indicators include school/education valuing (valuing), sense of belonging to the school (sense of belonging), and participation in school (participatory). While the indicators of class engagement are consist of cognitive, emotional, and behavioral engagements. For endogenous/dependent variable used in this study is the SMK accounting students competence which is measured by using the test with basic competence indicator on the subject of service company accounting for cognitive domain. Before the data instrument in the form of questionnaires and tests were used, these are first piloted in other schools with similar accreditation.

To find the descriptive of research variables, A descriptive statistical analysis is used. While to test the hypothesis, inferential statistics is used. Pre-requisite test was previously undertaken, consists of normality and linearity test. Then, the classical assumption test is undertaken, consists of multicollinearity and heteroscedasticity test. Then path analysis is conducted to test the hypothesis. As an extension of the linear regression, simple and multiple regression analysis will be used in this study. Here is the simple regression equation:

$$\begin{aligned}
 KA &= \beta_1 UM + e_1 \\
 KA &= \beta_2 UB + e_2 \\
 KA &= \beta_3 SE + e_3 \\
 KA &= \beta_4 CE + e_4 \\
 SE &= \beta_5 UM + e_5 \\
 SE &= \beta_6 UB + e_6 \\
 CE &= \beta_7 UM + e_7 \\
 CE &= \beta_8 UB + e_8
 \end{aligned}$$

Where:

- KA = Accounting Competence
- SE = School Engagement
- CE = Class Engagement
- UM = UN score on Mathematics
- UB = UN score on Bahasa Indonesia

nesia

As for the multiple regression equation is as follows:

$$\begin{aligned}
 KA &= \beta_9 UM + \beta_{13} SE + e_9 \\
 KA &= \beta_{10} UB + \beta_{14} SE + e_{10} \\
 KA &= \beta_{11} UM + \beta_{15} CE + e_{11} \\
 KA &= \beta_{12} UB + \beta_{16} CE + e_{12}
 \end{aligned}$$

Multiple regression analysis in path analysis is used to determine the effect of input on accounting competence after the entry of mediator. If there are depreciation of the regression coefficient (β) of the input variables to the accounting competence after the entry of the intervening variable in the model then it indicates that the intervening variable is indeed mediating (Yanto, 2011). To prove the effect of mediation, sobel test is also undertaken by using sobel test calculator for the significance of mediation.

Here is the model of path analysis for the first model is the effect of UN score on mathematics on accounting competence through school engagement.

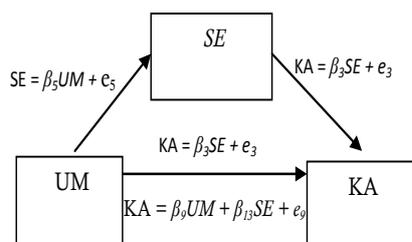


Figure 2. Model of Influence of UN score on Mathematics on Accounting Competence

through School Engagement

After the calculation for the first model, the next step is to do calculations for the next model that is the influence of the UN score on bahasa Indonesia towards accounting competence through school engagement; the influence of UN score on mathematics on accounting competence through class engagement; and the influence of UN score on bahasa Indonesia on accounting competence through class engagement.

RESULT AND DISCUSSIONS

In table 1 shows a summary of data obtained by respondents regarding student accounting competencies, school engagement, class engagement, UN score on mathematics, and UN score on bahasa Indonesian. The result of descriptive analysis is that the accounting competence of the students of class X accounting in SMK N 2 Purworejo in good enough category, school and class engagement in good category, and UN score on mathematics and bahasa Indonesia in very good category. This result gives an illustration that students' accounting competency has an average of 65.2 (60.94%), school engagement has an average of 58.9 (52.34%), class engagement has an average of 66.7 (78, 13%), UN score on mathematics has an average of 89 (64.06%), and UN score on bahasa Indonesia has an average of 87.9 (75%).

Table 1. Descriptive Analysis Result

	Descriptive Statistics				
	N	Min	Max	Mean	Std. Deviation
KA	128	47	83	65,2	6,877
SE	128	42	69	58,9	4,784
CE	128	51	78	66,7	5,819
UM	128	70	100	89	7,058
UB	128	76	98	87,9	4,313
Valid	128				

Source: Research Data (2017)

Before processed by using path analysis, prerequisite test is taken in advance, i.e. test of normality and linearity. The data normality test is by using kolmogorov-smirnov test. The variables of UN score on mathematics, UN score on bahasa Indonesia, school engagement, class engagement, and accounting competence have kolmogorov-smirnov values of, respectively, 1,1140, 1,296, 0,961, 0,794, and 1,311 with significance values of, respectively, 0.148, 0.069, 0.314, 0.554, and 0.064. These five variables have significance above 0,050 so that the variable of UN score on mathematics, UN score on bahasa Indonesia, school engagement, class engagement, and accountancy competence have normal distribution.

The next step is performing linearity test. The linearity test can be seen in the SPSS output in the linearity column of the ANOVA table. The eight simple regressions have significance in linearity columns of less than 0.05 so that the eight simple regressions have a linear relationship.

