Economic Literacy among Students in Malaysia.

Nurul Fazira Binti Muhamad Nizam, Lai Wei Sieng, Noorasiah Binti Sulaiman

Faculty of Economics and Management, Universiti Kebangsaan Malaysia

Correspondence: Lai Wei Sieng (laiws@ukm.edu.my)

Received: 18 September 2019; Accepted: 03 July 2020; Published: 28 August 2020

Abstract

Basic knowledge of economy is very important for all community levels regardless of their academic backgrounds. Measuring the economic literacy level among students in Malaysia is important as a benchmark to improve students' economic literacy. The purpose of this study is to identify the level of economic literacy among students in Malaysia. The data used in this study were collected through surveys. The questions in this economic literacy test were composed according to Malaysia's own references and added with some demographic information of the respondents. 400 samples were randomly taken from students which come from different learning institutions and backgrounds in Malaysia. Next, this data is analyzed using Tobit regression model. Sigma value in this study is used to determine whether this is a good model or not. Dependent variable used in this study are the scores in economic literacy tests, while independent variables are gender, ethnicity, household income, residential location and field of study. The result of this study found that students in all type of education has low level of economic literacy. The household income and the field of study was significant and had influence on the level of economic literacy among students.

Keywords: determinants, economic literacy, knowledge, Malaysia, students, Tobit regression

Introduction

An understanding of the economy as well as the terminology used is very important nowadays due to economic development around the world, including Malaysia. We often see on television about the news distributed regarding the rate of inflation, unemployment, economic growth rate and other economic terms used to indicate the country's economic performance, but by the news that delivered, do we really understand what they are trying to convey? Are we able to reflect the current economic situation in Malaysia and around the world? Efforts to change the economy based on knowledge, began as early as the 1990s. Efforts to create a Malaysian society with economic knowledge, especially for the labor and economic sectors are given priority by the Malaysian government (Yeop Yunus, Ishak, & Abdul Jalil, 2010). The study of economics has

increased as people begin to understand the needs of economic education for effective citizenship and as interest in education is growing with the increase in the economic knowledge. The importance of economic education has been supported by academic studies and popular media (Akhan, 2015). The purpose of economic literacy is to increase the interests and knowledges of young people on economic matters and to get the habits of working together, to create a profession that will contribute to society. In short, it aims to create qualified people and qualified workforce. Economic savvy individuals will know their responsibilities towards society (Nakiboglu, 2017). The topics of economic literacy are becoming a way of enabling people to understand the economy, and they show how to interpret situations that might affect them directly or indirectly. Hence, it can help individuals gain proficiency in social decisions and understand the subjects that can be used personally and throughout their lives. Students need to know the fundamental principles of the economy before giving out their opinions on economic matters that may affect their lives (Akhan, 2015).

Often financial literacy is equates with economic literacy, in fact financial literacy is a part of economic literacy. Financial literacy is all about money: what is and how to invest, save and manage money. Economic literacy is the ability to apply economic fundamentals in everyday life scenarios (Salemi, 2005). According to Lusardi & Tufano (2008), financial literacy specifically focus on understanding debt, money-literacy components, which can be defined as the ability to make simple decisions that are closely linked to debt contracts, especially in applying the basic knowledge of compressed benefits measured in the context of daily financial options. According to Rivlin (1999), economic literacy can be defined as a basic level of understanding that allows people to understand economic events and explain the reasons and relationships in solving economic problems of their lives rather than academic information about the economy. Walstad and Allgood (1999) states that economic literacy is crucial in all countries as it provides students with the transformation of the world financial system. Developing countries face difficulties in improving the economic performance and standard of living. Therefore, students need more understanding of the economy to be active in a changing global economy. Economic literacy is increasingly important for households' decisions on how to invest wealth and how much to borrow in financial markets (Jappelli, 2009). Economic events and economic issues are major concerns around the world. The economy is facing a debt crisis and a recession in economic growth. Consumers are faceing with rising food prices, oil price fluctuations, the problems of unemployment and low wages. However, despite the attention given to the economy in recent years, economists have found that people are still not familiar with the economic and basic economic concepts (Fourie & Krugell, 2015). Individuals who face complicated economic problems in daily life must make economic decisions.

