

The Impact of Technological Advancement, Economic Openness and Institutions on the Competitiveness of Indonesian Human Resources

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Abstract:- This research aims to identify and analyse the impact of technological progress, economic openness, and the impact on the competitiveness of SDM both directly and through economic growth. This research uses secondary data such as information and communication technology development index data, import exports, democracy index, PDRB. and human development index in each province, both in the Western Region of Indonesia and in the Eastern Area of Indonesia. The data is data time series 10 years (2013 – 2022). For the purposes of analysis used data panel 34 Provinces in Indonesia. The analytical techniques used are Simultaneous Equation Models (SEM) with the help of R Studio Software.

The results of the research show that directly the factors of technological progress, trade openness and institutional positive and significant to the competitiveness of the SDM. Indirectly, the progress of financial technology can improve the competitive strength of SDM through economic growth other than the openness of the economy and institutions have not optimally propelled the competition of the SSM.

Keywords:- Information and Communications Technology Development Index, Trade Openness, Institute of Competitiveness Human Resources.

I. INTRODUCTION

In the 90s, Amartya Sen introduced a development policy with a capability approach that puts human resources well-being (HRW) as a primary goal, so that the quality of HRW is one of the measures of development success. Empirically, the Indonesian national economy has shown a positive post-covid trend of 2019 growing above 5 percent in 2022, but on the other hand during the post-77 years of independence of Indonesia is still facing a fundamental issue, namely the stagnation of improved quality of human resources in Indonesia in recent years. The economy is sometimes judged only by statistics and physical development, but it's alpha to the problems of SDM, starting with the poor quality of education, health, and the economy of the people. The

World Bank that IPM Indonesia is still ranked 130th out of 199 countries, as is our EQ ranking that ranks sixth in ASEAN. Senada's study of the Program for International Student Assessment (PISA) released by the Organization for Economic Co-operation and Development (OECD) in 2019 showed that Indonesians' literacy rate is very low, at number 62 out of 70 countries in the world.

If viewed from the degradation of the human development of the removed territory, it has undergone development throughout the province in Indonesia, undergoing an increase compared to the previous year. Over the past 12 years, IPMs in many provinces in Indonesia have undergone significant changes, indicating a fairly rapid development of IPM throughout the province in Indonesia. The provinces in Java also follow the same pattern, even there are two provinces that change status, from IPM high category to IPM very high category, i.e. Jakarta DKI and Yogyakarta DI Provinces. In Kalimantan Island, only Western Kalimantan have not undergone status change, the rest of the shift from the IPM category to the high category IPM. In Sulawesi Island, most provinces are shifting from the high-category IPM to the higher category, except for Gorontalo Province. The West Sulawesi province has even been able to grow into a province with a medium-sized IPM from the previous 12 years low-category position. The shift in status from a previously low-class IPM to an IPM category is also taking place in the provinces of Nusa Tenggara Island and Papua. (BPS, 2023). However, there is still inter-territorial access inequality in Indonesia, where the West Area has a higher quality of development compared to the East Area. The West Area that includes Sumatra, Java and Bali has IPMs continuously increasing between 73.74 to 74.83, unlike the East Region that includes Nusa Tenggara, Kalimantan, Sulawesi, Maluku and Papua, although it is increasing every year but its values are still much lower.

Table 1 shows that economic growth in Indonesia has grown positively, having successfully boosted national economic growth by 3.7% (yoy) in 2021. The achievement will also bring Indonesia back into the top-middle-income country classification. (upper middle-income country). This

position is an excellent starting point for pushing economic recovery and structural reforms to get out of the middle class trap. (middle-income trap). Spatially speaking, Java Island as an industrial base and one of the major contributors to economic growth has grown positively by 3.66 percent.(yoy). Meanwhile, the highest economic growth was achieved by the Maluku and Papua regions of 8.6 (yoy), in line with the high

growth of the mining sector in the two regions as well as after the rise in commodity prices throughout 2021. Furthermore, Bali and Bali are still experiencing negative growth of -2.46 percent (yoy) despite being heavily dependent on its tourism sector which has experienced a decline in performance since the Covid-19 pandemic.