After the prerequisite test, classic assumption test is taken, that is multicollinearity and heteroscedasticity. How to detect the presence or absence of multicollinearity is by looking at the tolerance or VIF values. Limitless absence of multicollinearity is if the tolerance ≥ 0.10 and $VIF \leq 10$. Output results show that the four multiple regression have tolerance value of more than 0.10 and $VIF < 10$ so that the four multiple regressions are free from multicollinearity. While for heteroskedastisitas test, park test is used. Of the twelve regressions, both simple and multiple regression showed more than 0.05 significance so that the twelve simple and multiple regressions are free of heteroscedasticity.

After the data is tested for both its prerequisite and its classical assumption, then the hypothesis test is taken, that is by using path analysis. Here is the result of t test calculation by using SPSS in model I that is the influence of UN score on of mathematics to accounting competence through school engagement.

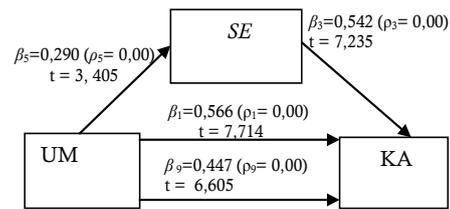


Figure 3. Model of Influence of UN score on mathematics on Accounting Competence through School Engagement

Based on the figure of model I, it is known that the relation of UN score on mathematics to accountancy competence shows the significance of 0,00 ($< 0,05$) so it means there is an influence of UN score on mathematics to accountancy competence of class X students of SMK Negeri 2 Purworejo in the academic year 2016/2017. Any increase in the UN score on mathematics by one unit will lead to an increase or increase in accounting competence by 0.566.

Then, the relation of UN score on mathematics towards school engagement showed a significance of 0,00 ($< 0,05$) or it can be interpreted there is an influence of UN score on mathematics to school engagement. Any increase in the UN score on mathematics variable by one unit will cause an increase or raise in school engagement by 0.290.

For the relationship of school engagement towards accountancy competence shows a significance of 0,00 ($< 0,05$) so that there is influence of school engagement to accountancy competence. Any increase in school engagement by one unit will lead to an increase or increase in accounting competence by 0,542.

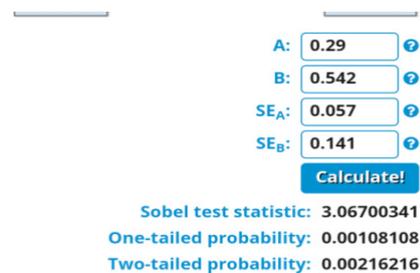


Figure 4. Model I Sobel Test

Multiple regression analysis for the influence of UN score on mathematics and school engagement on accounting competence showed the regression coefficient of UN score on mathematics is 0.447 or less than 0.566. Depreciation of the regression coefficient of UN score on mathematics influence on accounting competence after the entry of school engagement indicates that school engagement is an intervening/mediator of the influence of the UN score on mathematics on accounting competence. This is evidenced by the sobel test in Fig. 4 which shows a significance of 0.002 (<0.05).

The amount of the direct influence of the UN scores on mathematics to accounting competence is 0.566. The amount of indirect influence of the UN scores on mathematics on accounting competence through school engagement is $0.290 \times 0.542 = 0.157$. So the total influence of the UN scores on mathematics to accounting competence through school engagement is $0.566 + 0.157 = 0.723$.

Here is the model II that is the influence of the UN score on bahasa Indonesia on accounting competence through school engagement.

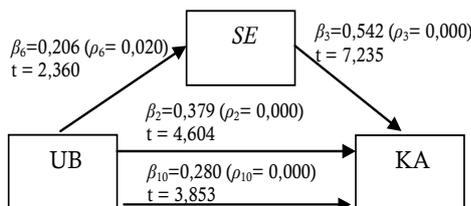


Figure 5. Model of the influence of the UN score on bahasa Indonesia on accounting competence through school engagement.

Based on the figure of model II, it is known that the relation between UN score on bahasa Indonesia towards accountancy competence shows the significance of 0,00 (<0,05) so that mean there is influence of UN score on bahasa Indonesia to accountancy competence of class X students of SMK Negeri 2 Purwo-rejo in the academic year 2016/2017. Any increase in UN score on bahasa Indonesia by one unit will cause an increase or increase in

accounting competence by 0.379.

Then, the relationship of the UN score on bahasa Indonesia to school engagement shows the significance of 0.02 (<0.05) or can be interpreted there is an influence of the UN score on bahasa Indonesia on school engagement. Each increase of UN score on bahasa Indonesia varaible by one unit hence will cause increase or increase of school engagement by 0,206.

