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Gig-Economy and Knowledge Society: Avoiding the Middle-Income Trap

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A B S T R A C T

With the advancement of digital technology and amid the Pandemic of Covid-19, the way people work is changing. Industry structures and business models are being disrupted by innovation in new products and services, changing cost structures, and lower barriers to entry. Many people work as freelancers, self-employed, or also known as gig workers. In such a gig economy, people have more control over the way they work, yet they receive unstable income, no benefit, decreasing job security, and stalled careers if they do not improve their skills. Surviving in the gig economy also requires competency in specific skills which can get very competitive. For skilled workers, the gig economy will provide a benefit compared to the unskilled workers. People need to update their skills and knowledge when it becomes obsolete. However, the educational and social systems in Indonesia do not sufficiently prepare for the gig economy. The objective of teaching and learning is still based on how the student will work as a paid worker after they graduate. Repeated works will be replaced by the machine, therefore, critical thinking, liberal art education, long-life learning, and worldwide networking among educational institutions are among policies that can be implemented to maximize the benefit of technological advancement through education. Using Principal Component Analyses (PCA) for dimensionality reduction, this research indicates that Indonesia has high discrimination against minorities, high corruption, lack of freedom of the press. These factors may hamper the transformation into the knowledge society since opportunities will not be distributed evenly. Results from the PCA also show that Foreign Direct Investment (FDI), budget on research, logistics performance, number of students studying abroad, and collaborative research are not the main factors for development in Indonesia. Therefore, Indonesia needs to reform its education systems to be well suited for the knowledge society, provides long-life learning for the gig workers, and integrate into the Global Value Chain (GVC) to avoid the middle-income trap.

Keywords: gig economy, knowledge society, critical thinking, PCA, GVC.

1. Introduction

Many jobs today and in the following years will need more specific skills, i.e. blended between technological know-how, problem-solving, critical thinking, and soft skills such as persistence, collaboration, and empathy. The demand for less advanced skills is declining and being replaced by smart technology. On the other hand, the demand for advanced cognitive skills associated with greater adaptability, such as socio-behavioral skills, is rising. Innovation will continue to accelerate. This is already noticeable in developed countries and also starting to arise in some developing countries (WorldBank, 2019).

1.1. Gig economy

The gig economy is characterized by the growing number of workers abandoning traditional 9 to 5 employment and being replaced by independent workers based on a task-by-task basis. The new form of corporate culture will be controlled by the core team who represents the values and philosophy of the company whilst the rest of the tasks will be carried out by temporary workers. Small and medium-sized enterprises (SMEs) may benefit from the development of the gig economy since they traditionally lack resources to recruit and retain full-time workers.

There are numerous benefits for the company working with gig workers, such as more adaptive workers, access to hyper-specialized talent, cost-saving whilst at the same time can increase productivity (Team, 2016). Yet, the gig economy has been most pronounced in a small number of

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service industries with high shares of own-account workers. This indicates that it substitutes for traditional self-employment rather than dependent employment (Schwellnus, Geva, Pak, & Veiel, 2019). Those who are involved in the gig economy mostly are young, between 18 – 24 years old (Kartina, Wishart, & Cornick, 2018).

The gig economy mostly is supported by a digital platform that facilitates gig workers to communicate with their customers for services or asset sharing (Mastercard and Kaiser, 2019). The rise of the digital platform allows the effect of technology to reach more people more quickly. Gig platform is projected to grow and develop, especially in the emerging market, with large pools of freelancers who previously worked in the informal sectors such as in India and Indonesia. Both countries also provide a substantial market with their extensive population (Mastercard and Kaiser, 2019).

One-third of the 127 million labor (work) force in Indonesia can be classified as gig workers with working hours less than 35 hours per week. This number is expected to increase with the increasing number of start-ups, lower recruitment costs than conventional jobs, more flexible working hours preferred by millennials and Z generations. Working as travel bloggers, vloggers, celebrity endorsers, even buzzers attract young people since it looks glamorous (Soerjoatmodjo & Laksmini, 2019). These jobs gained more momentum during the Covid-19 Pandemic.