Table 1 IPM Development, Economic Growth, Information and Communications Technology Development Index, and Democracy Index in the West Region of Indonesia (KBI) and East Indonesia Region (KTI), 2019-2021

Year	Reproduction	KBI		KTI			
		Sumatera	Jawa dan Bali	Nusa Tenggara	Kalimantan	Sulawesi	Maluku dan Papua
2019	IPM	71.79	74.83	66.69	71.41	69.93	65.92
	PE	4.56	5.60	4.58	5.38	6.64	-0.36
	TIK	5.04	6.17	4.30	5.50	4.94	4.41
	IDI	74.70	78.13	78.83	79.88	73.98	65.25
2020	IPM	71.83	74.91	66.72	71.30	70.11	65.88
	PE	-1.26	-3.61	-0.73	-1.81	0.03	1.53
	TIK	5.16	6.17	4.49	5.51	5.05	4.41
	IDI	73.84	77.38	75.78	78.06	74.42	67.80
2021	IPM	72.07	75.21	66.97	71.70	70.39	66.09
	PE	3.38	3.11	2.41	3.68	4.93	8.62
	TIK	5.82	6.45	5.20	5.90	5.65	4.87
	IDI	77.08	79.54	73.06	76.60	76.58	67.66

Source: BPS Data, Processed, year 2023

As time passed, massive advances in technology, information and communications gave birth to a new era that required many adaptations from SDM. Now we have entered the era of society 5.0, where old machines are shifted to the use of more advanced technology and its digital nature. Competent SDM is one of the determinants of the success of transformation in this digital age. Indonesia cannot escape the cycle of change triggered by the era of society 5.0. One measure to see the development and inequality of information technology through the Information Technology and Communications Development Index of Technology, Information, and Information Development Index has an index of 0 to 10, the higher the value of the index then reflects the increasing speed of ICT development in a region. In general, there are still 21 provinces in Indonesia whose technology, information, and communications development values are below the national level. The province of Papua is the province with the lowest development of technology, information, and communications in Indonesia. It could also be an indicator of the disparity in the use of technology, information, and communications in Indonesia. Development is still centralized in the Java region with the eastern region to be taken more seriously in Indonesia for the development of technology, information, and communications. (BPS, 2022).

The era of society 5.0, the world has entered the digital age. Technology, Information, and Communications (ICT)

has become an urgent factor in the progress of a region. Countries such as Japan (Zuhdi et al., 2012), the European countries that are joining the OECD (Fernández-Portillo et al. 2020), (Awad & Albaity, 2022), (Liu & Saam, 2022) have proven, using a country's technology can accelerate the growth and development of a country. ICT has been a catalyst in economic growth, which can be seen from the widespread use of applications that have an impact on more efficient processes in the production, distribution, and consumption of goods and services. Therefore, ICT advances can have a positive impact in a variety of areas. (Septanto, 2016). According to (Niebel, 2018) who studied the impact of ICTs on economic growth, 59 samples of developing countries found a positive influence between ICTs and economic growth.

Furthermore, these ICTs have an impact not only on economic activities, but also on health and education. As explained (Bankole et al., 2011; De La Hoz-Rosales et al, 2019; Hashem, 2015) ICT development has a positive impact on human development. But differently (Morawczynski & Ngwenyama, 2007) explains that ICT alone is not significant enough to influence human development. A study that took place in five West African countries -- Benin, Cameroon, Senegal, Gading Coast, and Niger -- said that investments in education and health care should be given equal consideration.

In addition to information and communication technology factors, foreign factors also affect the competitiveness of human resources of a country including Indonesia. In the current era of global competition, the development of the world economy is more of a liberal economic doctrine. It looks like a lot of countries are implementing this system in their own country. Three key underlying ideas are drawn from the ten: first, fiscal and budgetary discipline; second, a market economy, especially copyright, competitive currency exchange rates, privatization, and deregulation; third, openness to the global economy through trade liberalization and the cultivation of foreign capital. (Bremmer, 2011). The consensus states that economic and financial openness is a means of achieving the improvement of a country's economy. Such a policy is adopted by most developing countries without the exception of Indonesia. Countries with open economies carry out exports and imports of goods and/or services as well as borrowing on the world capital markets. (Mankiw, 2003). In line with the view of this liberal economic system, each individual is given a great advantage in the economy. (Delivarnov, 2010). Economic and financial openness is a way of achieving the growth of a country's economy. (Fatsabit & Yusran, 2019).

For developing countries, economic openness has different implications. (Dreher, 2006) explains that economic openness can lower social and environmental standards, increase the poverty rate in the developing country and increase the financial crisis in a country. In a study conducted by (Kong et al., 2021; Rana, 2020) trade openness had a positive impact on economic growth, but unlike (Hussein et al.

Another factor that drives the competitiveness of SDM is the institutional factor. The institutional environment of a country depends on the efficiency and behavior of public and private stakeholders. The legal and administrative framework in which individuals, companies and governments interact determine the public quality of a country and have a strong influence on competitiveness and growth. It will also affect income inequality. The importance of institutional factors for economic development has been a concern over the past decade as a result of attempts to find other dimensions beyond traditional growth theory as an additional factor that affects economic development. Effective institutions to improve the supply of public goods address market failures, improve efficiency, reduce transaction costs (North, 1990), prioritize transparency (Storper, 2005), promote entrepreneurship, and facilitate the functioning of the labour market. Putham (2000) in (Dijkstra et al., 2011) explains that solid institutions can drive innovation, mutual learning and productivity growth and place it as a core driver of economic growth. Equal to Equal with (Acemoglu et al., 2001; Nawaz et al., 2014; Vijayaraghavan & A. Ward, 2011).