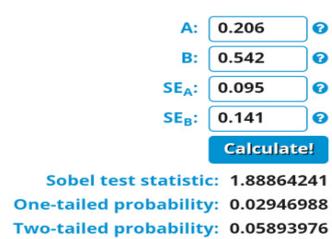


Figure 6. Model II Sobel Test

The multiple regression analysis for the influence of UN score on bahasa Indonesia and school engagement on accounting competence shows the UN score on bahasa Indonesia regression coefficient of 0.280 or smaller than 0.379. The depreciation of the regression coefficient of the influence of the UN score on bahasa Indonesia on accounting competence after the entry of school engagement indicates that school engagement is an intervening/mediator of the influence of the UN score on bahasa Indonesia towards accounting competence. However, this is not proved by the Sobel test in Figure 6, which shows a significance of 0.058 (>0.05). This means that school engagement does not mediate the influence of the UN score on bahasa Indonesia on student’s accounting competence.

The amount of the direct influence of the value of the UN score on bahasa Indonesia on the accounting competence is 0.379. The amount of indirect influence of the UN score on bahasa Indonesia on accounting competence through school engagement is $0.206 \times 0.542 = 0.112$. So the total influence of the UN score on bahasa Indonesia to accounting competence through school engagement is $0.379 + 0.112 = 0.491$.

Here is the model III that is the influence of the UN score on mathematics on accounting competence through class engagement.

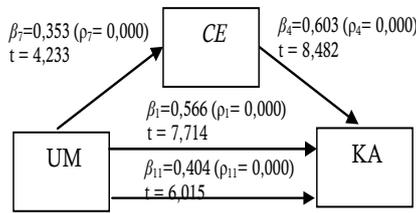


Figure 7. Model of the influence of the UN score on mathematics on accounting competence through class engagement

Based on figure III model, it is known that the relation of UN score on mathematics on class engagement shows the significance of 0,00 (<0,05) so it means that there is an influence of UN score on mathematics on class engagement of class X students of SMK Negeri 2 Purworejo in the academic year 2016/2017. Any increase in the UN score on mathematics by one unit will cause an increase or raise of class engagement by 0.353.

Then, the relationship of class engagement to accounting competence shows the significance of 0.00 (<0.05) or can be interpreted that there is an influence of class engagement on accounting competence. Each increase of class engagement variable by one unit will cause increase or increase of accountancy competence by to 0,603.

Multiple regression analysis for the influence of the UN score on mathematics and class engagement on accounting competence shows that the regression coefficient of the UN score on mathematics by 0.404 or less than 0.566. Depreciation of the regression coefficient of UN score on mathematics influence on accounting competence after the entry of class engagement indicates that the class engagement is an intervening/mediator of the influence of UN score on mathematics on accounting competence. This is evidenced by the Sobel test in figure 8 which shows a significance of 0.000 (> 0.05).



Figure 8. Model III Sobel test A

The amount of the direct influence of the UN score on mathematics on accounting competence is 0.566. The amount of indirect influence of the UN score on mathematics on accounting competence through the class engagement of 0.353 x 0.566 = 0.200. So the total influence of the UN score on mathematics on accounting competence through the class engagement is 0.566 + 0.200 = 0.766. KA

Here is the model IV of the influence of the UN score on bahasa Indonesia towards the accounting competence through class engagement.

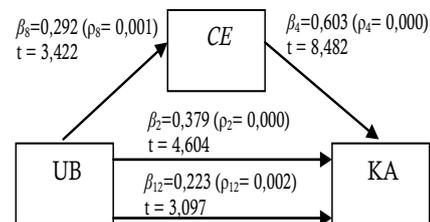


Figure 9. model IV of the influence of the UN score on bahasa Indonesia towards the accounting competence through class engagement.

Based on the figure of model IV, it is known that the relation of UN score on bahasa Indonesia to the class of engagement shows the significance of 0.001 (<0.05) so that means there is an influence of the value of the UN score on bahasa Indonesia against the class engagement of students of class X Accounting SMK Negeri 2 Purworejo in the academic year 2016/2017. Any increase in UN score on bahasa Indonesia by one unit will cause an increase or raise of class engagement by 0.292.

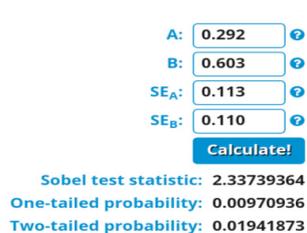


Figure 10. Model IV Sobel Test

Multiple regression analysis for the influence of UN score on bahasa Indonesia and class engagement on accounting competence shows the coefficient of regression of UN score on bahasa Indonesia equal to 0,223 or smaller than 0,379. The depreciation of the regression coefficient of the UN score on bahasa Indonesia influence on accounting competence after the entry of the class engagement indicates that the class engagement is an intervening/mediator of the influence of the UN score on bahasa Indonesia towards the accounting competence. This is evidenced by the sobel test in Fig. 10 which shows a significance of 0.019 (> 0.05).

The amount of the direct influence of the UN score on bahasa Indonesia towards the accounting competence is 0.379. The amount of indirect influence of the UN score on bahasa Indonesia towards accounting competence through the class engagement is $0.292 \times 0.603 = 0.176$. So the total influence of the UN score on bahasa Indonesia on accounting competence through class engagement is $0.379 + 0.176 = 0.555$.