People need economic knowledge to manage their budgets in the most appropriate way. In other words, they need economic knowledge to act rationally, choose the right payment method, understand the possibility of using credit cards, and more. In general, the fundamentals of economic education are first provided in the family, but systematic training is needed to make the right economic decisions (Lusardi, 2008). According to Mutsaniah (2013), a phenomenon that occurs among students show that the functions and goals of economic education that are exposed at school cannot be implemented perfectly. This applies to their impact and behavior of the economy itself. Additionally, the concepts of economy that have been educated at the school have no impact on them as they still do not apply the concept in their daily lives. They cannot think properly about things like basic needs and wants. According to Che Noraini and Bakare Kazeem (2013), as a society with a growing economic system, the problems of life and the

problem of educating young people are increasingly challenging. There is no doubt that the acquisition of knowledge and skills is essential to enable Malaysians to make decisions and act wisely in relation to economic matters. Overall, most of them conducted a study on economic literacy by providing several surveys to their respondents to respond to such economic tests such as the Test of Economic Literacy (TEL) and the Test of Understanding in College Economics (TUCE) introduced by Walstad and Soper in 1988 and 1991 to facilitate their efforts to assess the level of literacy for various populations such as high school students. In addition, there are also the Test of Understanding Economics in South Africa (TUESA) by Fourie and Krugell (2015), Basic Economic Testing (BET) by Halinski (1983) and the Test of Economic Knowledge (TEK) by Soper (1979). The purpose of this study is to examine the level of economic literacy of secondary school students and higher education institutions using economic literacy tests based on Malaysia's own reference. Next, identify the factors that determine the level of economic literacy among students in Malaysia. This paper is divided into five parts. The second part is the highlight of previous studies. Next, in the third part discusses the methodology and model specification. The fourth part will discuss the research findings and the fifth part is the conclusion.

Literature Review

Rivlin (1999) suggests that economic literacy is a basic knowledge of the concepts and languages of economic activity as well as economic policies and not just economics. In the international literature, research on economic literacy has been widely done. It is sometimes confused with financial literacy, but economic literacy is, in fact, a much broader concept (Salemi, 2005). Despite the importance of economic literacy for households' decisions and the proper functioning of financial markets, the evidence on the importance of literacy and the effectiveness of financial education is focused primarily in the US. There are survey of other regions, but they are not comparable with either focus or method (Jappelli, 2009). In the US, knowledge of these basic economic concepts is supposed to be taught to students in high school. At university or college level, in the introductory economics course, lecturers are supposed to teach students how to apply these basic concepts in order to improve their economic literacy levels (Salemi, 2005). Lavoie and Gill (2009) in a study conducted on 1,343 students enrolled in economics courses in the first semester found that white students received the highest TEL pre-test score followed by Asian and Hispanic, as well as the male students better than the performance of the woman with the matter an estimated 3.5 percentage points. In another study conducted by Walstad & Soper (1991), it was found that the economic knowledge of secondary school students is lower for students without economic background. In addition, the study by Lopus (1997) on 5,490 students, including instructors who conducted TUCE III and the results obtained were students with economics secondary schools covering microeconomics and macroeconomics in their learning process to score more on TUCE III than students who did not have background behind the economy. Similar results were also found in a study by Schuhmann et al., (2005) in which they are conducting a survey to investigate the relationship between quantitative and economic literacy. Their findings suggest that economic students are weaker in responding to economic questions than business students and other majors.

