FINANCIAL INCLUSION AND HUMAN CAPITAL INVESTMENT IN URBAN AND RURAL: A CASE OF ACEH PROVINCE

Nanda RAHMI
Assistant Professor at the Departement of Economics, Fakultas Ekonomi dan Bisnis, Universitas Syiah Kuala, Banda Aceh, Indonesia
nanda_rahmi84@unsyiah.ac.id

ALIASUDDIN
Associate Professor at the Department of Economics, Fakultas Ekonomi dan Bisnis, Universitas Syiah Kuala, Banda Aceh, Indonesia
aliasuddin@unsyiah.ac.id

Abstract

this study is to analyze the effects of financial inclusion and other variables on human capital investment in urban dan rural region of Aceh Province by using pooled regression model with sample size total of 800 households. The results show that financial inclusion and income have a positive and significant effect on human capital investment, whereas family size has negative and significant. Furthermore, male and urban have bigger effects on human capital investment than female and rural region, respectively. Meanwhile, age has a bell-shaped to human capital investment indicates that the higher age smaller human capital investment. The last, the average of years of schooling in urban and rural regions is nine-year means the education level of these regions is junior high school. It is recommended that government should encourage banking to increase their services to a rural area in order to increase human capital investment.

Keywords: Financial Inclusion, Human Capital Investment, Aceh Province, Indonesia
JEL classification: G5, I210, D1, J170

1. Introduction

Human capital is very important to increase an added value of natural resources and to increase productivity, hence the higher economic growth. Natural resources absolutely depend on human capital, as stated by Kim and Lin (2017) in their study and find that natural resources depend on human capital. In addition, Odoardi and Muratore (2019) find that human capital has a positive and significant effect on local economic performance and productivity. Even though some countries have abundant natural resources, but some of them are still poor because human resources have lower quality. Meanwhile, some countries that have a high quality of human capital produce higher income level and also an educational level. Higher quality of human capital will produce higher competitiveness of the countries. For example, Singapore has limited natural resources, but it has a higher quality of human resources, this country has a higher human development index (HDI) and also competitiveness.

Table 1 reveals that Singapore has HDI as 0.932 is at 9th ranking in the world, and it is at the first ranking of world competitiveness ranking even though Singapore has limited natural resources compared to Indonesia. Indonesia only has HDI as 0.694, and it is 116th in the world ranking, and Indonesia is at the lowest rate compared to the countries in Table 1. It is known that Indonesia has abundant natural resources, but there is a problem in human resources to increase the added value of natural resources. In addition, Indonesia is only at 32nd ranking of world competitiveness where this ranking is the second lower of the countries in Table 1. Table 1 indicates that human capital is very important to achieve higher productivity and economic growth.

Table 1. Human Development Index and World Competitiveness Ranking, Selected ASEAN Countries, 2018

No.	Country	Human Development Index[1)]		World Competitiveness Ranking[2)]
		Index	World Ranking	
1.	Singapore	0.932	9	1
2.	Malaysia	0.802	57	22
3.	Thailand	0.755	83	25
4.	Indonesia	0.694	116	32
5.	Philippines	0.699	113	64

Sources: [1)] UNDP, Human Development Reports 2018, (2019) and [2)] WEF, Global Competitiveness Ranking 2018 (2019)

Similar to Aceh Province that has a huge budget total of USD 30.69 billion from 2010–2018, however, economic growth was 4.49 percent (2018), the poverty rate was 15.97 (March 2019), and the unemployment rate was 5.53 percent (March 2019) [(BPS, 2019)]. There is no guarantee that a huge budget will produce higher economic growth and lower unemployment rate because the human capital has a problem and cannot provide higher productivity and economic growth. Human development index (HDI) represents the human resource problem in this province and other districts in Aceh Province. Table 2, for example, reveals that with a huge budget, the HDI in Aceh Province still low at 70.00 and 70.60 for 2016 and respectively.