One of the indicators used to get a picture of how the state and institutional state of Indonesia is the Index of Indonesian democracy, i.e. Index of Civil Freedoms and Index of Political Rights. (Setianingtiyas et al., 2019). Table 1.1 shows that access to the index of democracy between the

West Indonesia Area and the East Indonesia Area has increased and has different proportions. Indicates that Java and Bali have the largest index compared to the other islands is about 79.54 percent and of the five existing provinces only Western Kalimantan has the competitiveness of SDM (IPM) which status is moderate while the others status is high. In contrast with Papua and Maluku having the lowest access index of democracy affected its lowest SDM competitiveness, followed by southeastern Nusa. Empirically in line with the findings (Liotti et al., 2018; Saha & Zhang, 2017) that demography has a positive effect on improved human development, however (Tsai, 2006) unlike democracies in developing countries fails to maintain its momentum in improving human development. And there are other arguments that state that there is no connection between democracy and economic growth among them. (Gerring et al., 2005).

Thus, global competition in the era of society 5.0 today information and communication technology (ICT), economic and institutional openness is seen as an important factor in improving the quality of current SDM. Over the last two decades, some researchers have tested ICTs for economic growth, but still limited to studying the impact of ICTs on human development in particular in Indonesia, which is considered one of the fundamental factors of economic development. This could be very important from the perspective of developing countries, which can grow faster through the implementation of ICTs. Economic openness must be balanced with policies and measures that support inclusive and sustainable human development. Efforts must be made to ensure that the economic benefits resulting from economic openness are distributed fairly and evenly, taking into account the social and environmental impacts that may arise.

Besides, it sees a rapid rise in the rate of economic and human development throughout the world, many countries still remain poor. Thus, social scientists of various disciplines have long sought the causes of development. In political science, the theoretical and empirical relationship between democracy and development is often of special concern. While democracy can be seen as an end in itself, a more general argument about the importance of democracies may claim that political democracies improves the standard of living of citizens. However, empirically, the effect of democratic development is much more controversial.

Based on the facts and data presented above shows how important the ability of a country or region to improve the competitiveness of SDM in keeping with global competition in the era 5.0.

II. METHODS

This study is a study that deals with causal relationships between variables or common, also called explanatory research. (explanatory research). The approach used is a verification approach, which tests the relationship, correlation, and influence between variables between free variables and closely bound variables. The research uses the

competitiveness of SDM as a bound variable, economic recovery as an intervening variable and three free variables, including the availability and accessibility of information and communication technologies, economic openness. The research is carried out in 34 provinces, not including South Papua Province, Central Papua, Papua Mountains, and South West Papua. The type of data used in this research is secondary data that comes from the Central Statistical Agency (BPS) and the Regional Data Management Information System of the National Development Planning Agency. (Simreg Bappenas). Estimates, analyses and research were carried out using panel data that combines time series from 2013 to 2022 and cross-section with research locations are 34 Provinces in Indonesia with 17 provinces in the West Area and 17 in the East Area.

To find out the competitiveness model of SDM Indonesia there is an economic growth model analyzed using Simultaneous Equation Model (SEM), to answer the problem formula and the hypothesis developed, then the secondary data collected is processed using RStudio software. Based on the conceptual framework developed in Figure 1, maak can be formed functional equations in simultaneous models for linear regression estimates as follows:

$$Y_{1it} = f(X_{1it}, X_{2it}, X_{3it}) \quad (1)$$

$$Y_{2it} = f(X_{1it}, X_{2it}, X_{3it}, Y_{1it}) \quad (2)$$

Where:

X_{1it} = The availability and accessibility of information and communications technology, projected from the Information and Communications Technology Development Index, provinces i and t, measured on a scale of 1 – 10.

$$Y_{2it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4(\alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \alpha_3 X_{3it} + \mu_1) + \mu_2 \quad (1.2.3.a)$$

$$Y_{2it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 \alpha_0 + \beta_4 \alpha_1 X_{1it} + \beta_4 \alpha_2 X_{2it} + \beta_4 \alpha_3 X_{3it} + \beta_4 \mu_1 + \mu_2 \quad (1.2.3.b)$$

$$Y_{2it} = (\beta_0 + \beta_4 \alpha_0) + (\beta_1 X_{1it} + \beta_4 \alpha_1 X_{1it}) + (\beta_2 X_{2it} + \beta_4 \alpha_2 X_{2it}) + (\beta_3 X_{3it} + \beta_4 \alpha_3 X_{3it}) + (\beta_4 \mu_1 + \mu_2) \quad (1.2.3.c)$$

$$Y_{2it} = (\beta_0 + \beta_4 \alpha_0) + (\beta_1 + \beta_4 \alpha_1) X_{1it} + (\beta_2 + \beta_4 \alpha_2) X_{2it} + (\beta_3 + \beta_4 \alpha_3) X_{3it} + (\beta_4 \mu_1 + \mu_2) \quad (1.2.3.d)$$

$$Y_{2it} = \theta_0 + \theta_1 X_{1it} + \theta_2 X_{2it} + \theta_3 X_{3it} + \mu_4 \quad (4.2.3.e)$$