The study took a sample of students from the states of California and Washington by Gill and Lavoie (2011) shows that college students in California who had taken an economics course in

secondary school received a better economic literacy test score than college students in Washington which was not exposed to the economy in high school. The results of a study conducted by Roland Happ et al., (2016) found that the first-year students studying in business and economics found that in fact the first year students who have not completed their courses or economic programs have the low economic knowledge. Although students who have completed courses or economic programs at the high school level have a better level of knowledge than peers who did not attend the course. However, a study conducted by Fourie and Krugell (2015) in which the results of the tests TUESA that have been implemented for 2717 students introductory economics at four universities in South Africa shows that there are significant differences in the economic literacy scores between sexes, races, majors and students who enrolled for grade 12 in high school. In another study, Yasmin et al., (2014) using the method of field study with 200 students chosen at random, and use the OLS method to determine the relationship between variables and adapt the Logit model. They found that gender has a positive relationship with economic literacy. The results show that men have a higher chance to become more economically literate than women. Results from this study also showed that people who have more years of education more economically literate. The findings of the study conducted on 200 university students were selected from universities in southern Punjab found that expenditure, age, gender, parents' education and students' education are a positive and significant impact on the level of economic literacy. Based on the study conducted by Koshal et al., (2008), they conducted a survey of 494 students at five different institutions that provided MBA education in India. The method used in the studies they are carrying out an economic assessment by combining all questions of Standards in Economic Outlook and some questions of TEL. They found that, gender, class, age, and experience does not determine the level of economic literacy of students. Although there are a number of students majoring in business who have a higher percentage than any other student in the economics literature.

The findings can also be attributed to the study conducted by Akhan (2015), studied on the level of literacy of Economic Prospective Teachers of Social Studies using a mixed sample of 726 senior teachers and 436 prospective teachers from the university and found that the gender did not play an important role in determining the level of economic literacy. Akhan (2015) identified that there is a relationship between family income and level of economic literacy. Through the study, he found that the financial situation of answers option 'Just Enough to Basics' is a positive influence on the level of economic literacy. His study was based on a prospective teacher in Turkey. Based on the results of the study, the level of economic literacy among prospective teachers increased when there is an increase in public knowledge, but the difference was not large enough to prove that it will affect economic literacy. There are also a number of studies, which showed that the students who have the educational background of the economy previously had better economic literacy over students who do not have economic education. In addition, studies conducted on students at the University of Ömer Halisdemir, Turkey by Nakiboglu (2017) found that female students have higher levels of economic rationality, individual economic planning and higher general economic literacy than male students. According to a study by Serkan Dilek et al., (2018) which was done to 481 people in Kastamonu and Tosya Turkey, found that when there was an increase in economic education, it would indirectly increase economic literacy in microeconomics and macroeconomics. Therefore, when a person has an economic education will have more information on the real economic situation, it will indirectly increase the level of economic literacy. A study conducted by Nakiboglu (2017) which analyzes the level of economic literacy of students at the Faculty of

Economics and Administrative Sciences at the University Ömer Halisdemir in 2016-2017. It was found that students who are in the field of trade and international logistics management, political science and international relations have higher economic literacy than students in business, finance and economics that have the lowest economic literacy. In addition, in terms of grades, students in high grades indicate that they have the highest level of economic literacy and not students in lower grade classes. To determine whether the difference in location of residence plays a role in the level of literacy, Akhan (2015) in his study has provided some of the economic literacy, indicating that many areas in Turkey have a different understanding of decision-making, how to understand the system existing, economic fundamentals and the best use of the medium.