Table 2. Years of Schooling, Mean Years of Schooling, and HDI 2016 and 2017

Province and District	Expected Years Schooling (Years)		Mean Years of Schooling (Years)		HDI	
	2016	2017	2016	2017	2016	2017
Aceh Besar District	14,48	14,49	9,92	9,93	71,75	72,00
Banda Aceh Municipality	17,03	17,10	12,57	12,59	83,73	83,95
Aceh Province	13,89	14,13	8,86	8,98	70,00	70,60

Source: BPS (2019)

Pelinescu (2015) concludes that human capital is very crucial to achieve higher economic growth and sustainability. Furthermore, Odoardi and Muratore (2019) find that human capital has a positive and significant effect on local economic performance and productivity. The problem not only about the low economic growth and HDI but also there is a gap among district such Banda Aceh as the capital of Aceh Province and Aceh Besar District as the hinterland of Banda Aceh. Banda Aceh has 83.95 HDI in 2017 and Aceh Besar only 72.00. Aceh Besar as a rural region has lower HDI even though this region is hinterland of Banda Aceh.

Chen and Fang (2018) find that there are gaps between urban-rural, east-west, center-west in term of human capital investment because there is imbalance development of electricity in the regions. Statistics of Table 2 confirms the finding of Chen and Fang (2018), however, empirical evidence is very important to analyze whether there is the gap between Banda Aceh as an urban region and Aceh Besar as a rural region in related to financial inclusion and its effect on human capital investment in these regions. Dutta and Sobel (2018) find that financial capital has a positive and significant role in human capital development. Contrast to Dutta and Sobel (2018), Palamida et al. (2018) find that financial capital has a negative effect on human capital investment in Greek. In the case of Banda Aceh and Aceh Besar it is very important to examine the effect of financial inclusion on human capital investment in urban and rural regions because the previous studies have different results, there is positive effect and also negative effect.

2. Theoretical Review

Zallé (2019) finds that human capital has an important role in natural resource optimization, so the government in Africa should strengthen the quality of human resources. This study shows that human capital is very important to ensure well managed the natural resource allocation and to increase the added value from natural resources to the economy.

Inline to this study, Kim and Lin (2017) use panel cointegration model in analyzing 55 developed and developing countries related to natural resources from 1970 to 2011, and they find that natural resource dependence has a statistically significant effect on education. In addition, they also document that the education-improving effect of resource dependence is more dominant in countries with higher income, better legal quality, higher democracy, lower corruption, and less ethnic diversity.

Human capital investment is a very important factor for economic growth both in developed and developing countries. The role of skills, knowledge, and value of people are an important part of human capital (Pelinescu, 2015). Pelinescu (2015) states that human capital is a very crucial factor in achieving higher economic growth and sustainable development of the countries. Odoardi and Muratore (2019) find that human capital has a positive and significant effect on local economic performance and productivity. However, local financial systems do not support convergence between the North and South part of Italy. Bandyopadhyay (2019) document that sometimes the allocation of human capital investment is misallocation and redistribution on GDP, welfare, IFP, in the economies with financial market imperfections. This misallocation and redistribution have negative effects on TFP and GDP.

Anikina et al. (2015) find that the human capital investment has a production effect, the benefits for the individual and benefits to the government. This investment has a long-run effect on the welfare of society and to achieve sustainable economic development. Blanchard and Olney (2017) use panel of 102 countries and 45 years find that growth in less skill-intensive exports depresses average educational attainment while growth in skill-intensive exports increases schooling. Furthermore, types of sectoral growth are most beneficial for long-run human capital formation. Even, McDonald (2019) concludes that human capital investment during military services is very important even in the military sector because the effects of investments on the accumulation of human capital and output of defense sector have a spillover effect on general production. However, the effect of this investment is lower than investment on formal education.

The work of Wang et al. (2016) shows that workers with greater human capital to be engaged in high-status off-farm occupations. Furthermore, the results show that formal education attainment and post-school training have different impacts on rural people's off-farm occupation choices. Educated workers have higher possibility to earn more income than the lower ones. Onkelinx et al. (2016) report that firm-level of human capital investments are critical for labor productivity and internationalization in fast internationalizes, but not for those firms that internationalize more slowly. In term of training and education, Yokoyama et al. (2019) document that workers with self-motivation to join the training have a higher wage level than the others. Furthermore, the results show that the trend in investment in oneself training and education are increasing from time to time. Receiving training and education raises the likelihood for the workers.

