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Technology Improvement and Micro, Small, and Medium Enterprises (MSMEs) on Regional Development in Special Region of Yogyakarta

Rian Marita Sugiarto[1,a*], Doddy Aditya Iskandar[2,b]
[1]rianmarita.28@mail.ugm.ac.id; [2]doddy@ugm.ac.id

[a]Industry dan Trade Office of Special Region of Yogyakarta
[b]Urban and Regional Planning Master, Gadjah Mada University
*corresponding authors

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ABSTRACT

A new perspective on regional economic development is development capital generated from the region. MSMEs and Higher Education as development capital of the Special Region of Yogyakarta (DIY) have different characteristics. Development is recognized as a process in which interrelationships and effects between the variables lead to regional development. Therefore, it is necessary to identify the effect of regional development capital on regional development. This study aims to examine the use of PLS-SEM in designing a model of the relationship between technological innovation, capital, and workforce on regional development. This current study also aims to observe the effect of latent predictor variables (X_i) of technology, innovation, capital, and workforce on LPE, HDI, and poverty rate as the latent dependent variable of regional development (Y_i). Regional development capital has a positive effect on LPE. Technology has a positive and significant effect on innovation by 92.6%. Innovation Technology positively affects Economic Growth by 14.44% but is not significant. Though it is not significant, regional capital proxied by MSMEs positively affects economic growth. The workforce has a negative and insignificant effect on the economic growth of -28.3%. LPE and HDI have a negative effect on the poverty rate, although not significant at -6.8% and -13.3%, respectively. LPE and HDI play a role in reducing poverty. However, they perform on different paths. Workforce productivity is still low. Thus, it has not been able to boost economic growth and reduce poverty. These results are expected to be utilized as a basis for developing strategies for technology utilization by MSMEs.

Introduction

The theory of the Cobb-Douglas production function was developed from the Solow-Swan growth model. It states that regional economic growth is affected not only by

production factors in the form of capital and workforce but also by other factors, such as technological progress (Todaro & Smith, 2011). A study (Pramono & Suminar, 2019) highlighted that the capital factor in the Solow-Swan growth model is more identical to the ownership of a region over natural resources (resource endowment). Furthermore, it is also a key determinant of regional development capacity. However, (Todaro & Smith, 2011) also stated that the expertise and managerial and technical skills of a Human Resources (HR) in a country show the ability to exploit Natural Resources (SDA). In its development, a new perspective on regional economic development is development capital generated from within the region.

The Special Region of Yogyakarta (DIY) is a province in Indonesia with a finite area, making it difficult to increase the economy from the primary sector. However, DIY has regional development capital, namely the Micro, Small and Medium Industries (MSMEs), as a support for the economy and Higher Education as a producer of innovative human resources and a driver of technological innovation. Based on the 2016 Economic Census conducted by Statistics Indonesia (BPS), the characteristics of the business sector in DIY are dominated by business actors from small micro-units, which reach 94.8% of the total business and are used in 5 regencies/cities. The general characteristics of MSMEs are: that they have limited capital, are labour-intensive, and require workers who have special skills from generation to generation but do not need formal education (Sulistyastuti, 2004). MSMEs are an alternative job for lower secondary education workers who are not absorbed into the formal sector. The MSMEs workforce in DIY has increased significantly in 10 years and was able to absorb 79 per cent of the total workforce in 2016. Based on 2018 Indonesian Higher Education Statistics data from the Ministry of Research, Technology and Higher Education (Kemenristekdikti), the number of higher education institutions in DIY is 110 and ranks 9th out of 34 provinces in Indonesia. Schumpeter's theory of economic development (1934) states that technology inventors, entrepreneurs who apply technology, and innovation processes are the main factors that drive economic development (Arsyad, 2010). MSMEs can be utilized as a proxy to show the diffusion of innovation and technology generated by universities in developing the regional economy.