In the USA, from 2000 to 2016 the share of the workforce with income from alternative, non-employee work arrangements grew by 1.9 percent. More than half of this increase occurred between 2013-2016, mostly mediated by the presence of digital platforms and it becomes secondary or supplemental income (Collins, Garin, Jackson, Koustas, & Payne, 2019).

Workers will likely have many gig jobs throughout their careers. This means they will have to be lifelong learners. Consequently, developing countries must take rapid action to ensure their competitiveness in the future economy, especially in health and education (WorldBank, 2019).

1.2. Knowledge-economy and knowledge-society

The dynamic fast-changing world has led to a transformation from an agricultural society to an industrial society and then followed by advancement in information technology and innovation, known as Economy 4.0 or knowledge economy. This is a new challenging work to identify intelligent people who are creative and innovative. It is also a challenge for the learner to seek the learning outcome concerning the learning management by the teacher (Puncreobutr, 2016).

There was a growth of interest in educational design, the recognition that to create an excellent higher education is best done in teams rather than by a lone academic. It is time to say goodbye to disciplinary silos in universities. The educational institution should identify new programs that are future-proof to prepare students for industry 4.0. A new curriculum that equipped students with multiple careers for their long lives learning through sharing resources across faculties and departments is pivotal (Salmon, 2017).

Classical economic theory is not fully aware of the importance of knowledge as an organizational asset. It was not until the mid-1980s that the role of knowledge as a competitive asset was well recognized, particularly in professional competence. Yet, most organizations still do not have strategies and methods for managing knowledge.

The word now is highly connected. It becomes a global knowledge society. The link of knowledge to economic growth has become increasingly clear since the early twentieth century with the increasing importance of intangible capital in total productive wealth, and the increasing relative share of GDP due to intangible capital (David & Foray, 2003). Intangible capital largely falls into two main categories: Firstly, investment directed at the production and dissemination of knowledge (ie. in training, education, R&D, information, and coordination); secondly, investment is directed at supporting the physical condition of human capital (health expenditures).

With globalization and the technological revolution in the latest decades, knowledge has become a major driver of competitiveness, growth patterns, and unimaginable world economic activities. Therefore, both developed and developing countries must think about the urgency of their future under the Knowledge Economy scheme. The global economy can be said as a catalyst of transition to the Knowledge Economy (KE) or "information society". The rules and practices that determined success in the industrial economy of the 20th century that accompanied the second Industrial Revolution became obsolete and it needs to be rewritten in anticipation of an increasingly connected world followed by the roles of knowledge that becomes more significant than any other economic resources (Junoh, 2004). Since the mid-1980s, the role of knowledge as a competitive asset has been increasingly recognized, particularly in professional competence.

1.3. Education in the hyper-connected world

Higher education is an institution that is intensively connected through the scientific community. Higher education helps the exchange of knowledge and students. At the same time, higher education also functions as a catalyst for the dissemination of knowledge and innovation through staff exchange and research collaboration. Globalism and internationalism, promoting the development of interculturally competent and socially responsible cosmopolitanism among students, staff, and faculties who practice 4.0 education. Consequently, universities must become an integrated part of the network-centric reality of the 21st century, focusing on self-organized and responsible learning (Harkins, 2008). Schools and universities are no longer seen as isolated entities, but they become part of the larger ecosystem in which they operate. Some educational institution starts to collaborate, forming networks or

partnerships with other schools. Even, some schools have started to collaborate more widely with other organizations in their communities where teachers and students become familiar with the skills and competencies that employers and other community members needed (Speiser & Lang, 2019).

1.4. Middle-income trap

The Middle-Income Trap (MIT) is a condition where a country is trapped in a transitional position between low-wage producers and highly skilled, fast-moving innovators (Flaaen et.al., 2013, Apriliana et.al., 2021). In Figure 1, whether countries are trapped in MIT or not are indicated by income per capita, and they remain in the same position after 40 to 50 years. MIT can be caused by a decrease in productivity due to diminishing returns of cheap labor with limited technology. The technology used does not require further innovation and is only an imitation of the previous production (Flaaen et al., 2013).