The discussion of the results of this study discusses the relationship among all theory elements that are educational input which in this study are the UN score on mathematics and UN score on bahasa Indonesia (student previous achievement), the process or environment that is the school engagement and class engagement (student engagement), and education outcome in the form of students' accounting competence. The discussion of the results of this study consists of 4 parts, namely: (1) the relationship between educational input and educational output; (2) the relationship between educational environment and edu-

cational output; (3) the relationship between educational input and the educational environment; and (4) the role of the environment in mediating the influence of input on output.

The first input education in this research is UN score on mathematics. Based on t test using a simple regression, it is found that UN score on mathematics affects the accounting competence. Armstrong in Wulansari and hakim (2013) states that a person who has good logical-mathematical intelligence tends to like to and effectively calculate, analyze counts, and find logical solutions. The better the logic, the numeracy skills, and the use of symbols the better the student's accounting competence. This is because accounting has the same characteristics as mathematics that includes science that uses logic and calculations (Fajriah, Junaidi, and Achmadi, 2013). Meanwhile, Cockroft in Abdurrahman (2012) also explains that mathematics is always used in aspects of life and all fields of study require math skills, including accounting. UN score on mathematics is considered as educational input in this study because the UN score on mathematics when SMP is one of the criteria for admission of new students in SMK Negeri 2 Purworejo, especially accounting major. The results of this study prove that with the theory Astin IEO model, UN score on mathematics as input research affects the accounting competence as the outcome is accepted.

The second educational input is UN score on bahasa Indonesia. Based on t test by using simple regression, it is found that UN score on bahasa Indonesia influences accountancy competence. If someone has a good language skills then (s)he will have an integrated communication system, including speech, reading, and writing (Abdurrahman, 2012). With good reading skills, students will be able to read not only to speak the written language but also to understand its meaning so as to have a basis for mastering various fields of study, including accounting. With the good ability to understand the meaning of reading, both accounting exercises and materials, students will be more easily understand the meaning

and purpose of the accounting exercises and materials. Meanwhile, good writing skills can be used for recording and communication purposes. Accounting lessons is one of the many lessons which use note-taking. Someone's ability to think determines and at the same time can be understood by his/her's language ability (Morgan in Rifa'i). Meanwhile, accounting is one of the subjects that require high order thinking skills.

The UN score on bahasa Indonesia is considered as the input of education in this study because UN score on bahasa Indonesia when junior high school is one of the new admissions criteria in SMK Negeri 2 Purworejo especially for accounting major. The results of this study prove that with the theory of Astin IEO model, UN score on bahasa Indonesia as an input of education affects the accounting competence as an outcome is accepted.

The result of this study is supported by Mardiyanti (2007) which explains the positive influence of basic skills of mathematics and bahasa Indonesia to the achievement of accounting. Although Cimafranca et al. (2016) said non-verbal ability is not a valid predictor of accounting competence, but in his research it is explained there is a positive and significant influence by verbal ability to accounting competence. In addition, related to the UN score on bahasa Indonesia and mathematics in junior high school which is an academic achievement taken by students before taking the vocational education level (student previous achievement), the results of this study is also supported by Yanto (2011) which explains the influence of Student Previous Achievement (SPA) to accounting competence.

The first educational environment is school engagement. Based on t test using simple regression, it is found that school engagement influences accounting competence. School engagement is part of student's engagement outside the classroom and refers to psychological and social involvement (Gunuc and Kuzu, 2015). The higher the quality and quantity of psychological and social involvement, the higher the students gained the aca-

ademic experience (Gunuc and Kuzu, 2015). The higher the accounting students gain academic experience, the higher the students have accounting competence as well. This is in accordance with the opinion of Fredricks, Phyllis, & Alison (2004: 70) which states one outcome of student engagement is the students' success.

Fredricks, Phyllis, & Alison (2004: 73) mentioned that one factor of student engagement is school characteristics (school-level). What is meant by characteristic here is a school that can reduce student's alienation and increase student's involvement, engagement, and intergration at school. The school has clear and consistent goals, policies and management regarding student participation, and staff and student's collaboration to create an academic process that allows students to grow and gain academic experience. The better the school level the better the student's school engagement, so as to enable students to develop and improve their competencies, especially accounting competency. School engagement is considered as environment in this study because it adapts from the research by (Yanto, 2011; Ani, 2013; and Dharmayana et al., 2012). The results of this study proved that with the theory of Astin IEO model, school engagement as an environment affects accounting competence as an outcome is accepted.