Regional development should be performed to create a more developed region. Each region has different Natural Resources (SDA) and demographic conditions. As a result, each region has a different comparative advantage. Thus, the strategy for developing each region is also different. Regional development can deal with technological developments in areas with limited or scarce natural resources (Rustiadi, Saefulhakim, & Panuju, 2011). Technological developments depend on science, the quality of education in a region, and its

10.12928/optimum.v13i1.3829

concern with research and development. Romer's endogenous growth theory (1990) states that knowledge as a form of capital is important in producing technological inventions. The invention was then utilized in production systems to increase productivity. Patents indicate the National Innovation System (SIN) performance in a country. Research conducted by (Kardoyo, Handoyo, Triyono, & Laksani, 2011) shows that technological developments proxied in the form of patents are indicators that can affect the country's economic performance. Higher Education through the Tri Dharma Higher Education plays an important role in driving technological innovation and supplying qualified human resources required in the innovation system.

The DIY's economic growth ranged from 4.95 to 6.20 per cent per year from 2014 to 2018. The DIY economy grew 6.60 per cent in 2019, exceeding the national figure of 5.02 per cent. DIY's Human Development Index (IPM) achievements from 2010-2019 ranked second highest among 34 provinces in Indonesia and reached 79.99 in 2019. Economic growth and HDI are development benchmarks in a region negatively correlated with poverty. Economic growth is a general description of welfare expected to impact poverty positively. Ideally, if a region's economic growth and HDI value are high, the poverty rate in that region should be low. However, this condition did not occur in DIY, where a reduction did not follow the high rate of economic growth and HDI in the poverty rate. As of September 2019, BPS survey results showed that the DIY poverty rate is 11.44 per cent above the national average of 9.22 per cent.

The business in DIY, which MSMEs dominate, has been able to absorb middle to lower-formal education workers. However, the condition has not been able to reduce the poverty rate. This is because the development capital of the DIY region has different characteristics: MSMEs with limited human resources with higher education, technology, and capital. Meanwhile Higher Education can produce new technology and innovative human resources. Development must be identified as a process in which there are interrelationships and influences between the factors that lead to regional development. Therefore, it is necessary to recognize the effect of regional development capital on DIY development. The limited data published by Higher Education statistics from LLDIKTI V and PDDikti Kemendikbud RI caused data only to be available starting in 2014. Thus, the panel data samples available were less than 30 data. In addition, most of the data does not follow a normal distribution, and data normalization cannot be completed because some data is zero. Therefore, testing the data is performed through the Partial Least Square Structural Equation Modeling (PLS-SEM) analysis method, which allows data with small samples and is not normally distributed. This study aims to describe the utilization of PLS-SEM in designing a model of

the relationship between technological innovation, capital and labour factors on regional development.

Furthermore, this current study also aims to perceive the effect of latent predictor variables (X_i) of technology, innovation, capital, and labour on LPE, HDI, and poverty rate as the latent dependent variable of regional development (Y_i). These results are expected to be adopted as a basis for constructing policy strategies to determine technologies that can increase the capabilities of MSMEs. Thus, the government can increase welfare and reduce poverty and economic inequality between regions in DIY.