The transition from middle-income countries to high-income ones requires a dynamic process because middle-income countries must compete with high-income countries with high levels of productivity. Middle-income countries that have previously succeeded in producing products at low prices are not guaranteed that they will be able to produce products that require a high level of skill and expertise due to low productivity. Countries that experience this kind of situation can easily be categorized as MIT countries (Kesgingöz & Dilek, 2016). MIT countries generally make two mistakes, first, the country is too long to implement a policy of cheap labor that is poor in innovation; secondly, it exits too early. Therefore, the MIT country cannot specialize which could be the country's advantage. They artificially maintain uncompetitive firms through subsidies, fiscal incentives without regard to efficiency gains. They use FDI as a key performance indicator for competitiveness, rather than on the ability to innovate (Flaaen et al., 2013).

MIT can be avoided on the condition that the country can achieve a certain rate of economic growth every year. The average per capita income growth must be achieved at each level of MIT, both lower and upper. Intuitively, the supply of quality human capital can increase a country's ability to increase the quantity and capacity of high-tech exports (Slovana, 2019). Therefore, development must be followed by upgrading human capital, not only based on abundant natural wealth and strategic geographical position. Without being followed by an increase in human capital, the country will enter the developmental trap which then enters MIT. Without investment in human capital, companies will be controlled by foreigners (Ohno, 2009).

With various restrictions imposed by the WTO, it is still possible for middle-income countries to implement strategies to accelerate industrialization. For example, the development of supporting industries and industrial human resources does not violate the rules of the WTO. Technology transfer, education, and training, FDI marketing, SME financing, enterprise management, infrastructure, logistics, industrial clusters, industrial estates are also permitted (Ohno, 2009).

In terms of quality of education, Indonesia also lags behind its neighboring countries as indicated by the PISA (Program for International Student Assessment score). PISA involves almost 80 countries conducted by OECD. As an illustration, Indonesia's PISA score is below Vietnam, even though Indonesia has a higher income. To expand workers' entry into manufacturing and high-end services, these issues need to be addressed. One of the steps that can be taken is to make tertiary education and vocational education more responsive to the market needs and to improve the relevant training system (World Bank, 2014).

2. Materials and methods

2.1. Materials

Data were obtained from the compiled dataset for the ASEM Sustainable Connectivity Portal (Becker et al, 2018). This dataset contains data from 51 countries in Asia and Europe, those are (1) Austria, (2) Belgium, (3) Bulgaria, (4) Croatia, (5) Cyprus, (6) Czech, (7) Denmark, (8) Estonia, (9) Finland, (10) France, (11) Germany, (12) Greece, (13) Hungary, (14) Ireland, (15) Italy, (16) Latvia, (17) Lithuania, (18) Luxemburg, (19) Malta, (20) Netherlands, (21) Norway, (22) Poland, (23) Portugal, (24) Romania, (25) Slovakia, (26) Slovenia, (27) Spain, (28) Sweden, (29) Switzerland, (30) United Kingdom, (31) Australia, (32) Bangladesh, (33) Brunei, (34) Cambodia, (35) China, (36) India, (37) Indonesia, (38) Japan, (39) Kazakhstan, (40) Korea, (41) Lao, (42) Malaysia, (43) Mongolia, (44) Myanmar, (45) N Zealand, (46) Pakistan, (47) Philippines, (48) Russia, (49) Singapore, (50) Thailand, (51) Vietnam.

In this paper, all those countries are evaluated based on their similarity using Principal Component Analysis based on the following variables: logistic performance index, international flights, liner shipping connectivity, FDI, regional trade agreements, international student mobility, research outputs, tourist arrivals, GDP per capita growth, RD expenditure, trade in cultural goods, trade-in cultural services, corruption perceptions index, tolerance to minority, press freedom.

2.2. Methods

Principal Component Analysis (PCA) and cluster analysis was calculated by R software with factoextra, FactoMineR, cluster, and ggbiplot libraries. All data are standardized, and they become unitless. Clustering uses the K-means method. Data is an extensive model, which means not divided by the number of population.