In SEM analysis techniques, various statistical tests are used to test the hypothesis of a model developed. The model accuracy test, or goodness of fit, is a measuring tool for measuring the precision of a regression function in estimating its actual value. (Ghozali, 2011). There are different types of fit indices to measure the degree of conformity between the hypothesized models. Fit index with the cut off value used to measure the level of conformity or truth of the model in this study so that a model can be accepted or rejected.

III. RESULT

A model's validity test is a test performed to see the conformity of a model. There are nine criteria used to assess whether a model is qualified or not, among others Chi square,

X_{2it} = Economic openness, procured from the trade openness of the provinces i and t, measured as a percentage (%).

X_{4it} = Institutions procured with the index of democracy of provinces, provinces i and t, measured by percentage (%).

Y_{1it} = Economic growth, projected from the PDRB on the basis of the 2010 provincial price constant i and t, measured as a percentage (%).

Y_{3it} = Competitiveness of SDM, projected from the Human Development Index of provinces i and t, measured in percentage units (%).

Based on the above functional model, then simultaneous equations (equations 1.1 – 1.2), if following nonlinear functions can be formed estimated equations as follows:

$$e^{Y_{1it}} = \alpha_0 e^{(\alpha_1 X_{1it} + \alpha_2 X_{2it} + \alpha_3 X_{3it} + \mu_{1it})} \quad (1.1.1)$$

$$e^{Y_{2it}} = \beta_0 e^{(\beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 Y_{1it} + \mu_{2it})} \quad (1.2.1)$$

The equation (1.1.1; 1.2.1) can be rewritten as:

$$Y_{1it} = \alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \alpha_3 X_{3it} + \mu_1 \quad (1.1.2)$$

$$Y_{2it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 Y_{1it} + \mu_2 \quad (1.2.2)$$

With the help of matrix analysis, the reduced form is obtained as follows:

$$Y_{1it} = \alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \alpha_3 X_{3it} + \mu_1 \quad (1.1.3)$$

significanced probability, RMSEA, CMIN/DF, GFI, AGFI, TLI, NFI, and CFI. According to (Ferdinand, 2002) there are at least 7 criteria of goodness of fit index that are met of 9 indices, except NFI.

Based on Table 2, it can be seen that in the tested model there is only a goodness of fit criterion that is not accepted Chi Square = 1247,033, Significanced Probability = 0,000. However, Chi-square (X^2) testing is sensitive to the size of the sample used, when the number of samples is large enough that is less than 200 samples, whereas if the large sample will be significant then the chi – square must be followed by other test tools (Hair et al., 2010; Tabachnick and Fidell, 2019). The value of Chi – square, this study obtained as 0,000, thus it can be stated that this model is declared fit because of the number

of samples of the study as 340. So it can be concluded that the model used in this study already meets the criteria of goodness of fit.

As for the results of the GOF test on this study are as follows:

Table 2 Test Results Goodness of Fit Model

Criteria	Value Limit	Model Results	Model Evaluation
Chi Square	expected small	704.803	Not fit
Significanced Probability	$\geq 0,05$	0.000	Not fit
RMSEA	$<0,08$	0.000	Fit
GFI	$\geq 0,90$	1.000	Fit
AGFI	$\geq 0,90$	1.000	Fit
RMR	$<0,08$	0.000	Fit
SRMR	$<0,08$	0.000	Fit
CMIN/DF	$\leq 2,00$	0.000	Fit
TLI	$\geq 0,95 < 1$	1.000	Fit
CFI	$\geq 0,95 < 1$	1.000	Fit

Source: Data Process Results, Year 2024

Testing the hypothesis related to direct influence found technological progress had a positive and significant impact on the competitiveness of SDM with a value of 2.629 and a significant value of 0,000. This is in line with the initial hypothesis that the availability and accessibility of information and communications technologies directly and significantly affect the competitiveness of SDM. In terms of the indirect influence of technological progress factors on the competitive SDM through economic growth shows a significant impact overall. This influence comes from a

positive and significant relationship between the availability and accessibility of information and communications technologies and economic growth which is then followed by a significant link between economic growth and the competitiveness of SDM. That is, any increase in the availing and accessibility of information & communications technology will increase economic growth. Furthermore, the increase in such economic growth will then affect any change in SDM's competition.