Method

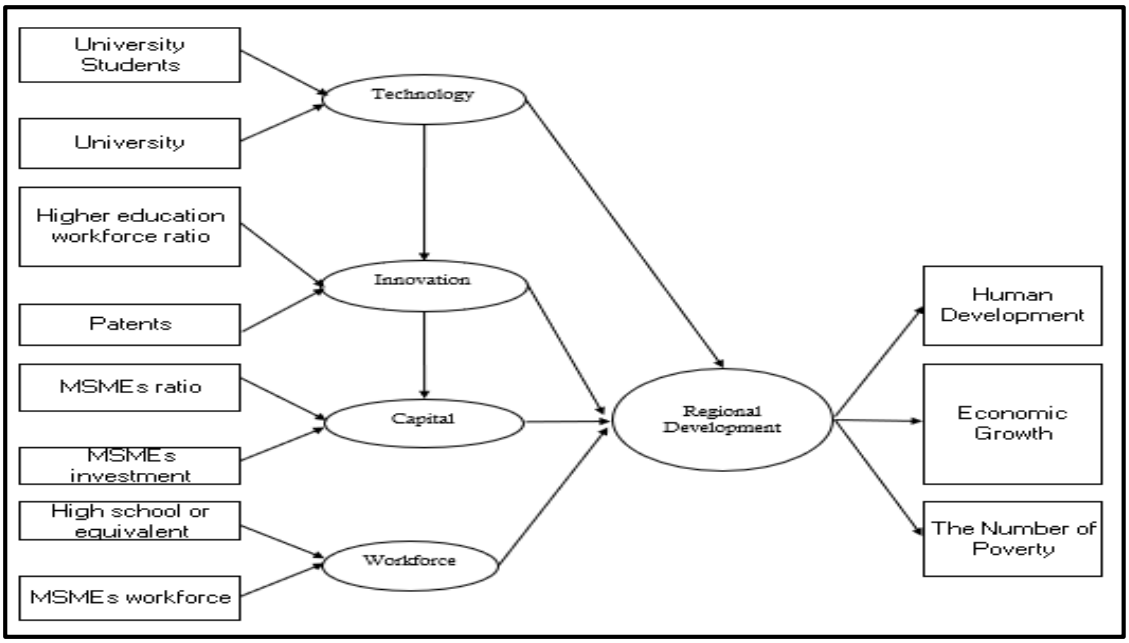
This current research utilizes panel data or pooling data. This kind of data combines *time series* and *cross-section* data. Panel data is collected at a time and chronologically arranged according to time on a particular variable (Kuncoro, 2018). The variables of this study are data on poverty rates, economic growth rates, HDI, workforce, MSMEs, universities, and registered patents from the five regencies/cities of DIY from 2014 to 2018. The data generated from BPS; Industry and Trade Office of Special Region of Yogyakarta; Region V Higher Education Service Institution (LLDIKTI V); Data and Information Center for Science, Technology and Higher Education of the Ministry of Research, Technology and Higher Education; Ministry of Education and Culture Higher Education Database, as well as the Directorate General of Intellectual Property of the Republic of Indonesia.

PLS-SEM is one of the variant-based Structural Equation Modeling (SEM). PLS-SEM is non-parametric, meaning there are no assumptions about the distribution as in the regression analysis. The PLS-SEM approach assumes that all variances measured in the indicator variables are helpful and should be included in estimating the construct scores. According to (Santosa, 2018), constructs are concepts, characteristics, or properties that are being observed and must be measured using indicators. The design of the path analysis model to be analyzed is presented in Figure 1. Five latent constructs and 11 indicators are used to construct the five constructs.

The Solow-Swan growth theory suggests that regional economic growth is affected by capital, labour, and technological progress (Todaro & Smith, 2011). According to Law Number 12 of 2012 concerning Higher Education, the obligations of Higher Education are to organize education, research, and community service. Thus, the university plays a role in technological innovation and the quality of human resources. Therefore, technology is proxied by universities and university students. A proxy of the workforce shows innovation

10.12928/optimum.v13i1.3829

with higher education to registered patents ratio. The results of research (Author, 2014) showed that the higher the number of university graduates and individuals with bachelor's degrees in a city, the faster the economic growth rate in that city. Research by (Martawardaya, Nugroho, & Firdaus, 2018) concluded that investment and patents have a reasonably strong relationship with the growth of Gross Domestic Product (GDP). Another research result by (Kardoyo et al., 2011) concluded that the larger the patents production, the higher the innovation capability in the country.