The higher productivity is better by combining the competency in information technology (IT) in order to support the labor ability in the production process. This statement is proven by the study of Siddoo et al. (2019) leader in higher education must keep up with the situation and accelerate plans to produce graduates with the quality and preparation required to meet industrial needs. Furthermore, the competency of the digital workforce, an issue that was identified as vital to the 2017–2021 national agenda. Industries had most expected competencies in the professional skills and IT knowledge category, followed by the IT technical category and IT management and support category.

Theoretically, there are some factors affecting human capital investment, such as income, demography, financial development, and education. This theory is supported by empirical evidence; some of them are Attanasio (2017) find that human capital investment is determined by the income of parents. Higher-income parents have a higher investment in human capital. They also find that investment in younger ages has the greatest impacts on welfare.

Chi and Qian (2016) use data for Urban Household Education Survey 2007 and 2011, find that education expenditure incurred outside the school significantly contributes to increasing household expenditure. Furthermore, compulsory education programs are effective in curbing

in-school education expenditure. The last, family income has a positive and significant effect on education expenditure as human capital investment.

Lee and Lee (2016) analyze long-run human capital in 111 countries and over the period of 1820 to 1945 find that human capital investment is determined by income growth and infant mortality rates. Furthermore, they also find that transformation from rural and agricultural to urban and industrial has an effect on human capital.

Winfried and Prat (2018) analyze human capital and distribution, and they find that human capital investment should increase in parental income because of ability transmission across generations, but decrease in inherited assets because of the negative effect of wealth on labor supply.

Eckel et al. (2013) study about behavioral characteristics of low-income individual workers and find that the decision to save for family member's education is somewhat different from that of investing in one's own education. The patient is very important in education because patient participants are more likely to save for family members education.

Culture has a role on human capital as supported by the work of Hoorn (2019) use an epidemiological approach involving second-generation migrants to test for a possible cultural gradient in individuals' propensity towards human capital accumulation. The results show a strong relationship between country-of-origin culture and human capital accumulation and are robust to using years of education instead of individuals' engagement in human capital accumulation as the dependent variable. Neve and Fink (2018) conclude that each educational year of primary schooling in children resulted in a reduction in the probability of maternal death and also the probability of paternal death. This means that parental education is important to ensure the education of children.

Financial is another important factor in human capital investment as found in the study of Thakurata and D'Souza (2018) report that households with zero, ten, and fifteen years education have different access to financial markets. They also find that financial excluded, uneducated households prefer assets with a negative return over human capital investments. The human capital investments begin after the threshold of income at the same level as an educational fund. They decide to withdraw from education if the income level of the household is very low. However, Dutta and Sobel (2018) find that financial capital has a positive and significant role in human capital development. They also document that the countries that have higher financial development, the impact of tertiary enrollment is higher compared to a lower level of financial development.

Palamida et al. (2018) confirm the work of Dutta and Sobel (2018), and they find that financial capital has a negative effect on human capital investment in Greek. They also find that human capital is, directly and indirectly, related to investment intentions. There are three channels for human capital relations, and they are norms, social capital, and personal attitudes.

Another problem in human capital investment is the gap between urban and rural, where human capital investment is higher in the urban region than rural region. Chen and Fang (2018) find that there are gaps between urban-rural, east-west, center-west in term of human capital investment because there is imbalance development of electricity in the regions. Human capital investment is very important for sustainable development.

3. Research Method

This study is conducted in Banda Aceh and Aceh Besar districts. Banda Aceh is capital of Aceh Province, so Banda Aceh represents the urban region in this province, whereas Aceh Besar represents the rural region.

3.1. Data

Data are collected from Banda Aceh and Aceh Besar districts of households data level. The sample size is calculated as (Tejada & Punzola, 2012):

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

y

Where *n* is sample size, *N* is population, *e* is error term, in this study is set 5 percent. Based on equation (1), the numbers of samples are:

Table 3. Households and Sample Sizes in Urban and Rural Regions

Items	Banda Aceh	Aceh Besar
Number of households	64,008	94,683
Sample size (*e* is 5 %)	395	398
Actual samples	400	400