According to Yamaoka et al., (2010), economic education for undergraduate students has been facing serious problems several years ago in Japan. Most of the problems come from complicated economic content, there is a rapid change in the current economy, a drop in academic achievement among students and there is a restriction instruction from senior high schools and universities. This study used a survey method by applying TUCE, there are some economic students who show a high level of knowledge and understanding of the economy, but others show lower levels. Students with no micro or macroeconomic learning experience achieve a fairly high score. Additionally, students who take the economy at a particular university achieve a fairly low score. In macro examinations in particular, students studying macroeconomics achieve the lowest mean score. The increasing number of students in school, mean score shown is consistent in both micro and macro tests. Similarly, Yohanes Harsoyo et al., (2017) they used questionnaires by applying questionnaires from TEL. As a result of the study, they found that gender did not play a role in the difference in understanding of economic literacy in economic education. In addition, there are differences in the level of economic literacy among students in terms of educational background of the economy compared to the previous education (high school) level. In addition, the study found that there was no difference in the level of economic literacy by location of residence. This study was conducted on 197 students of economic education in Yogyakarta, Indonesia. There is not much research has been done to link the relationship between location of residence and the level of economic literacy. Likewise, a study conducted by Mutsaniah (2013) results from his study showed that good economic learning outcomes have no effect on good economic literacy, meaning a student with a good economic understanding does not mean that their economic literacy is good.

In Malaysia, although economic courses are offered at some universities, the majority of Malaysian students terminates their formal education in secondary schools and the majority who pursue university studies are unlikely to take on economic courses. In recent years, growing discussions in Malaysia have shown a general dissatisfaction with the ability of young people to face current and future economic problems (Che Noraini and Bakare Kazeem, 2013). This study measured the level of economic literacy among 200 students from the International Islamic University Malaysia using the Test of Economic Literacy (TEL) as an instrument and found that the level of economic literacy among graduates at the International Islamic University Malaysia is low and the educational background of the students did not play an important role in determining the level of economic awareness IIUM students. Based on previous research, clearly states that there are positive and negative determinants of the level of economic literacy among students and scarce study on economic literacy among Malaysian students. Thus, this study is important to review the economic literacy of Malaysian students and identify the relationship

© 2020, e-ISSN 2682-7727 https://doi.org/10.17576/geo-2020-1603-04

between the level of economic literacy with independent variables such as gender, ethnicity, household income, residential location and field of study.

Method

The focus of this study is the determinant of the level of economic literacy among students in Malaysia and survey methods was used. The questionnaire on economic literacy test has been developed by combining a number of questions of Test of Economic Literacy (TEL) and compiled questions based on Malaysia's own reference. The data for this study were collected from a survey among students in Malaysia. The sample of the study consist of 400 students (determined with 5 percent margin of error) who were selected randomly from different institutions of study and school. The questionnaires been was distributed proportionally across secondary school, boarding schools, sports schools, MRSMs, vocational schools or colleges, religious secondary schools, cluster schools, public universities and private higher learning institutes. Students were asked to answer a few questions related to economic understanding based on existing general knowledge of the economy. The questionnaire consists of 3 sections, namely personal information, knowledge of the economic and students' opinions on the current economy and some suggestions.

Tobit's method was used to analyze the relationship between the economic literacy test score with gender, ethnicity, household income, residential location and the field of study. The Tobit model was introduced by James Tobin, and this model aims to explain various variables depending on the filtered regression model at the lower threshold (left censored) or upper threshold (right censored), or both. The filtered data is different from the data being decimated, this is because only non-limited values are contained in data being decimated while limited data information is also provided in the filtered data (Anastasopoulos, 2008). The Tobit model is an extension of the probit model. Used when samples where information about regressand is only available for some observations only. The sample is called as a filtered sample. Sometimes it is called a dependent variable regression model. This model is estimated by the maximum likelihood method. According to Amemiya (1984), Tobit's model refers to a regression model in which the range of variables depends on several ways. Tobit regression uses the first and second derivations of analysis to get maximum likelihood estimates via the Newton-Raphson algorithm.