Source: Data estimation result, 2021

Figure 1. Path Analysis Model Plan

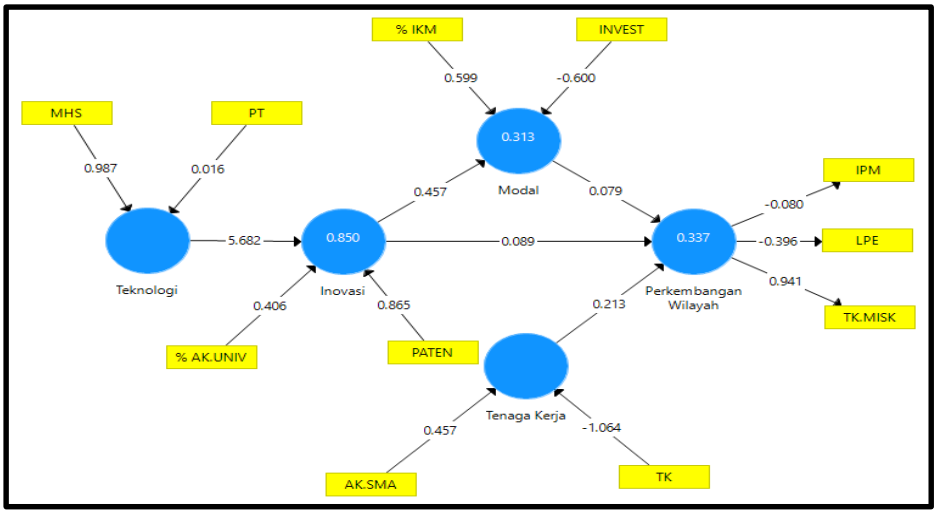
Innovation is applying technology to production systems in the industrial world to increase value added. A study (Langroodi, 2018) on Schumpeter's economic development theory concludes that entrepreneurship and new business creation positively and significantly impact economic growth. MSMEs have a role in the diffusion of innovation and technology adoption in encouraging the growth of a region's independence to increase economic growth and income distribution (Sulistyastuti, 2004). The regional capital is a proxy for the ratio of SME business actors and SME's investment value. HR plays a role in labour production, capable of mastering technology to increase economic productivity. Research (Maitra, 2016) found that the workforce in Singapore contributes to increased economic growth. A proxy indicates the workforce for the number of workers at MSMEs and the workforce who have graduated from high school/equivalent.

The new economic perspective interprets the development process as representing economic aspects in pursuit of accelerated growth and concerning fundamental changes in the social order, societal attitudes and national institutions, handling inequality, income,

and poverty alleviation (Todaro & Smith, 2011). Regional development in this current study is proxied by HDI, LPE, and poverty rates.

Results and Discussion

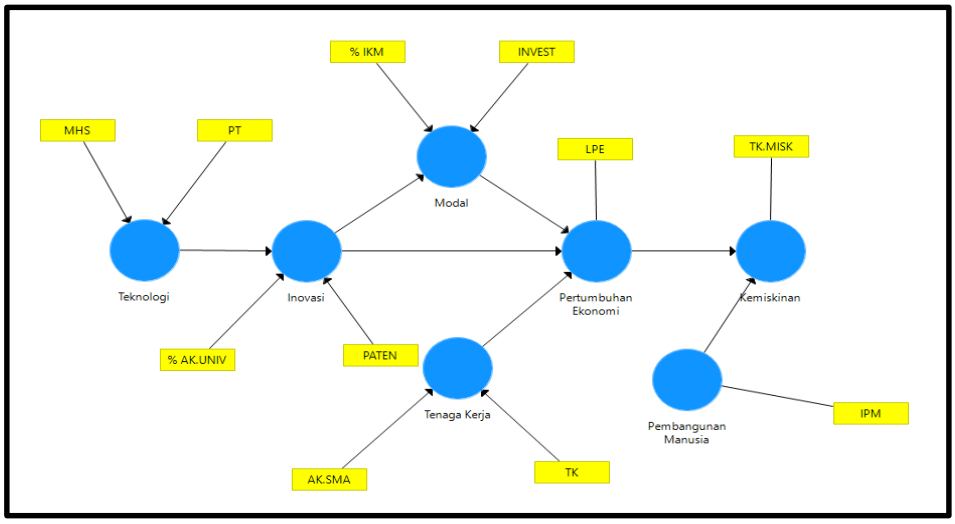
Path analysis use by examining the relationships between a dependent variable and two or more independent variables. Figure 2 show The Path Analysis Model.