Table 3 Results of Estimates of Direct Impact of Economic Growth (Y1), and Competitiveness of SDM (Y3)

Variabel		Estimate	Default Error	t value	Pr(> t)	Description
Exogenous	Endogenous					
Technology Advances (X1)	Economic growth (Y1)	0.554	0.066	8.461	0.000	Meaning
Economic openness (X2)	Economic growth (Y1)	-0.003	0.001	2.546	0.011	Meaning
Institutional (X3)	Economic growth (Y1)	-0.023	0.01	-2.242	0.025	Meaning
Technology Advances (X1)	Competitiveness of SDM (Y3)	2.629	0.145	18.177	0.000	Meaning
Economic openness (X2)	Competitiveness of SDM (Y3)	0.009	0.002	4.296	0.000	Meaning
Institutional (X3)	Competitiveness of SDM (Y3)	0.114	0.021	5.52	0.000	Meaning
Economic growth	Competitiveness of SDM (Y3)	0.596	0.109	5479	0.000	Meaning

Source: Data Processed from Rstudio, Year 2024.

The direct impact of the economic openness factor on the competitiveness of the SDM shows a significant and positive impact (nilai t sebesar 0.000 dan nilai koefisien sebesar 0,009). In this study, the economic openness factor is represented by the ratio of imports and exports to the total regional gross domestic product for each province according to the applicable price base. This means that an increase in the percentage of imports and exports by one per cent will increase the competitiveness of the SDM by 0.009 per cent. This result is in line with the initial hypothesis that the level of trade openness has a direct positive and significant impact on the competitive strength of SDM. The influence comes from a negative and defining relationship between the level of economic openness and economic growth that is then followed by a positive and significant relationship between

economic growth and the competitiveness of the SDM. These results are not in line with the initial hypothesis that economic openness indirectly positively and significantly affects the competitiveness of SMEs through economic growth.

The direct influence of institutional factors on human competitiveness shows a positive and significant influence. In this study, the institutions are represented by the Indonesian Democracy Index (IDI) at the province level. This means that any change in the Indicator of Indonesia's democracy at the provincial level will have an impact on the competitiveness of the region. The results are in line with the initial hypothesis that institutional factors have a direct positive and significant impact on the competitiveness of SDM.

Table 4 Non-Direct Impact of SDM Competitiveness Through Economic Growth

Variable		Estimate	Default Error	t value	Pr(> t)	Description
Exogenous	Endogenous					
Technology Advances (X1)	Competitiveness of SDM (Y2) by Economic growth (Y1)	0.330	0.066	8.461	0.000	Meaning
Economic openness (X2)		-0.002	0.001	2.546	0.011	Meaning
Institutional (X3)		-0.014	0.01	2.242	0.025	Meaning

Source: Data Processed from Rstudio, Year 2024

As for the indirect influence of institutional factors on the competitiveness of the SDM through economic growth, it shows a negative and significant overall impact. The influence stems from a significant and negative relationship between institutional and economic growth which then proceeds with a significant positive relationship between economic growth and competitive SDM.

IV. DISCUSSION

➤ *Analysis and Implications of the Impact of Availability and Accessibility of Information and Communication Technologies on the Competitiveness of SDM both directly and through Economic Growth.*

The results of the research show that the availability and accessibility factors of information and communication technology measured by the Information and Communication Technology Development Index have a positive and significant impact on the overall competitiveness of SDM. The development of modern technology, especially information and communication technology (ICT), has had a major impact on various aspects of human life, which in turn can affect human development. Through technology, such as the availability of Internet networks, it provides easy access to information and educational resources. With today's online learning platform, people can access courses and educational materials from anywhere, which can improve accessibility of education and improve literacy levels in various areas.

In addition, technology also plays an urgent role in improving access to health services and improving diagnosis and medical care. Innovations such as telemedicine enable remote consultation with medical professionals, which is very

beneficial for those who live in remote areas or do not have easy access to medical facilities. Technology advances can help create new economic opportunities through sectors such as e-commerce, technology startups, and digital-based jobs. It can increase employment opportunities, economic growth, and household incomes, which in turn contribute to improved MSM competitiveness, so that these ICTs have an impact not only on economic activity, but also on health and education. As explained (Bankole et al., 2011; De La Hoz-Rosales et al, 2019; Hashem, 2015) ICT development has a positive impact on human development.

While technology has great potential to enhance the competitiveness of SDMs, it is important to remember that equal access and inclusive use of technology must be given priority to ensure that the benefits are widely disseminated throughout society. In addition, challenges such as digital gaps and data privacy also need to be addressed to ensure that the positive impact of technology on competitiveness can be maximized and sustained.