This model assumes that there are latent variables (ie can not be observed) y_i^*. This variable linearly depends on x_i via parameter (vector) β which define the relationship between the independent variables (or vector) latent variables x_i and y_i^* (as in the linear model). In addition, there are common mistakes that are distributed terms of u_i to capture random influences on this relationship. The variable that can be observed y_i defined as a function of increasing: the same with latent variables when latent variables are above zero and vice versa. Tobit is a mix of discrete and continuous dependent variables. Tobit model assumes that the dependent variable in the model is refined and variable takes the value of a good number of respondents, with other respondents who have a variety of values beyond the borders. According to Park et al., (2008), this model is different from a truncated regression model, which is generally different and require different estimators. Therefore, Tobit regression model can be described by the function:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where,

Y	: Economic literacy test score
β_0	: intercept
X_1	: Gender
X_2	: Ethnic
X_3	: Household income
X_4	: Residential Location
X_5	: Field of Study
ε	: standard error

Results And Discussion

Table 1 reports the demographic distribution of respondents. Referring to Table 1, a total of 154 male students, and a total of 246 female students participated in this study. From the point of ethnicity, the majority of participating students from several universities and schools are Malay students to a total of 348 students. While there are a total of 20 students are Chinese, 12 Indians and 18 students who come from the indigenous people of Sabah and Sarawak. The household income was divided into ten categories. Household income range from RM1000 and below to RM9001 and above. It can be seen that a total of 74 students who came from household income at RM1001-RM2000, where they are the ones most participating in this economic literacy study. Followed by the second largest household income group came within RM2001-RM3000. Furthermore, the residence location of respondents involved in urban and rural areas is 283 respondents living in urban areas, while 117 people in rural areas. Next is a field of study of the respondents. Social science students were among the many students who participated in this study with a total number of 305 people, while science students a total of 95 people.

Next, Table 2 shows reports the average score of the economic literacy test for each type of institution. The average score is calculated by adding all economic literacy test scores that are available for each type of institution and then divided by the total number of respondents. The average score is between 0 and 1. The value close to 1 indicates that the student in that institution is more economically literate while values close to 0 indicate otherwise. Referring to the table, the average score for Public University is the highest, which is 0.491. Meanwhile, the Secondary School (SMK) obtained an average score of 0.083, followed by Private Higher Educational Institutions which had an average score of 0.029. Respondents who attended the School Cluster received an average score of 0.007 economic literacy tests, where the MARA junior science college (MRSM) also earned the same average score. Vocational Schools or Colloges and SMKA also get an average score of 0.006. Followed by Boarding School and Sports School, which has an average literacy test score of 0.001. These results indicate that students in all type of education institution have low level of economic literacy. Eventhough students in public university scored highest, the average score is less than 0.5.

© 2020, e-ISSN 2682-7727 https://doi.org/10.17576/geo-2020-1603-04

Table 1: Respondents' demographic distribution

Features	Frequency	(%)
Gender		
Male	154	38.5
Female	246	61.5
Ethnic		
Malay	348	87
Chinese	20	5
Indian	12	3
Bumiputera in Sabah dan Sarawak	18	4.5
Household Income		
RM1000 and below	51	12.8
RM1001 – RM2000	74	18.5
RM2001 – RM3000	62	15.5
RM3001 – RM4000	59	14.8
RM4001 – RM5000	37	9.3
RM5001 – RM6000	34	8.5
RM6001 – RM7000	20	5
RM7001 – RM8000	18	4.5
RM8001 – RM9000	7	1.8
RM9001 and above	38	9.5
Residential Location		
Urban	283	70.8
Rural	117	29.3
Field of Study		
Science	95	23.8
Social Science	305	76.3

Source: Author

Table 2. Average score on economic literacy test by institution

Type of Institution	Average Score
Public university	0.491
Private university	0.029
Vocational College/School	0.006
SMK	0.083
MRSM	0.007
SMKA	0.006
Boarding School	0.001
Cluster School	0.007
Community College	0.002
Sports School	0.001