Source: SmartPLS 3 output, data estimation result, 2021

Figure 2. Path Analysis Model with Path Coefficient

The path model design utilizes reflective indicators on the latent dependent variable and formative indicators on latent predictor variables. Calculations using the PLS Algorithm method produce SmartPLS 3 output, as shown in Figure 2.



Source : SmartPLS 3 output, data estimation result, 2021

Figure 3. Path Analysis of The Fittest Model

The value between the indicator and the construct on the reflective indicator shows the

10.12928/optimum.v13i1.3829

outer loading value. Furthermore, a value between the indicator and the construct on the formative indicator shows the value of the outer weight. Arrows connecting between constructs indicate a positive and significant effect. In the bound latent construct, two indicators had an outer loading value of less than 0.40, namely HDI and LPE. Thus, these two indicators had to be removed from the developmentally bound latent construct. However, because this study aims to predict the effect of capital on development areas seen from the HDI, LPE, and poverty rate indicators, the model was redesigned by separating these three indicators. The model redesign is performed until the best model meets the outer model requirements, as shown in Figure 3.

Outer Model Evaluation in Path Analysis on The Fittest Model

A collinearity test is performed from the Variance Inflation Factor (VIF) value, as well as testing the significance and relevance of the outer weight and T-statistics values in evaluating the outer model of formative indicators. The results of the evaluation of the outer model of the best model path analysis can be seen in Table 1.

Table 1. Result of Path Analysis

Construct	Indicators	*Outer* VIF	*Outer Weights*	*T-Statistics*	*p-value*	*Outer Loadings*
Technology	University Students	2.697	1.043	3.140	1.001	0.999
	University	2.697	-0.055	0.145	0.442	0.772
Inovation	Higher education workforce ratio	1.015	0.348	1.552	0.060	0.458
	Patents	1.015	0.896	5.016	1.000	0.938
Capital	MSMEs ratio	1.183	0.610	1.143	0.127	0.841
	MSMEs investment	1.183	-0.588	0.933	0.175	-0.828
Workforce	High school or equivalent workforce	1.141	0.531	1.006	0.157	0.770
	MSMEs workforce	1.141	0.681	1.355	0.088	0.868
Economic Development	LPE	1.000	1.000			1.000
Human Development	IPM	1.000	1.000			1.000
Poverty	The Number of Poverty	1.000	1.000			1.000

Source: Data Estimation Result, 2021

The collinearity level in evaluating the outer model can be seen from the value of the outer VIF. The approved outer VIF value is VIF <5 (Hair, Hult, Ringle, & Sarstedt, 2017). Table 1 shows that the outer VIF value for each indicator is less than 5. Thus, there is no collinearity problem in all formative indicators. To evaluate formative indicators' contribution and relevance by assessing T-statistics on the outer weights through the bootstrapping procedure on SmartPLS 3. The rule of thumb in this study is T-statistics >1.318 (one-tailed test) with a significance level of p-value <0.10. The t-table value of 1.318 is obtained from the T-table at df=n-1, with the number of samples (n) of 25. Table 1

revealed that the indicators that meet the significance and relevance tests are student indicators, the ratio of the higher education workforce, patents, and the workforce at MSMEs. According to (Hair et al., 2017), indicators still meet the requirements of significance and relevance if the outer loading value is ≥0.50. The SmartPLS 3 result in Table 1 shows the Higher Education indicators, the ratio of the number of MSMEs, the investment value of IMKM, and the workforce graduating from SMA or equivalent. However, not significant and still fulfils the significance and relevance requirements because the outer loading value is > 0.50. For variables with a single indicator, outer model testing is not performed because the outer loading value is set at 1,000. Thus, all the formative indicators in the best model path analysis meet the requirements of significance and relevance.