The second educational environment is class engagement. Based on t test by using simple regression, it is found that class engagement influences accounting competence. Class engagement is part of student's engagement that consists of student's cognitive, emotional, and behavior involvement on the learning process in terms of quality and quantity in the classroom, such as academic activities (Gunuc and Kuzu, 2015). Cognitive engagement relates to students' approach and understanding of learning (Gunuc and Kuzu, 2015) and the more the time and effort used by students to understand accounting, the higher their accounting competencies. Emotional involvement refers to students' emotional reac-

tions such as attitude, interest, relationship and values towards teachers/staff and peers in the classroom (Gunuc and Kuzu, 2015). So the higher the students give attitudes, interests, relationships, and values to teachers and friends in the classroom then the higher their competence of accounting. Likewise, the more the students' participation in academic activities and educational activities in the classroom, which in this case is the behavior involvement, the more the accounting competence they have.

This is in accordance with Kuh et al. (2006) who said that one of the important things related to student engagement is about how much time and students' effort to learn in order to gain academic experience so that more the students give time and effort to study in the class then the more the students gain academic experience. Especially for vocational students majoring in accounting, the higher the accounting competence owned. Class engagement is a student engagement that is still within the scope of classroom context. Fredricks, Phyllis, & Alison (2004: 73) mentions classroom contexts include several dimensions including support of teachers, peers, class structure, autonomous support and assignment characteristics. The higher the support of teachers, peers, class structure, autonomous support, and assignment characteristics, the higher the number of students in providing classroom involvement that will enhance the academic experience. So the higher the academic experience, the higher the students competence, which in this case is the students' accounting competence.

Class engagement is considered as an environment in this study because it adapts from the research by (Yanto, 2011; Dharmayana et al., 2012; Ani, 2013). So the results of this study prove that with the theory of Astin IEO model, class engagement as an environment affects accounting competence as outcome is acceptable.

Related to school and class engagement which is part of student engagement (Gunuc dan Kuzu, 2015), there is a positive and

significant influence between student engagement to accountancy competence (Yanto, 2011). Then, there is an influence of class engagement on academic achievement (Gunuc, 2014). This finding is supported by the opinion of Kuh et al. (2006) who said that the better the student engagement, the more the students will gain academic experience. In addition, Suryani (2013) also said, student engagement can improve student's success.

The next discussion is about the influence of input towards environment. Based on t test by using simple regression, it is found that student's previous achievement, both The UN score on bahasa Indonesia and UN score on mathematics influence on school engagement. UN score on mathematics and bahasa Indonesia in junior high school is one of the academic achievement that has been achieved by students before taking the vocational education level (student's previous achievement) and at the same time the criterion of new student admission in SMK Negeri 2 Purworejo. The better the UN score on mathematics and bahasa Indonesia that the students get in junior high school, the greater the opportunity for students to be accepted as new students at SMK Negeri 2 Purworejo, especially accounting major. Meanwhile, SMK Negeri 2 Purworejo is the favorite Business Management SMK in Purworejo with accounting major as its featured program. Therefore, as the result from the selection process, the accounting major students of SMK Negeri 2 Purworejo are students with a very good junior high school UN average score on mathematics and bahasa Indonesia.

Students with more attention to education tend to choose a good high school with a corresponding major or often called as students with high school engagement (Gunuc and Kuzu, 2015). This is because favorite schools tend to be good at using resources and organizing curriculum, learning opportunities, and support services in order to induce students to participate in activities that lead to desired experiences and outcomes such as diligence, satisfaction, learning, and graduation

(Kuh et al., 2007). In short, favorite schools tend to have good school level in decreasing student alienation and increasing students' involvement, engagement, and integration in schools. Meanwhile, according to Fredricks, Phyllis, & Alison (2004: 73), one of the factors of student engagement is school-level.

Therefore, accounting major students in SMK Negeri 2 Purworejo are students with high school engagement because students who are accepted are those who have more attention to education and choose a favorite school as a place of education. To increase the chance of admission acceptance on favorite schools, students tend to try to get a good UN score on junior high school. The higher the UN scores on mathematics and bahasa Indonesia the higher the student's effort to be accepted at SMK Negeri 2 Purworejo in accounting major. The greater the students' effort to be accepted in SMK Negeri 2 Purworejo in accounting major, the higher the students' attention/valuation to education, sense of belonging to school, and school participation (school engagement). The greater the students' effort to be accepted in SMK Negeri 2 Purworejo then the greater the individual needs. Meanwhile, according to Fredricks, Phyllis, & Alison (2004: 73) said the individual needs is one of the factors of student engagement.

In addition, regarding to the relation of UN score on bahasa Indonesia to accounting competence is also reasoned because the UN score on bahasa Indonesia which includes reading ability is not only allows students to improve work skills and mastery of various academic fields, but also allows to participate in the life of social, culture, politics, and meet emotional needs (Mercer in Abdurrahman, 2012). The higher the language skill mastered by a person, the higher the person's likelihood to participate in social, cultural, political, and emotional life. Meanwhile, one of the indicators of school engagement is the dimension of participation that refers to social engagement. So the higher the UN score on bahasa Indonesia, the higher the students' school engagement.