Source: Field Research, 2019

3.2. Method

Human capital investment is a key factor in economic development as found in some studies such as Anikina et al. (2015), Pelinescu (2015), Odoardi and Muratore (2019), and Blanchard and Olney (2017). However, misallocation of human capital investment causes misallocation and redistribution on GDP, welfare, IFP, in the economies with financial market imperfections. This misallocation and redistribution have negative effects on TFP and GDP. Meanwhile, Chen and Fang (2018) document that there is a gap between one region with others. Based on these findings, the relationship between human capital investment and financial inclusion is stated in a function as follows:

$$HCI_{ij} = \beta_1 + \beta_2 FI_{ij} + \beta_3 Y_{ij} + \beta_4 Age_{ij} + \beta_5 Age_{ij}^2 + \beta_6 S_{ij} + \beta_7 D_{ij} + e_{ij} \quad (2)$$

The variables are *HCI* as human capital investment is measured in years of schooling, *FI* as financial inclusion is dummy variable, 1 for a household has access to financial services and 0 otherwise, *Y* is family income in US dollars, and *Age* is the age of head of household. Furthermore, to capture the curvature of age to human capital investment, the age is formed in quadratic form, so the Age^2 represent the form of the quadratic function, *S* is sex, dummy variable, 1 for male and 0 otherwise, and *D* is dummy variable, 1 for urban and 0 otherwise. If the coefficient of Age^2 is negative and significant, indicating the relationship between age and human capital investment is a bell-shaped curve, whereas positive and significant is *a U*-shaped curve.

Theoretical sign of the coefficients, β_1 is positive, indicating that the average years of schooling, β_2 if this coefficient is significant means that financial inclusion has an effect on human capital investment. In addition, β_3 is positive means increase in income, human capital investment increases, β_4 is positive means the higher the age and human capital investment are higher, but this coefficient should have maximum value to capture maximum age to human capital investment activities. The coefficient of β6 represents a difference between male and female in human capital investment, and β_7 represents the difference between urban and rural regions in human capital investment.

4. Findings and Discussion

This part consists of two subsections; they are statistics of respondents, findings, and discussion. For the statistics of respondents, there are two statistics i.e., Banda Aceh and Aceh Besar districts, and the next parts are as follows.

4.1. Statistics of Respondents

Statistics of respondents show that most of the respondents from Banda Aceh are male (274) and female (126), whereas the most of respondents from Aceh Besar are female (220) and male (180). Table 4 also shows that most respondents have a lower level of education, 226 and 287 for Banda Aceh and Aceh Besar, respectively. Furthermore, the anomaly is found in Banda Aceh as urban region, but the respondents in this region that have financial inclusion only 40 respondents, meanwhile Aceh Besar as the rural region has higher financial inclusion (219 respondents).

Table 4. Sex, Education, and Financial Inclusion of Respondents of Urban and Rural Regions

No	Items		Urban (Banda Aceh)	Rural (Aceh Besar)
1	Sex	Male	274 [68.50]	180 [45.00]
		Female	126 [31.50]	220 [55.00]
2	Education	Higher	174 [43.50]	113 [28.25]
		Lower	226 [56.50]	287 [71.75]
3	Financial Inclusion	Have	40 [10.00]	219 [54.75]
		Not	226 [56.50]	181 [45.25]

Source: Field Research, 2019 (counted).
Note: […] indicates percentages

The anomaly of financial inclusion becomes strange because most of the respondents of Banda Aceh on average is 34.42 years. It is very young compared to Aceh Besar 41.74 years, and Banda Aceh has higher years of schooling (13.29 years) than Aceh Besar (11.62 years). Even, the average income of Banda Aceh is USD 336.95, whereas Aceh Besar is USD 205.09 [see Table 5 for more details].

Table 5. Statistics of Respondents of Urban and Rural Regions

No.	Items	Mean of Statistics		
		Urban (Banda Aceh)	Rural (Aceh Besar)	Average
1.	Age	34.42	41.74	38.08
2.	Family Size	2.21	2.82	2.52
3.	Years of Schooling	13.29	11.62	12.46
4.	Income (USD)	336.95	205.09	271.02

Source: Field Research, 2019 (counted)

4.2. Findings and Discussion

Table 6 shows the estimated results of the effects of financial inclusion, income, sex, regional dummy, age, and age^2. All of the estimated coefficients are theoretically significant because all the signs are as stated in theory. However, two of the variables have a lower significant level i.e., income and age. In addition, the model is free from autocorrelation because the Durbin-Watson statistic is 1.70. These results are an appropriate model to be used in analyzing financial inclusion effect on human capital investment.