The Evaluation of The Inner Model of The Best Model Path Analysis

An evaluation of the inner model is performed after the evaluation of the outer model is fulfilled. In evaluating the inner model, collinearity testing between variables is required by looking at the inner VIF value, the coefficient of determination (R^2), the predictive relevance of Q^2, and testing the significance and relevance of the outer weight and T-statistics values. The results of the evaluation of the inner model of the best model path analysis can be seen in Table 2.

Table 2. Result of Inner Model of Path Analysis

Construct	*Inner* VIF			
	Innovation	Capital	Economic Growth	Poverty
Technology	1.000			
Innovation		1.000	1.478	
Capital			1.801	
Workforce			1.487	
Economic Growth				1.001
Human Development				1.001

Source: SmartPLS 3 Output, data estimation result, 2021

The level of collinearity between variables can be seen from the inner VIF value. The test results showed that the inner VIF value of each variable is <5.

Table 3. Result of Collinearity

Construct	R^2	Q^2
Innovation	0.857	0.390
Capital	0.310	0.180
Economic Growth	0.109	-0.148
Poverty	0.022	-0.030

Source: SmartPLS 3 Output, Data Estimation Result, 2021

10.12928/optimum.v13i1.3829

The construct has a strong level of predictive accuracy if the R2 value is > 0.75. The innovation construct has a high level of predictive accuracy, while the other constructs are classified as "weak" because they have an R2 value of <0.50. The Q2 value is obtained by calculating the blindfolding method on SmartPLS. The value of Q2 > 0 in the innovation and capital constructs indicates that the two constructs have predictive relevance. Meanwhile, the constructs of economic growth and poverty lack predictive relevance. The Q2 value of 0.914 or > 0 indicates that the best model path analysis has predictive relevance. Thus, the model is the fittest.

Table 4. Result of Influence Composition

Predictor Construct	Bound Construct	Influence Composition	Total
Technology	Economic Growth	Technology – innovation – PE 0.081 (indirect)	0.081
Innovation	Economic Growth	0.167 (direct) innovation – capital – PE -0.557 x 0.144 = -0.080 (indirect)	0.087
Capital	Economic Growth	0.144 (direct)	0.144
Workforce	Economic Growth	-0.283 (direct)	-0.283
Economic Growth	Poverty	-0.068 (direct)	-0.068
Human Development	Poverty	-0.133 (direct)	-0.133

Source: SmartPLS 3 output, data estimation result, 2021

The significant effect of technology on innovation and the positive effect of innovation technology on economic growth in Equation (1) indicates that DIY has scientific and technological capital to economic growth. This finding confirms the results from (Author, 2014) that the higher the number of university graduates and individuals with bachelor's degrees in a city, the faster the economic growth rate. The R^2 value of the innovation variable in Table 3 is 0.857. It indicates that technology indicators affect innovation by 85.7%, and other factors outside the model affect the rest. It can be interpreted that universities and students affect the number of patents produced by a region and the ratio of the workforce of university graduates or equivalents in that region.

Ideally, the results of technology that MSMEs can utilize through innovation can boost regional economic growth. However, Equation (2) results found that the results of technology through innovation do not yet affect MSMEs. A negative correlation between innovation and capital shows it. The negative effect of innovation on the R^2 value of the capital in Table 3 is 0.310. It indicates that capital is affected by innovation by 31%, and the other is affected by another variable outside this study. These results can be interpreted that technology in the form of registered patents and the university graduate workforce only affected 31% of the capabilities of MSMEs. Capital indicates that MSMEs in DIY cannot

be utilized in the diffusion of innovation and technology produced by universities in the form of registered patents. According to (Piketty, 2014), capital wich is associated as a factor of production in the form of technology (such as machines) is an alternative source of growth because an increasing population cannot become a productive class. However, technological discoveries in registered patents are high technology and are not in line with the MSMEs' characteristics which still utilize simple technology. This is in line with research results (Hamdani & Wirawan, 2012) that Higher Education should modify science and technology from ideal and sophisticated to simple and user-friendly so that MSMEs can adapt well. MSMEs must have a spirit of entrepreneurship, creativity and achievement to produce sustainability and create a competitive advantage. Research conducted by (Batabyal & Yoo, 2018) shows that increased economic growth is achieved when entrepreneurs increase research and development. Tax policy is not able to increase regional economic growth if entrepreneurs reduce spending on research and development.