For the next is the relationship between student's previous achievement which includes the UN score on mathematics and bahasa Indonesia towards class engagement. Based on t test by using simple regression, it is found that the UN score on mathematics influences the class engagement. Indicators of class engagement are cognitive, emotional, and behavioral engagement. Many people think that mathematics is the most difficult field of study but everyone should learn it because it is a mean to solve the problems of everyday life (Abdurrahman, 2012). The perception that mathematics is a difficult subject will make the students of class X Accounting SMK Negeri 2 Purworejo when in SMP were tried hard to learn, had high motivation, felt challenged, disciplined, and willed to solve the problems in order to achieve a satisfying UN score on mathematics. This is an example of cognitive involvement mentioned by Dharmayana et al. (2012). Therefore, a student with a high UN score on mathematics is a characteristic that this student has a high cognitive involvement as well.

Students with a high UN score on mathematics can overcome the perception that mathematics is a difficult subject due to the need for competence. While according to Fredricks, Phyllis, & Alison (2004: 73), one factor of student engagement is need for competence. Students with high need for competence will be able to involve control, strategy, and capacity in competence.

In addition, student with high UN score on mathematics is one of the characteristics that related student appreciates his/her academic achievement. Moreover, the value of the UN score on mathematics is the main requirement for candidate students of SMK Negeri 2 Purworejo to be accepted as a new student majoring in accounting. The perception that mathematics is the most difficult and challenging lesson causes students to appreciate their academic achievement. Meanwhile, Dharmayana et al. (2012) mentioned the characteristics of emotional involvement of students, one of them is to appreciate academic achieve-

ment in school. The higher the students' UN score on mathematics, the higher the student's emotional involvement.

In addition, mathematics and accounting subjects are subjects that require high concentration and attention. Students with high UN score on mathematics are students with high concentration and attention to learning, especially mathematics. The existence of similarity of characteristics on the subjects of mathematics and accounting makes the students of class X Accounting SMK Negeri 2 Purworejo to have the same concentration and attention on subjects of mathematics as well as accounting. Meanwhile, some characteristics of behavioral involvement according to Dharmayana et al. (2012) is to provide diligence, concentration, and attention.

Based on t test by using simple regression, it is found that UN score on bahasa Indonesia influences class engagement. Students with good language skills will more easily understand the accounting text materials and explanations from the teacher. So that students with good language skills will have no difficulty on approaching and understanding of accounting learning and supporting their cognitive involvement. In addition, students who have high language skills will have high thinking and reasoning ability as well. Students with high thinking and reasoning abilities tend to be liked by their peers in the classroom as well as their subject teachers. This will certainly support the good emotional reactions of the students related to the atmosphere in the classroom either with their classmates or accounting teachers. The student will feel as a part of the class and enjoy the classroom atmosphere.

Then, language is the ability to communicate with others (Yusuf, 2009: 118). Students with good language skills will be easy to communicate with their classmates as well as with accounting teachers, such as communication in discussions or asking to the teacher. The act of communicating in discussion and asking the teacher is one example of behavioral engagement.

Related to the UN score on mathema-

tics and bahasa Indonesia which is part of student's previous achievement and school and class engagement which is part of student engagement (Gunuc dan Kuzu, 2015), this research is supported by Yanto (2011) and Syah, Huda, and Budi (2017) which revealed there was a positive and significant influence between student previous achievement towards student engagement. UN score on mathematics and bahasa Indonesia is considered as educational input in this research because of students UN score on mathematics and bahasa Indonesia on junior high school is one of the admissions criteria in SMK Negeri 2 Purworejo especially in accounting majoring. Meanwhile, school engagement and class engagement are considered as the environment in this study because it adapts from the research by (Yanto, 2011; Dharmayana et al., 2012; Ani, 2013). The results of this study proved that through the theory of Astin IEO model, UN score on mathematics and bahasa Indonesia as input affects school and class engagement as outcome is accepted.

The last discussion is about the role of the environment in mediating the influence of input on output. It is found that almost all factors of student engagement can mediate the influence of student previous achievement factor to accountancy competence. It is only the school engagement that is not able to mediate the influence of UN score on bahasa Indonesia on accounting competence. The real reason is possibly because the value of UN score on bahasa Indonesia in junior high school achieved by SMK Negeri 2 Purworejo students which are very good as the main requirement for the acceptance for candidate students into new students is given small weight. The small weight of the UN score on bahasa Indonesia makes students less prioritize the UN score on bahasa Indonesia to be accepted in SMK Negeri 2 Purworejo in accounting major. If a student can be accepted in SMK Negeri 2 Purworejo in accordance with his/her wishes then the student is likely to give attention/assessment to education/school, a sense of belonging to school, and

high participation in high school.

The lack of student's priority towards UN score on bahasa Indonesia to be accepted in SMK Negeri 2 Purworejo in accounting major makes the low effect of UN score on bahasa Indonesia student's attention/assessment to education/school, a sense of belonging to school, and participation in school or in this case is school engagement. This is what causes the school engagement to be not a mediation of the influence of the UN score on bahasa Indonesia towards accounting competence.