Source: Author

Results obtained from the Tobit regressions can be seen in Table 3 which indicating Sigma (σ) is 0.659005, and significant at $p = 0.01$. This gives a good hint of the model. There is an approximate parameter that get the same significance at $p = 0.01$, the field of study, while the

other parameters are estimated household income were significant at $p = 0.05$. The constant value is -14.87440. The Likelihood Test is carried out and the hypotheses used are:

$$H_0: \beta_1 = \beta_2 = \cdots = \beta_k = 0$$
$$H_1: At\ least\ there\ is\ one\ \beta_i \neq 0$$

From the test results obtained LR = 20.55963> $X^2_{0.05;5}$= 11.07050. Then H_0 is rejected and Tobit regression model can be used. Next, the Wald test, the hypothesis are:

$$H_0 = \beta_i = 0$$
$$H_1 = \beta_i \neq 0$$

This parameter test is done gradually by removing very insignificant parameters so as to obtain significant parameters. It can be seen that the value of X^2= 21.09717. It was concluded that H_0 was rejected so that the regression model could be used. The coefficient value of gender is 0.023201 and not significant at p = 0.10. This means that the level of economic literacy changed from woman to man increased by 0.023201. Next, the coefficient of ethnicity is -0.000578 and it is not significant at p = 0.10. The coefficient of income is 0.021193 and significant at p = 0.05, meaning that if there is an increase in household income among students, it will bring an increase to the level of economic literacy score of 0.021193. In addition, the coefficients of the independent variables residential location are 0.005554 and not significant at p = 0.10. Coefficient value of field of study is 0.321103 and significant at p = 0.01. In other words, students in the field of social science has higher level of economic literacy compared to students in science field.

Table 3. Tobit's regression results

Variables	Coefficient	Std. Error	z-Statistics	Prob.
C	-14.87440	4.137710	-3.594838	0.0003
GENDER	0.023201	0.068194	0.340216	0.7337
ETHNIC	-0.000578	0.004344	-0.133086	0.8941
INCOME	0.021193	0.010356	2.046497	0.0407**
LOCATION	0.005554	0.006686	0.830695	0.4061
FIELD	0.321103	0.077963	4.118661	0.0000***
Sigma	0.659005	0.023299	28.28427	0.0000
LR Test	20.55963			0.0010
Wald Test	21.09717			0.0008
*Significant at $p < 0.10$	**Significant at $p < 0.05$	***Significant at $p < 0.01$		

Source: Author

Based on the results of the study using the Tobit regression model, the results of this study show that gender does not necessarily play an important role in improving the economic literacy. The result of this has been proven by Koshal et al., (2008) where the results they find in their study proves that gender does not determine the level of economic literacy of students. The

results also supported by a study conducted by Akhan (2015) and John Harsoyo et al. (2017). Furthermore, the results of the regression results show that ethnicity does not play an active role in increasing students' economic literacy levels. This result was supported by a study from Che Noraini and Bakare Kazeem (2013). Household income appears to play an important role in determining the level of economic literacy. From the results of this study it is found that household income is significant and as the household income increases, the level of economic literacy will also increase. This result is supported by the study conducted by Yasmin et al. (2014) and Akhan (2015) which also showing that household income and the level of economic literacy has a positive relationship. Next, the student residence location, whether in urban or rural areas is not significant and does not constitute a decisive factor in increased levels of literacy. This result is consistent with the study conducted by John Harsoyo et al. (2017). Furthermore, from the results of the Tobit regression model, fields of study showed significant impact on the level of economic literacy. In this regard, several studies support this result. The study conducted by Fourie & Krugell (2015), Achan (2015), Roland Happ et al., (2016), Nakiboglu (2017), and John Harsoyo et al., (2017). Among the variables included in this study, household income and field of study showed consistent results with previous research highlights. In general, it can be seen that economic knowledge is essential to all levels of society, regardless of race, social status, education level and so on. This is because, basic knowledge of economics can help us in making everyday decisions. Economics is not only based on purely political, but it covers about our whole lives. As all know, economics education at the school and university level is one step towards embracing good character and citizens. Therefore, it is very important for society to have knowledge and understanding of the economy.