The negative effect of labour on economic growth indicates that labour productivity in DIY is still insignificant. Thus, it can not boost economic growth yet. According to the economic census of 2016 data (Badan Pusat Statistik, 2019), the labour productivity substandard worker productivity means that not all MSMEs scale businesses can implement a wage system according to the provisions of the Provincial Minimum Wage (UMP).

The best model path analysis in Figure 3 shows that the LPE, HDI, and poverty rate cannot be used as a unified indicator to identify the development of a region. DIY regional development capital in the form of MSMEs and technological developments affect LPE and poverty rates but have no relationship with HDI. This finding (Equation 3) is consistent with Richard Florida's finding that creative class and human capital simultaneously play a role in regional growth and operate through different channels. The Creative Class has a stronger relationship with wages, while human capital has a stronger relationship with income (Florida, 2012). In this study, the creative class is indicated by students, the higher education workforce, and MSMEs actors. The rapid development of technology must be balanced with highly educated human resources and MSMEs actors who can adopt this technology to their production systems. The results of this model show a clear relationship between the economic achievement of a region and human capital as measured by the level of education.

However, the R^2 value of poverty is 0.022. It indicates that the indicators on the Economic Growth and Human Development variables affect poverty by 2.2%, while other factors outside the model affect the rest. This is as stated by Richard Florida regarding the creative class theory, which requires three key factors in the creative class: technology,

10.12928/optimum.v13i1.3829

talent, and tolerance. The tolerance factor that has not been included in this study could be another factor that affects the innovation to the capital variable, which affects Economic Growth and poverty. According to Richard Florida, tolerance is defined as a cultural factor or society's openness to diversity. In addition, the lack of openness or dissemination of information regarding technological inventions that MSMEs can adopt can also be a determinant of Human Development's inability to reduce poverty. According to Everer Roger's Diffusion of Innovations Theory as explained (Dodgson, Rothwell, Lissoni, & Metcalfe, 2013), technology is not only limited to machines and materials, but includes organizational and cultural elements. Furthermore (Dodgson et al., 2013) states that most adopters are late in adopting technology due to the insufficient information they obtain about the benefits of the new technology.

Conclusion

DIY regional development capital is MSMEs and technological developments that positively affect LPE. Technology has a positive and significant effect on innovation by 92.6%. Innovation Technology positively affects Economic Growth but is not significant by 16.7%. Although it is not significant, the regional capital proxied by IMKM positively affects the economic growth of 14.44%. The workforce has a negative and insignificant effect on the economic growth of -28.3%. LPE and HDI have a negative effect on the poverty rate, although not significant at -6.8% and -13.3%, respectively. LPE and HDI play a role in reducing poverty but operate on different paths. DIY's labour productivity is still moderate. Thus, it has been unable to encourage economic growth and reduce poverty.

This current study is an early identification of the regional capital development in the regional development in Special Region of Yogyakarta. Future researchers are expected to be able to discover technological innovation indicators, such as data on the transfer of appropriate technology adopted by MSMEs. Thus, the findings will be more comprehensive, up to the MSMEs' technology utilization strategy.

REFERENCES

Arsyad, L. (2010). Ekonomi Pembangunan (5 ed.). UPP STIM YKPN.