3. Results and discussion

3.1. Results

Biplot Result for PCA, which represents two dimensions of the dimensionality reduction (from 15 dimensions) is shown in Figure 1. In Figure 1, the number represents the country. Dimension 1 represents 44,11% and dimension 2 represents 25.12% of explained variance which is determined by the eigenvalue, with a total of 69.13%.

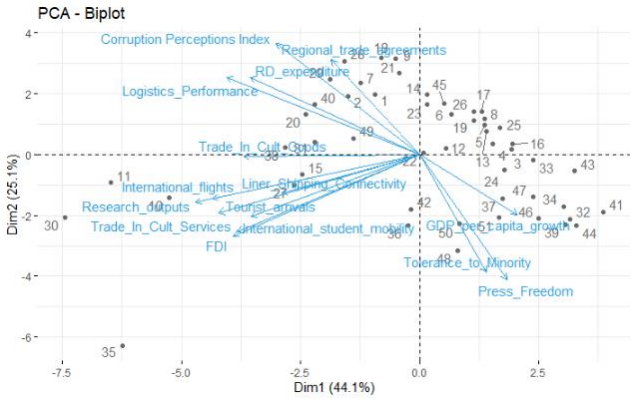


Fig. 1. PCA Biplot.

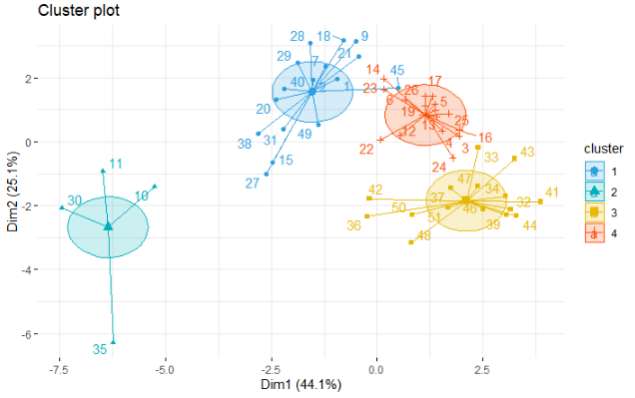


Fig. 2. K-Means Clustering.

Figure 2 shows the K-means clustering. The position of each node (country) is kept as in Figure 1. As can be seen from Figure 1 and Figure 2, Cluster 4, mostly located in the northeast quadrant contains countries from central and eastern Europe except for Cyprus, Ireland, and Portugal which come from western Europe. Cluster 1 is mostly located in the northwest Quadrant, mostly populated by countries from western Europe, with exception of Japan (38), Korea (40), Australia (31), New Zealand (45), and Singapore (49) which come from Asia-Oceania. Cluster 2, located in the southwest quadrant, only consists of 4 countries, i.e. UK, France, Germany, and China. Finally, cluster 3 is populated by developing countries from Asia (except Russia, 48) located in the southeast quadrant except for Malaysia (42) and India (36) are located in the southwest quadrant.

From the phylogenic diagram (Figure 3), Indonesia (37) shares the same characteristic as the Philippines (47) and is in the same root as Pakistan (46). This root is also a close "cousin" with the root for Bangladesh (32), Myanmar (44), and Cambodia (34). Based on these results, Indonesia should learn their success and failure on their development policy since all these countries are at the risk to be trapped as low- and middle-income countries.

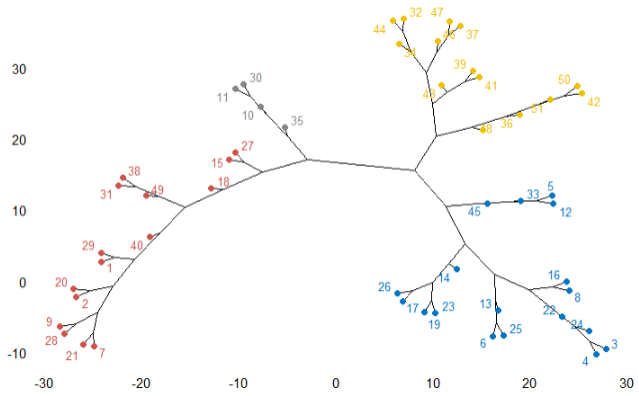


Fig. 3. Phylogenic Diagram

Figure 4 shows variables contribution to Dimension-1 where research output, international flight, trade-in cultural services, logistics performance, Foreign Direct Investment (FDI), international student mobility, trade in cultural goods, RD expenditure, and tourist arrival are among the highest contributors.