The impact of ICTs on the region's competitiveness can be seen from its contribution to the input of production factors such as investment and labour absorption. In addition, ICT also serves as a driving factor for competitiveness through increased productivity of sectors that utilize or use ICT products and services. There has been a transformation of the economy, jobs, and even society itself through the introduction of new technologies and processes. (Deloitte Insights, 2018). These advances in digital technology are not only by its experts, but also have an impact on society in general. The diversity of facilities obtained with applications and digital platforms has enabled a wider range of technology

users. Access to communication information and knowledge empowers a person by affecting the ability to learn, think, and cooperate with others. (Summak et al., 2011). The need to increase the availability and access of ICT from the government to the public will have a major impact on improving the quality of life of the public and the workforce.

The development of technology means an increase in technical efficiency, which can be described as the ability to produce multiple outputs with the same amount of input. (Djadjuli, 2017). According to Donou-Adonsou (2019), optimum use of technology can drive economic growth in the short term better in improving the quality of resources themselves. According to (Lucya & Anis, 2019), education and technology have a positive impact on economic growth. Technology has also helped to improve conditions in Indonesia during the Covid-19 pandemic. With technology, every small, medium-sized enterprise and big corporation is capable of doing business. This led to the occurrence of the economic movement from the physical exchange of goods to the exchange. There is technology capable of driving economic development and contributing to economic growth. (Afif, 2020). These findings are also supported (Bayraktar Sağlam, 2018; Cardona et al., 2013; Niebel, 2018, Qureshi & Najjar, 2017; Van Ark, 2008) which find that technological advances have a positive impact on economic growth.

The same study was conducted by Appiah-Otoo & Song (2021), looking at which rich (high-income) or poor (middle and low-income) countries are more likely to benefit from the information and communication technology (ICT) revolution? Using data from a panel of 123 countries comprising 45 high-income countries, 58 middle-income countries, and 20 low income countries from 2002 to 2017 and building an ICT index of mobile, internet, and fixed broadband, it was found that in general ICTs boosted economic growth in both countries, but poor countries tended to benefit more from the ICT revolution.

➤ *Discussions and Implications of Economic Openness on the Competitiveness of SDM both directly and through Economic Growth.*

The results of the research show that economic openness has a positive and significant impact on the competitiveness of the Indonesian SDM while its impact through economic growth shows a negative impact. In theory, this study is in line with the theory of economic openness that has an influence on gross domestic income that is part of the composite in measuring human development (UNDP, 2006) and is an effective stimulator in supporting the development of a country through the existence of international trade transactions (Kabadayi, 2013). The competitiveness of SDM measured in this study is the Human Development Index (HDI) a measure in assessing the impact of economic policies on the quality of life of people in a country. (Davies & Quinlivan, 2006). The economic openness of a country will show a picture of the benefits it achieves. These advantages are capable of driving the quality of competitiveness of domestic human resources, because the economy becomes an attraction for external entities to enter, so that the greater the

investment that enters a country, the bigger the benefit that can be obtained by the host country. (Golub, 2009).

The impact of trade openness on the competitiveness of the SDM has been a significant topic of discussion in economic and development literature. Through openness trade can improve access to goods and services of health and education, because international trade can increase the availability and diversity of such products in domestic markets. It can improve public health and educational, which in turn can improve the quality of human development. In addition, international trade can facilitate the transfer of technology and knowledge between countries. By enabling access to technology and best practices from other countries, trade openness can help accelerate the development of infrastructure, industry, and human resources in developing countries including Indonesia. Furthermore, trade openness can strengthen social networks and inter-community ties at a global level. It can help in the exchange of cultures, ideas, and values, which in turn can contribute to human development through increased awareness and understanding among communities. Small and open economies, sectors where human resources, research and development, as well as trade interact and allow absorption, tend to grow the fastest (Bye & Faehn, 2022).

These findings are also supported by research (Khan Jadoon et al., 2015) in Asian countries on trade liberalization, human capital and economic growth. This research finds that the impact of trade openness on human capital is significant. This is because the fierce competition between nations will create a trained human resource. Output from trade openness in the form of increased productivity for human resources. These findings are also reinforced by a study by Powell (2003) investigating the relationship between economic openness and economic growth and human development using average developing-country data from 1965 to 1990. Research finds that economic openness can affect economic growth as well as human development.

Further research results show that economic openness has a negative and significant impact on the competitiveness of SDM through economic growth. Theoretically contrary to Adam Smith's (1776) and David Ricardo's (1817) theory, two states with absolute and comparative cost advantages can benefit from trade. (Krugman & Obsfeld 2012), Every country specializes in producing manufactured goods that are relatively cheaper. This drives a number of manufactured goods where both countries consume them, and higher consumption means greater well-being. However, higher social well-being does not mean that gross domestic product (GDP) is higher.