This means that in mediating the influence of student previous achievement on accounting competence, class engagement has a greater mediation influence than school engagement. While the UN score on mathematics as a student previous achievement has a greater influence on accounting competence than the UN score on bahasa Indonesia.

The four models show student previous achievement factors have a direct influence on accounting competence, greater than the indirect influence of student previous achievement factors on accounting competence after mediated by student engagement factors. Therefore, in the relationship between inputs to accounting competencies, the environment can be called a partial mediation variable. This means that student engagement factors cannot perfectly mediate the influence of student previous achievement on accounting competence.

This is because student previous achievement, both the student's UN score on bahasa Indonesia and mathematics are very good and students regard that with the very good UN score on bahasa Indonesia and mathematics is able to support the accounting competence without paying too much attention to school and class engagement.

The use of school and class engagement as a mediator in the influence of UN score on mathematics on accounting competence is based on the findings of (Yanto, 2011) so that school and class engagement can simultaneously serve as Astin I-E-O theory environment in its influence on SMK students'

accounting competence. However, because all student engagement factors, both school and class engagement are only partial mediation variables of the influence of the UN score on bahasa Indonesia and mathematics on accounting competence, therefore the role of school and class engagement as the Astin IEO theory environment and mediator of the influence of the UN score on bahasa Indonesia and mathematics on accounting competence is less verified.

CONCLUSION

Student previous achievement is in very good category, student engagement is in good category, and accountancy competence is in fairly good category. Student previous achievement which consists of UN score on bahasa Indonesia and mathematics have an effect on accountancy competence. This is because someone who has a good logical-mathematical intelligence tends to have a good accounting competence as well. With good language skills, students will be able to read not only to speak the language but also to be able to understand its meaning so as to have a basis for mastering various fields of study, including accounting.

Then, the school engagement and class engagement affects the accounting competencies of students of class X Accounting of SMK Negeri 2 Purworejo in the academic year 2016/2017. This is because the better the school engagement and class engagement, the more the student's academic experience which certainly support student's accounting competence.

Student previous achievement which consists of UN score on mathematics and bahasa Indonesia influence on student engagement, both school engagement and class engagement of students of class X Accounting of SMK Negeri 2 Purworejo in the academic year 2016/2017. This is because the UN score on bahasa Indonesia and mathematics is a prerequisite to be a student of SMK N 2 Purworejo. The greater the value of students'

UN score, the greater the student's effort to become a student at SMK N 2 Purworejo which of course will also support school-level and classroom-context that can improve student's engagement.

Based on the analysis by using the sobel test, most dimensions of student engagement consisting of school engagement and class engagement have been able to mediate positively and significantly the influence of student previous achievement which consists of the UN score on mathematics and bahasa Indonesia towards the accounting competence of the students of class X Accounting of SMK Negeri 2 Purworejo in the academic year 2016/2017. However, school engagement has not been able to mediate positively and significantly the influence of the UN score on bahasa Indonesia towards the accounting competence of the class X students of SMK Negeri 2 Purworejo in the academic year 2016/2017. This is because the UN score on bahasa Indonesia is not the main priority for students to become a student in SMK N 2 Purworejo. This means that class engagement is better at mediating the influence of student's prior achievement on accounting competence. School engagement and class engagement is only partial mediation caused by the lack of student attention to student engagement to improve accountancy competence with student previous achievement which is very good.

REFERENCES

- Abdurrahman, Mulyono. 2012. *Anak Berkesulitan Belajar*. Jakarta: Rineka Cipta.
- Ani, Risa Ari. 2013. Model Pengembangan Sikap Kewirausahaan Siswa SMK Negeri Se-Kabupaten Demak. *Journal of Economic Education*. Semarang: Universitas Negeri Semarang.
- Astin, Alexander W. 1999. Student Involvement: A Developmental Theory for Higher Education. *Journal of College Student Development*.
- Cahyani, S.T., Sri W., dan Sohidin. 2013. Implementasi Pendidikan Karakter pada Mata Pelajaran Produktif Akuntansi di SMK Negeri 2 Surakarta. *Jurnal Pendidikan UNS*. 1 (2): 1-14. Surakarta: Universitas Negeri Sebelas Maret.
- Cimafranca et al. 2015. *The Influence of School Ability Measures on Accounting Competencies: A Path Analysis*. MPRA Paper. 72372. Munich: Munich Personal RePec Archive.
- Dharmayana, I Wayan dkk. 2012. Keterlibatan Siswa (Student Engagement) sebagai Mediator Kompetensi Emosi dan Prestasi Akademik. *Jurnal Psikologi*. 39 (1): 76-94. Yogyakarta: Universitas Gadjah Mada.
- Fajriah, A.N., Mastum J.H., Achmadi. 2015. Pengaruh Hasil Belajar Matematika terhadap Hasil Belajar Akuntansi Siswa di SMK. *Jurnal Program Studi Pendidikan Ekonomi FKIP*. Pontianak: UNTAN.
- Fredricks, A. J., Phyllis C. B. dan Alison H. P. 2004. *School Engagement: Potential of The Concept, State of The Evidence*. Review of Educational Research. 74 (1): 59-109. Connecticut: Connecticut College.
- Gunuc, Selim dan Kuzu. 2015. *Student Engagement Scale: Development, Realibility, and Validity. Assessment & Evaluation in Higher Education*. 40 (4): 587-697. Eskisehir: Anadolu University.
- Hamzah dan Yanto. 2015. Kompetensi Internasional Akuntansi Forensik Mahasiswa Akuntansi di Beberapa Universitas di Semarang. *Jurnal Riset Akuntansi dan Keuangan*. 3 (3): 819 - 835. Semarang: Universitas Negeri Semarang.
- Kuh et al. 2006. *What Matters to Student Success: A Review of The Literature*. Commissioned Report for the national Synposium on Post-secondary Student Success: Spearheading a Dialog on Student Success. National Post-secondary Education Cooperative.
- Mardiyanti, Dian. 2007. *Pengaruh Kemampuan Dasar dan Matematika dan Bahasa terhadap Prestasi Belajar Mata Pelajaran Akuntansi Keuangan Siswa Kelas 3 Akuntansi SMK Negeri 1 Kudus Tahun 2004/2005*. Skripsi. Semarang: Fakultas Ilmu Sosial Unnes.
- Peraturan Badan Standar Nasional Pendidikan Nomor 0043/P/BSNP/I/2017 tentang Prosedur Operasional; Penyelenggaraan Ujian