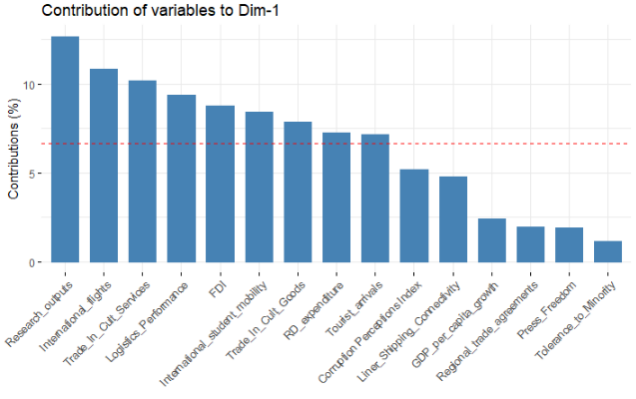


Fig. 4. Variables' Contribution on Dimension-1.

Fig. 5. Countries' Contribution on Dimension-1.

In terms of country contributors to Dimension-1 (Figure 5), China (30), Germany (11), the United Kingdom (35), France (10) are the major contributors followed by Laos (41), Myanmar (44), Mongolia (43), Bangladesh (32), Kazakhstan (39), Cambodia (34), Japan (38) and Spain (27). Note that 41, 44, 43, 32, 39, 34 are strongly in opposite direction with 35, 30, 11, 10 and also with 38 and 27 which are characterized by strong research, people mobility, liner shipping connectivity, cultural exchange, and FDI whilst the opposite direction represents those respected variables with a contradictory contribution in Dimension-1.

Figure 6 shows the variables contribution to Dimension 2, i.e. press freedom, tolerance to minority, corruption perception index, and regional trade agreements. Therefore, Dimension 2 is more related to the social variables while dimension 1 is more related to the economic variables. In Figure 6, it can be seen that China (35), Luxemburg (18), Russia (48), Finland (9), Sweden (28), Norway (21), Switzerland (29), Denmark (7) are among the main contributor for Dimension-2.

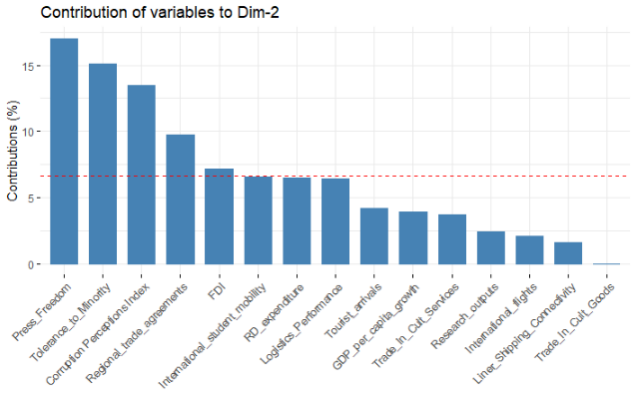
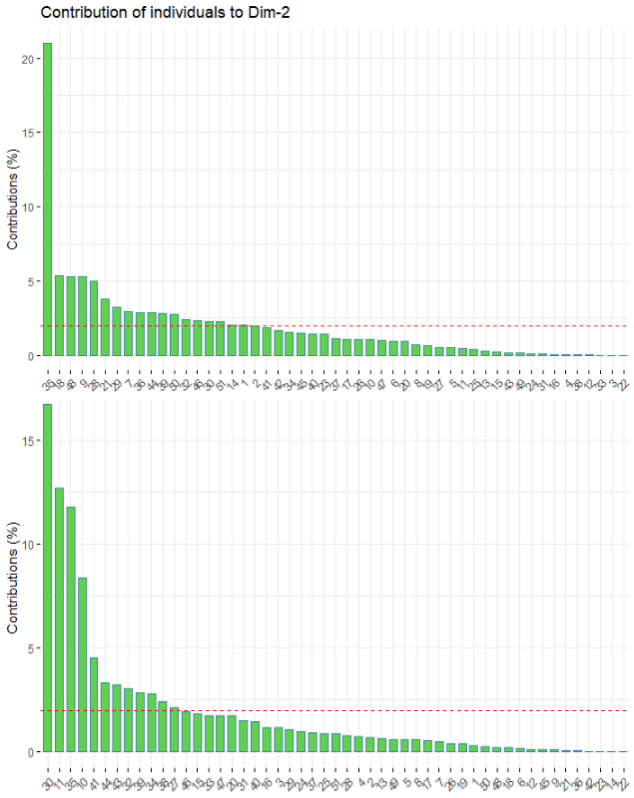