These different findings (Kong et al., 2021; Pradhan et al, 2017; Riekhof et al. 2019) prove that economic openness has a positive impact on economic growth. They explain how trade openness affects economic growth in a country. As for these conditions, they are influenced by certain economic, social, political conditions that affect the level of openness of a country, so that it affects its international trade performance.

Thus, faced with the potential negative impact of economic openness, it is important to pay attention to policies that promote inclusiveness, justice, and sustainability. This could involve the development of appropriate regulation, support for vulnerable sectors, investment in human resources and infrastructure, as well as the promotion of innovation and economic diversification. With a comprehensive and coordinated approach, countries can mitigate risks and optimize the benefits of trade openness for sustained and inclusive economic growth and impact on increased MSM competitiveness.

➤ *Explanation and Implications of the Impact of Institutional Factors on the Competitiveness of SDM both directly and through Economic Growth.*

The importance of institutional factors for economic development has attracted attention over the past decade as a result of attempts to find other dimensions beyond development theory as additional factors affecting economic development (Rod-Pose, 2013; Storper, 2005). Effective institutions increase the supply of public goods, address market failures, improve efficiency (Streek, 1991), reduce transaction costs (North, 1990), prioritize transparency (Storper, 2005), promote entrepreneurship, and facilitate the functioning of the labour market. Putnam (2000) suggests that solid institutions can be drivers of innovation, mutual learning, and productivity growth, and place them as the core driving factor of economic development (and thus economic competitiveness). The role of institutions in shaping the economic success of a country is also considered important by (Acemoglu & Robinson, 2001).

The results of this study show directly, institutional factors have a positive and significant influence on the competitiveness of SDM in Indonesia, but not significant through economic growth. The positive influence between the level of democracy and human development has been investigated both theoretically and empirically (Gerring et al., 2012, 2015, 2021; Sen, 1999, 2000). According to Sen's theory, democracies can be regarded as the last step in a political process that allows the participation of various social classes in the governance of society and, at the same time, drives the improvement of people's well-being (Sen, 1999; 2000). Along with Ming-Chang Tsai (2006) analysing the influence of Democracy on human development, he explains that democratic countries that support political competition show higher levels of human development than autocratic states, although the relationship is less strong when using the rate of change in human development as a dependent variable. (Liotti et al., 2018) using Polity IV data and the Human Development Index for 18 former Socialist countries from 1990 to 2014, found evidence of a positive link between democracy and HD. Moreover, the results are strong when we examine a series of control variables such as growth rates and trade openness.

Furthermore, the results of this study show institutional factors have no significant influence on the competitiveness of the Indonesian SDM both through economic growth. This indicates that the dynamic conditions of the development of democracy in Indonesia are not effective in boosting the

economic performance (and thus the competition of the SDM) in the region. The results are consistent with Lipset's (1959) and Bhagwati's (1995) views that states that countries with democratic systems will be vulnerable to social conflict and uncertainty that negatively affects investment and economic development.

Furthermore, (Lipset, 1959) provides a perspective that economic development is a prerequisite for opening up future democratization opportunities. Without economic development, it is difficult to create a democratic government and society. According to Lipset, economic development (and thus the level of well-being) will lead to modernization. This is what will encourage more organized and critical civil society, which is one of the essential preconditions for democracy.

Theoretically, there are three main currents of thought in the literature about how democracy affects economic growth (Sirowy & Inkeles, 1990) namely: 1) conflict perspective theorizing that higher economic growth can be achieved by authoritarian political regimes because of the successful implementation of policies for reform, difficult to do under a democratic political system; 2) compatibility perspective highlighting the importance of democracies and freedoms in achieving economic growth, where democratic and political freedom are prerequisites for the proper enforcement of contracts, security of law and order, and the expansion of the market to strong economic growth; 3) a sceptical perspective focusing on how some democratic principles such as the political party system, political culture and the use of resources in the industrial sector have independent influences on economic growth. (demokrasi). Democracy can stimulate economic growth, because democracy is capable of motivating people to work and invest that will drive economic progress. Thus, the well-established relationship between democracy and growth is the result of the relationship between democratic and other developmental determinants such as human capital and social capital, where the relationship is mediated by a qualified government bureaucracy. (Barro, 1996). But this finding is consistent with (Baum & Lake, 2003; Gerring et al., 2005) that there is no connection between democracy and economic growth.

The competitiveness of the SDM through its economic growth goes hand in hand with the sustainability of the democratic system. However, the experience in Indonesia in building a democratic system has given rise to strange phenomena. The democratic system that has been built successfully for almost two decades has not proved to have had a significant impact on economic progress. (dan dengan demikian daya saing SDM).