Conclusion

The main focus of this study is to identify the determinants of the level of economic literacy among students in Malaysia. The sample was composed of 400 students who came from different institutions. This study applies the Tobit regression model to analyze the relationship between literacy test score and determinants of economic literacy. The dependent variable used in this model is economic literacy test scores, while the independent variables are gender, ethnicity, household income, residential location and field of study. Result of the regression analysis shows that household income and education field play an important role in determining the level of economic literacy among students in Malaysia. Economic literacy is important to society regardless of one's background and their education level or field. Understanding of the economy must be nurtured from the school as this knowledge is very important. This knowledge enables students and the public to make good economic and financial decisions in their daily lives. Disclosure of the economy must be developed and nurtured in an interesting way to attract more young people today to learn the basics of economics. Often there is a dispute over economic issues in the community that is widespread in social media, but unfortunately when the ideas produced not in line with economic understanding. Therefore, knowledge and understanding of the economy is essential to creating an economically literate society and being able to make the right decisions.

Results from this study can assist researchers in further study on this issue by adding some independent variables that have not been studied to identify other factors that can determine the level of economic literacy. It can be concluded that economic literacy is very important to be

nurtured from the school level to disclose further economic terms, as well as basic knowledge of economics. Therefore, the government and the Ministry of Education must be very serious regarding this issue and take action to create an economically literate society. Suggestions for future researchers to expand the study to Sabah and Sarawak to identify the impact of independent variables on the level of economic literacy. Furthermore, future studies could also add variables that influence the impact of native language on economic literacy. This is because, in today's economic learning, whether at the school or higher education level, teachers are mixing Malay and English language in the learning and teaching sessions. The Ministry of Education also often revised the learning structure using these two languages. As a result, students tend to misunderstand some of the terms they learned.

Another proposal for further research involves the study of the impact of economic literacy on the attitudes and well-being of individuals. The early exposure of the economy should be encouraged from school level to enable the students to understand from the beginning. In addition, students' co-curricular activities need to be taken into account from various aspects of economic literacy in decision making. Learning economics are not only emphasizing the theory, but also applying it to students. In addition, the learning modules introduced to students should be more interesting and effective in attracting more students to gain knowledge of this area. It is expected that the results of this study can contribute to the improvement of economic understanding among students through school, higher education institutions and in particular the Ministry of Education.

Acknowledgement

We would like to acknowledge UKM as fund provider through Geran Galakan Penyelidik Muda (GGPM) (code GGPM-2017-104).

References

Akhan, N. E. (2015). Economic literacy levels of social studies teacher candidates. *World Journal of Education*, 25-39.

Amemiya, T. (1984). Tobit models: A survey. *Journal of Econometrics*, *24*(1-2), 3–61. https://doi.org/10.1016/0304-4076(84)90074-5

Anastasopoulos, P. C., Tarko, A. P., & Mannering, F. L. (2008). Tobit analysis of vehicle accident rates on interstate highways. *Accident Analysis & Prevention*, *40*(2), 768–775. https://doi.org/10.1016/j.aap.2007.09.006

Che Noraini Hashim & Bakare Kazeem Kayode (2013). Economics literacy among university students: A case study of International Islamic University Malaysia (IIUM). *World Applied Sciences Journal, 28*(6), 871-875.

Fourie, A., & Krugell, W. (2015). Determining the economic literacy of introductory economic students in South Africa. *International Journal Education and Development*, *6*(1), 86-96.

Gill, A. M., & Lavoie, C. G. (2011). Retention of high school economics knowledge and the effect of the California State Mandate. *The Journal of Economic Education, 42*(4), 319-337.

Halinski, J. F. (1983). Performance in the Basic Economic test (BEt) and trade-offs'. *The Journal of Economic education, 14*(1), 18-29.

Jappelli, T. (2009). *Economic literacy: An international comparison*. CSEF Working Papers 238, Centre for Studies in Economics and Finance (CSEF), University of Naples, Italy.