Fig. 6. Variables' Contribution on Dimension-2.

Countries with the high contribution in Dimension 2 are mostly from Nordic countries, and among them are the richest countries in the world (in terms of per capita income such as Luxemburg and Switzerland) which are characterized by high tolerance to minorities, press freedom, low corruption (Figure 1). In Figure 1, GDP per capita growth is in the opposite direction with the corruption perception index (the higher the index, the lower the corruption) and it is also in the same direction with the lower tolerance to minorities and freedom of the press. These may become the indication that corruption and intolerance are characterized by cluster 3 (Figure 2). Bangladesh (32), Russia (48), Vietnam (51) their share is above the average

Based on Figure 2, Singapore (49) and Korea (40) successfully migrate to be rich countries in a short time and avoided MIT. Yet, Korea is more related to the characteristic of Nordic countries than Singapore is. Even though Malaysia (42) and India (36) are in the same cluster as many Asian countries, they are located slightly in the southwest quadrant. It seems that they follow China's path, heavily



emphasizing FDI, people mobility, networking (connectivity), and research. Yet, the previous analysis showed that the two countries experienced environmental issues (Kusdarjito, 2020).

Fig. 7. Countries' Contribution on Dimension-2.

3.2. Discussion

Results from PCA indicates that non-economic variable such as research output, freedom of the press, tolerance to the minorities, lower corruption, international student mobility, trade in cultural goods and services are factors characterizing advanced economic including the new-comers (Korea, Singapore) Yet, the results from the PCA show that FDI, R&D, logistics performance, number of students studying abroad, and collaboration in research are not the main factors for development in Indonesia. These factors may hamper the transformation into the knowledge society for Indonesia since the opportunities will not be distributed evenly. The development of a knowledge society does not only require economic and technological improvement, social and cultural capitals such as networks with various universities locally and globally to collaborate in research and teaching also are pivotal. Material and nonmaterial cultures complement each other to help countries avoid MIT.

4. Conclusion

Intuitively, the supply of quality of human capital can improve a country's ability to increase the quantity and capacity of high-tech exports (Slovana, 2019). Therefore, development must be followed by upgrading human capital, not only based on the abundant natural wealth and strategic geographical position but also by enhancing social and cultural capitals. Therefore, Indonesia needs to reform its education systems to be well suited for the knowledge society, provides long-life learning for the gig workers in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) environment, and integrates into the Global Value Chain (GVC) to avoid the middle-income trap (universities merger, networking, and collaboration, prioritizing STEM (Science, Technology, Engineering, and Mathematics while enhancing interdisciplinary collaboration, promoting MOOCs (Massive Open Online Courses, using SPADA or alike).

MBKM (Freedom of Learning and Independent Higher Education), may pave the way for reforming the education system in Indonesia upon the condition it is not trapped with the administrative tasks and very strict guidelines for standardization and uniformity. The education system needs to be agile and adaptive by implementing the principles of liberal arts education and developing critical thinking. This type of education does not only nurture students as workers but more importantly as innovative critical thinkers to compete and serve as trailblazers in the knowledge society.

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