As is well known, the Indonesian system of government refers to a modern democratic system. All the political institutions that are the main pillars of democracy have been available and well awakened, even the president and parliamentarians directly elected by the people. However, democratic governance is not supported by clean public institutions. (birokrasi, aparat kepolisian, institusi peradilan). Parliamentary institutions, which are vital in the process of

formulating public policies, have become one of the epicenters of acute and systematic corruption practices, thus giving rise to the difficulty of building good governance. (Alhumami, 2010).

Empirically in line with findings (Linawati et al., 2021) that investigate the impact of government governance on economic growth and the Human Development Index: A Case Study for 10 Developing Countries, OKI finds variables of voice and accountability. A variable that reflects the perception of the extent to which citizens can participate in the election of their government, as well as freedom of expression, association freedom, and free media. The results of his research showed a significant negative link to economic growth. This indicates that the more democratic a country is, the slower economic growth will be. (dan sebaliknya). These results differ from previous studies conducted by (Bah & Kpognon, 2021; Baklouti & Boujelbene, 2015; Shabbir, 2017; Thach et al., 2017) which found a significant positive relationship between the two. The results are consistent with the theory that higher economic growth can be achieved by an authoritarian political regime because the successful implementation of policies for reform is difficult to do under a democratic political system. (Sirowy & Inkeles, 1990).

Furthermore, the results of this study are also confirmed through the report of the United Nations Development Programme. (UNDP, 2021). As one of the organizations under the United Nations (United Nations/UN), releases the National Human Development Index (HDI) scores throughout 2021. First place was placed by Switzerland, with an index score of 0.962 points. Tipis is below it in second place, Norway with a score of 0,961 points. Third, Iceland with a rating of 0.959 points. Fourth and fifth are filled by Hong Kong and Australia, with scores of 0.952 and 0.951 respectively. The top ten countries are dominated by the countries of the European region. Only Hong Kong is from Asia. Indonesia itself ranks 114th with a score of 0.705 points. Singapore is among the countries with the highest Human Development Index among the developed countries, ranked 9th out of 189 countries, but Singapore does not have a democratic system. Similarly, the five most prosperous countries of the small oil-rich kingdoms such as Kuwait, Bahrain, Brunei, Qatar and the United Arab Emirates are amongst the undemocratic countries. Moreover, UNDP also reports that in the spectrum of low-development countries, the relationship between development and democracy is declining, as is the number of poor countries adopting democratic systems.

According to Linawati et al., (2021) found that the variables of vote and accountability (VA), political stability (PS), government effectiveness (GE), quality of regulation (RQ), and corruption control (CC) have no influence on human development in 10 OKI countries. This may be because developing countries are often associated with low human resources, so when the state is democratic and the quality of regulation is good, many of them are reluctant to good health, as well as decent education. It gives policy implications related to the importance of the government to give incentives to small communities to improve their quality

of life. If the government continues to strive to create good governance, it is not impossible to sustainable economic development. The government is also required to ensure that the policy that has been formulated can go according to the plan, because it is the effectiveness of the government that will drive the increased competitiveness of SDM.

V. CONCLUSION

On the indirect, positive and significant impact on the competitiveness of the SDM through economic growth, but not significantly through income inequality. The trade openness factor, which represents the ratio of exports and imports to regional gross domestic product, has a significant positive impact directly on the Competitive Power of Indonesia. On the significantly negative indirect impact on competitive power of SDM by economic growth. The institutional strength factor that constitutes the Index of Democracy of each province has a positive direct and significant effect on the competency of the Indonesia SDM.

On direct, no significant impact has been found through the growth of the economy. This means that the index of democracy has not optimally influenced economic growth As recommendations and recommendations based on the results of this research, first, the development of technology, information and communications supports the competitiveness of SDM Indonesia in global competition, so that policy-making through the allocation of regional budget more efficiently and effectively for the advancement in technology, health, education, and the economy of the community can be implemented in improving the competitive capacity of the SDM. Increased quality of human resources is also necessary for people to well-being.

Furthermore, the maximum use of technology in helping to optimize efforts to reduce income inequalities; Secondly, trade openness directly affects the competitiveness of the SDM, so in this context, it is important to develop a trade policy that favours human development, taking into account the needs and interests of all parties involved. This can include the development of social infrastructure, education and labour training, environmental protection, as well as the promotion of justice and equality in the distribution of trade benefits. This research is limited to using only variables of availability and accessibility of information and communications technology exports, imports, and institutions that can estimate the competitiveness of SDM Indonesia in the face of global competition Era Society 5.0. The researchers hope that future research can add both macro and micro variables simultaneously, so that the determinants of human development can be seen within a more comprehensive perspective framework. Furthermore, the authors recommend that the subsequent study use the dynamic panel method, because the study uses more crossections compared to the time series, so that the results can be compared in view of the selection of the best methods.

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