Badan Pusat Statistik. (2019). Analisis Hasil SE2016 Lanjutan "Efisiensi Industri Manufaktur Daerah Istimewa Yogyakarta." Diambil dari http://library1.nida.ac.th/termpaper6/sd/2554/19755.pdf

Batabyal, A. A., & Yoo, S. J. (2018). Schumpeterian creative class competition, innovation policy, and regional economic growth. *International Review of Economics and Finance*, *55*(December 2017), 86–97. https://doi.org/10.1016/j.iref.2018.01.016

Dodgson, M., Rothwell, R., Lissoni, F., & Metcalfe, J. S. (2013). Diffusion of Innovation Ancient and Modern: A Review of the Main Themes. *The handbook of industrial innovation*, (March). https://doi.org/10.4337/9781781954201.00015

Florida, R. (2012). The Rise of the Creative Class--Revisited: 10th Anniversary Edition--Revised and Expanded. Diambil dari http://www.amazon.com/The-Rise-Creative-Class-Revisited-Edition-Revised/dp/0465029930

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2 ed.). https://doi.org/10.1080/1743727X.2015.1005806

Hamdani, J., & Wirawan, C. (2012). Open Innovation Implementation to Sustain Indonesian MSMEs. Procedia Economics and Finance, 4(Icsmed), 223–233. https://doi.org/10.1016/S2212-5671(12)00337-1

Iskandar, D. A. (2014). Assessing urban freeway deconstruction : a survey of 21 cities with case studies of San Francisco and Milwaukee. Diambil dari https://doi.org/10.18297/etd/661

Kardoyo, H., Handoyo, S., Triyono, B., & Laksani, C. S. (2011). Kebijakan Paten Dalam Mendorong Aktifitas Inovasi di Indonesia. Jakarta: LIPI Press.

Kuncoro, M. (2018). Metode Kuantitatif Teori Aplikasi untuk Bisnis dan Ekonomi (5 ed.). Yogyakarta: UPP STIM YKPN.

Langroodi, F. (2018). Schumpeter's Theory of Economic Development: A Study of the Creative Destruction and Entrepreneurship Effects on the Economic Growth. SSRN Electronic Journal, (May). https://doi.org/10.2139/ssrn.3153744

Maitra, B. (2016). Investment in Human Capital and Economic Growth in Singapore. *Global Business Review, 17(2)*, 425–437. https://doi.org/10.1177/0972150915619819

Martawardaya, B., Nugroho, A. S., & Firdaus, A. H. (2018). Peran Investasi Sektor Teknologi Informasi dan Komunikasi (TIK) serta Paten terhadap Pertumbuhan Ekonomi Indonesia. INDEF Monthly Policy Brief, 1(2), 1–4. Diambil dari http://indef.or.id/wp-content/uploads/2018/03/IMPACT-Volume-1-Issue-2-Maret-2018-E-Commerce-1.pdf

Piketty, T. (2014). *Capital in the Twenty-First Century*. Cambridge: The Belknap Press of Harvard University Press. https://doi.org/10.4159/9780674369542

Pramono, R. W. D., & Suminar, R. E. (2019). Ekonomi Wilayah untuk Perencanaan Tata Ruang (1 ed.). Yogyakarta: Deepublish.

Rustiadi, E., Saefulhakim, S., & Panuju, D. R. (2011). Perencanaan dan Pengembangan Wilayah (2 ed.). Jakarta: Yayasan Pustaka Obor Indonesia.

Santosa, P. I. (2018). Metode Penelitian Kuantitatif Pengembangan Hipotesis dan Pengujiannya Menggunakan SmartPLS (1 ed.; Giovanny, ed.). Yogyakarta: Andi Offset.

Sulistyastuti, D. R. (2004). Dinamika Usaha Kecil Menengah (UKM) Analisis Konsentrasi Regional UKM di Indonesia 1999-2001. *Jurnal Ekonomi Pembangunan, 9(2)*, 143–164.

Todaro, M. P., & Smith, S. C. (2011). Pembangunan Ekonomi (11 ed.; A. Maulana & N. I. Sallama, ed.). Jakarta: Erlangga.