Table 6. Estimated Results of Financial Inclusion Effect on Human Capital Investment

Variable	Coefficient	t-statistics	Prob.
Financial Inclusion	1.499631	5.4670	0.0000
Income	0.000034	1.8309	0.0675
Sex	0.576743	2.4888	0.0130
Dummy	2.002578	7.2288	0.0000
Age^2	-0.001626	-2.6833	0.0074
Age	0.095128	1.8192	0.0693
Constant	9.46492	8.5671	0.0000
R-Squared = 0.1407		Jarque-Berra = 177.6593 [Prob. = 0.0000]	
Adjusted R-squared = 0.1342		Durbin-Watson = 1.7027	
F-Statistic = 21.6474 [Prob. = 0.0000]			

Source: Field Research, 2019

The estimated results show that financial inclusion has a positive and significant effect on human capital investment in urban and rural regions of Aceh Province. The magnitude of the coefficient is 1.499631 indicates that if the family has access to financial services, the human capital investment increase by 1.499631; by assumption, other variables are constant. This result is consistent to the work of Thakurata and D'Souza (2018) where financial inclusion has

a positive effect on human capital investment, but it is different to the results of Dutta and Sobel (2018) find a negative effect of financial inclusion on human capital investment.

Furthermore, the income variable has positive and significant at ten levels, where the increase in income as USD 1, then human resource investment increase by 0.000034. The magnitude of this coefficient is very small, indicating that the income of the households is very low both in urban and rural regions. This result is in line with the works of Winfried and Prat (2018) and Eckel et al. (2013).

Sex is also positive and significant means that male has a higher educational level than female, and this result confirms the work of Attanasio et al. (2017). Meanwhile, the dummy for rural and urban regions is also significant means that there is a gap between the urban and rural area in human capital investment. Human capital investment in urban is higher than rural region. In addition, the age variable has a maximum for human capital investment because the Age^2 is negative means that the curve of this relationship is maximum. The last coefficient is constant, with magnitude 9.46492 means that the minimum level of human capital in term of education is nine years. This result is similar to a 9-year compulsory educational national program for entire Indonesia. This result is similar to the study of Chen and Fang (2018).

The effect of financial inclusion on human capital investment in details by sex is presented in Table 7. Table 7 shows that the effect of financial inclusion on human capital investment is more effective in the rural region than urban region both for male and female. These results confirm the results in Table 4, where financial inclusion is higher in the rural region than the urban one.

Table 7. Cross–Tabulation Statistics of Financial Inclusion Effect on Human Capital Investment by Sex in Urban and Rural Regions

Sex of Respondents	Pearson Chi–Square Values		df	Two–Sided Significant	
	Urban Region	Rural Region		Urban Region	Rural Region
Female	2.963	17.457	1	0.085	0.000
Male	0.108	13.830	1	0.743	0.000
Total	0.651	31.466	1	0.420	0.000

Source: Field Research, 2019

Table 8 confirms the results in Table 7, where the educational level of respondents of a male in urban is bigger than female, whereas, in the rural region, the female has higher educational level than male. However, respondents with the lower educational level of female in the rural area are bigger than male, indicating that most of the female in the rural area are having a lower educational level.

Table 8. Educational Level and Sex Distribution of Respondents in Urban and Rural Regions

Educational Level	Urban		Rural	
	Male	Female	Male	Female
	%	%	%	%
Higher	37.75	18.75	11.75	16.50
Lower	30.75	12.75	33.25	38.50
Total	68.50	31.50	45.00	55.00

Source: Field Research, 2019 (counted)

5. Conclusion

It should be noted that human capital investment is very important to achieve higher productivity, economic growth, and welfare. In addition, financial inclusion has a positive and significant effect on human capital investment. Income positively and significantly affects human capital investment. Male has a higher educational level than female, and its effect is positive on human capital investment. There is a gap between urban and rural in human capital investment, and urban has a higher human capital investment. Age has a bell-shaped curve, and it has a maximum point to human capital investment.

References

Anikina, E., Ivankina, L., & Tumanova, I. (2015). Human well-being and educational investment efficiency. Procedia - Social and Behavioral Sciences, 166, 48–52.