Koshal, R.K., Gupta, A.K., Goyal, A. and Navin Choudhary, V. (2008). Assessing economic literacy of Indian MBA students. *American Journal of Business*, *23*(2), 43-52. https://doi.org/10.1108/19355181200800009

Lavoie, C. G., & Gill, A. (2009). A study of high school economic literacy in Orange County, California. *Eastern Economic Journal*, *35*(4), 433-451.

Lopus, J. S. (1997). Effects of the high school economics curriculum on learning in the college principles class. *The Journal of Economic Education, 28*(2), 143-153.

Lusardi, A. (2008). Financial literacy: An essential tool for informed consumer choice. *Joint Centre for Housing Studies of Harvard University*, 1-26.

Lusardi, A., & Tufano, P. (2008). *Debt literacy, financial experience, and overindebtedness*. Centre for Research on Pension and Welfare Policies. Turin, Italy. Accessed from https://www.cerp.carloalberto.org/wp-content/uploads/2009/04/wp_83.pdf?f6fa34

Mutsaniah, M. (2013). Pengaruh modernitas siswa dan hasil belajar ekonomi terhadap economic literacy siswa di SMPN 3 Peterongan Jombang. *Jurnal Ekonomi dan Kewirausahaan, 1*(2), 109-120.

Nakiboglu, D. A. (2017). Examination of the economic literacy of the students of the faculty of economics and administrative sciences. *International Review of Social Sciences*, *5*(4), 261-271.

Park, B. U., Simar, L., & Zelenyuk, V. (2008). Local Likelihood Estimation of Truncated Regression and its Partial Derivatives: Theory and application. *Journal of Econometrics*, *146*(1), 185–198.

Rivlin, A. M. (1999). Economic literacy symposium. Minneapolis: The Federal Reserve Bank of Minneapolis.

Roland Happ, M. F.-T. (2016). Assessing the previous economic knowledge of beginning students in Germany: Implications for teaching economics in basic courses. *Citizenship, Social and Economics Education*, *15*(1), 45–57. https://doi.org/10.1177/2047173416646597

Salemi, M. K. (2005). Teaching economy literacy: why, what and how. *International Review of Economics Education, 4*(2), 46-57.

Schuhmann, P. W., McGoldrick, K., & Burrus, R. T. (2005). Student quantitative literacy: Importance, measurement, and correlation with economic literacy. *The American Economist*, *49*(1), 49–65. https://doi.org/10.1177/056943450504900104

Serkan Dilek, H. K. (2018). Factors affecting economic literacy. *Afro Eurasian Studies, 7*(1), 11-51.

Soper, J. C. (1979). *Test of Economic Literacy: Discussion guide and rationale*. New York, Joint Council on Economic Education.

Walstad, S. A. (1999). What do college seniors know about economics? *American Economic Review, 89*(2), 350-354.

Walstad, W. B., & Soper, J. C. (1991). Economic literacy in senior high schools. The Joint Council on Economic Education and The National Education Association.

Yamaoka, M., Asano, T., & Abe, S. (2010). Economic education for undergraduate students in Japan: The status quo and its problem. *Journal of Asia-Pacific Studies*, *14*, 5-22.

Yasmin, F., Kouser, R., Hassan, I. e., & Ahmad, W. (2014). Determinants of economic literacy at University level: A case of Pakistan. *Pakistan Journal of Commerce and Social Sciences, 8*(3), 914-924.

Yeop Yunus, N. K., Ishak, S., & Abdul Jalil, N. (2010). Economic literacy amongst the secondary school teachers in Perak Malaysia. *Information Management and Business Review, 1*(2), 69-78.

Yohanes Harsoyo, L. S. (2017). The level of economic literacy towards economics teacher candidates in Yogyakarta, Indonesia. *International Journal of Social Sciences & Educational Studies*, *3*(4), 73-88.