- Nasional Tahun Pelajaran 2016/2017.
- Peraturan Menteri Pendidikan dan Kebudayaan No 24 Tahun 2016 tentang Kompetensi Inti dan Kompetensi Dasar Kurikulum 2013.
- Peraturan Menteri Pendidikan dan Kebudayaan No 54 Tahun 2013 tentang Standar Kompetensi Lulusan Pendidikan Dasar dan Menengah.
- Peraturan Menteri Pendidikan dan Kebudayaan No 66 Tahun 2013 tentang Standar Penilaian Pendidikan.
- Priyatama, Alan Andika dan Sukardi. 2013. Profil Kompetensi Siswa SMK Kompetensi Keahlian Teknik Kendaraan Ringan di Kota Pekalongan. *Jurnal Pendidikan Vokasi*. 3 (2): 153 – 162. Yogyakarta: Universitas Negeri Yogyakarta.
- Rifai, Achmad dan Catharina Tri Anni. 2015. *Psikologi Pendidikan*. Semarang: Universitas Negeri Semarang.
- Suryani, Endah Mega. 2013. Peningkatan Aktivitas dan Hasil Belajar Siswa pada Mata Diklat Mengaplikasikan Keterampilan Dasar Komunikasi melalui Metode Pembelajaran Kooperatif Tipe Group Investigation (GI) Kelas XI AP SMK Teuku Umar Semarang. *Economic Education Analysis Journal*. 2 (2): 108 – 115.
- Syah, M. Fahmi Johan; Huda, Syamsul; Budi, Hermansyah Setyo. Faktor Affecting Oral Participation in Lecturing Process In Prospective Accounting Teacher Satudents. (2017). *Jurnal Dinamika Pendidikan*. 12 (2). ISSN 1907-3720.
- Syah, Muhibbin. 2008. *Psikologi Pendidikan dengan Pendekatan Baru*. Bandung: PT Remaja Rosdakarya.
- Wahyudin, Agus dan Muhammad Khafid. 2013. *Akuntansi Dasar*. Semarang: Unnes Press.
- Widihastuti. 2007. Pencapaian Standar Kompetensi Siswa SMK Negeri Program Keahlian Tata Busana di Kota Yogyakarta dalam Pembelajaran dengan KBK. *Jurnal Penelitian dan Evaluasi Pendidikan*. 2: 268–278. Yogyakarta: Universitas Negeri Yogyakarta.
- Wulansari, Mayang dan Hakim. 2014. Pengaruh Kecerdasan Logis-Matematis, Hasil Belajar Pengantar Akuntansi, dan Minat Belajar terhadap Tingkat Pemahaman Akuntansi. *Jurnal Pendidikan Akuntansi Universitas Negeri Surabaya*. Surabaya: Universitas Negeri Surabaya.
- Yanto, Heri. 2016. Internationalizing The Accounting Graduates' Competencies Through The Improvement of Student Engagement. *The 1st International Conference on Economics, Education, Business, Accounting (ICEEBA 2016)*. Semarang: Universitas Negeri Semarang.
- Yanto, Heri, Joseph M. Mula dan Marie H. Havanagh. 2011. *Developing Student's Accounting Competencies Using Astin's I-E-O model: An Identification of Key Educational Inputs Based on Indonesian Student Perspectives*. University of Southern Queensland.
- Yusuf, Syamsu. 2009. *Psikologi Perkembangan Anak dan Remaja*. Bandung: PT Remaja Rosdakarya.