Attanasio, O., CostasMeghir, & EmilyNix. (2017). Human capital growth and poverty: Evidence from Ethiopia and Peru. Review of Economic Dynamics, 25, 234–259.

Bandyopadhyay, D., King, I., & Tang, X. (2019). Human capital misallocation, redistributive policies, and TFP. Journal of Macroeconomics, 60, 309–324.

Blanchard, E. J., & Olney, W. W. (2017). Globalization and human capital investment: Export composition drives educational attainment. Journal of International Economics, 106, 165–183.

BPS. (2019, September 1). Statistics of Aceh Province. Retrieved from Statistics of Aceh Province: aceh.bps.go.id

Chen, Y., & Fang, Z. (2018). Industrial electricity consumption, human capital investment and economic growth in Chinese cities. Economic Modelling, 69, 205–219.

Chi, W., & Qian, X. (2016). Human capital investment in children: An empirical study of household child education expenditure in China, 2007 and 2011. China Economic Review, 37, 52–65.

Dutta, N., & Sobel, R. S. (2018). Entrepreneurship and human capital: The role of financial development. International Review of Economics and Finance, 57, 319–332.

Eckel, C., Johnson, C., & Montmarquette, C. (2013). Human capital investment by the poor: Informing policy with laboratory experiments. Journal of Economic Behavior & Organization, 95, 224–239.

Hoorn, A. v. (2019). Cultural determinants of human capital accumulation: Evidence from the European Social Survey. Journal of Comparative Economics, 47, 429–440.

Kim, D.-H., & Lin, S.-C. (2017). Human capital and natural resource dependence. Structural Change and Economic Dynamics, 40, 92–102.

Lee, J.-W., & Lee, H. (2016). Human capital in the long run. Journal of Development Economics, 122, 147–169.

McDonald, B. D. (2019). A human capital model of the defense-growth relationship. The Social Science Journal, xxx, xxx–xxx.

Neve, J.-W. D., & Fink, G. (2018). Children's education and parental old age survival–Quasi-experimental evidence on the intergenerational effects of human capital investment. Journal of Health Economics, 58, 76–89.

Odoardi, I., & Muratore, F. (2019). The role of human capital after the crisis in Italy: A regional analysis. Socio-Economic Planning Sciences, 66, 58–67.

Onkelinx, J., Manolova, T. S., & Edelman, L. F. (2016). The human factor: Investments in employee human capital, productivity, and SME internationalization. Journal of International Management, 22, 351–364.

Palamida, E., Papagiannidis, S., & Xanthopoulou, D. (2018). Linking young individuals' capital to investment intentions: Comparing two cultural backgrounds. European Management Journal, 36, 392-407.

Pelinescu, E. (2015). The impact of human capital on economic growth. Procedia Economics and Finance, 22, 184–190.

Siddoo, V., Sawattawee, J., Janchai, W., & Thinnukool, O. (2019). An exploratory study of digital workforce competency in Thailand. Heliyon, 5, e01723.

Tejada, J. J., & Punzola, J. R. (2012). On the misuse of Slovin's formula. The Philippine Statistician , 129-16.

Thakurata, I., & D'Souza, E. (2018). Child labour and human capital in developing countries - A multi-period. Economic Modelling, 69, 67-81.

UNDP. (2018, August 30). Human Development Reports. Retrieved from http://hdr.undp.org/en/2018-update

Wang, W., Li, Q., & Lien, D. (2016). Human capital, political capital, and off-farm occupational choices in rural China. International Review of Economics and Finance, 42, 412–422.

WEF. (2019, August 30). Global Competitiveness Report. Retrieved from World Competitiveness Ranking: http://reports.weforum.org/global-competitiveness-report-2018/

Winfried, K., & Prat, J. (2018). Human capital and optimal redistribution. Review of Economic Dynamics, 27, 1–26.

Yokoyama, I., Kodama, N., & Higuchi, Y. (2019). Effects of state-sponsored human capital investment on the selection of training type. Japan & The World Economy, 49, 40–49.

Zallé, O. (2019). Natural resources and economic growth in Africa: The role of institutional quality and human capital. Resources Policy, 62, 616–624.