ABSTRACT

The Impact of Technological Developments on The Labor of Start-up Company: A Case Study of Sayurbox

Izhatullaili
izhatullaili@polteknaker.ac.id

Polytechnic of Manpower, Jakarta, Indonesia

Abstract. The massive development of science and technology has conceived information technology and production process that are conducted automatically. Labor market is one of the aspects that mostly impacted by technological developments. It can open up opportunities to achieve progress and prosperity. In other hand, technological developments also replace the labor with machines. The purpose of this study was to examine the impact of technological developments on the labor of start-up company. The author studied Sayurbox, a start up company engaged in agritech that closed its offline store in June 2022. This study used a qualitative methods, which included observation, in-depth interviews, and SWOT analysis techniques. The results of the study are that Sayurbox store use technologies which is beneficial for store and consumer. Beside that, low-skilled workers must get training from the company and improve their skills in the future. The impact of this technological progress demands the availability of competent human resources who can drive this digital economy. The conclusion of this study is that to drive this digital economy ecosystem as the impact of technological developments, strategies need to be taken by government and private cooperation to build competent human resources. All stakeholders need to collaborate to raise the level of education and skills of the workers.
Keywords: start-up, technology, digital economy

INTRODUCTION

Indonesia is one of the countries with the fastest growing digital infrastructure in the world, the digital economy is estimated to reach USD 200 billion by 2025 (Azali, 2017). Electronic commerce consumers in 2022 are estimated to prefer 46 million people to shop online. Smartphone users reach 60 percent of Indonesia's 256 million population. Jobs related to customer service and information, recorders and stock keepers, general managers and operations will slowly disappear. Generally, these jobs are cognitive type 3 and routine manual work. Based on this, there is a threat in the form of low competitiveness, and another threat in the form of high unemployment. Industry and workers who are not able to innovate and adapt to technological changes will trigger industrial shock and manpower shock. So that it has the potential to trigger mass layoffs, as well as social turmoil inside and outside the company (Dhakiri, 2018). In fact, the coming year should be a "golden period" for Indonesia because it

will enjoy a demographic bonus. This article aims to determine the impact of technological developments on the industrial world, especially for start-up companies in Indonesia.

This early signal of transformation is important to get the attention of various parties, because technological change presents threats, challenges, but also opportunities for emerging markets such as Indonesia. Then, the author divides the article into two parts. The first section discusses the profile and technology used by Sayurbox Company. The second describes the impact of transformation in the form of threats, challenges, and opportunities that the workforce will face with technological developments as well as simple and practical strategies that can be taken to adapt to the dramatic transformations in the future.

LITERATURE REVIEW

According to Mesenbourg (2001), the digital economy has three main components: (1) e-business infrastructure is the total economic infrastructure used to support electronic business processes in conducting electronic commerce, (2) Electronic business (e-business) is any process carried out by business organizations through the internet; and (3) Electronic commerce (e-commerce) is the value of goods and services transacted online. Musafak (2012) explains the notion of the digital economy as an economy based on electronic goods and services produced by electronic businesses and traded through electronic commerce. So it can be concluded that the digital economy is a business with electronic production and management processes that interact between partners and customers by conducting transactions via the Internet and Web technology. Another understanding that is broader than just transactions or markets is New Economy, which according to PC Magazine is "The impact of information technology on the economy", meaning that it emphasizes the application of information technology in the economic field. The digital economy is an economic sector that includes goods and services when their development, production, sale or supply depends on digital technology. In operating this digital economy technology, skilled human resources are needed who understand the digital world and are proficient in using digital devices.

As stated by Knickrehm et al. (2016) that the digital economy is a share of the total economic output derived from a broad number of “digital” inputs. These digital inputs include digital skills, digital equipment (hardware, software, and communication equipment) and intermediate digital goods and services used in production. On the other hand, technology in the digital economy often creates gaps for certain social groups. The gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technology (IT).

METHOD, DATA, AND ANALYSIS

This study uses a qualitative approach.. The data is taken by observation. Furthermore, data were also collected through interviews. The technique used is a free interview technique to the informant. Secondary data is also taken through documentation in research journals related

to the theme being studied. The research took place at Sayurbox, a start up company engaged in agritech.

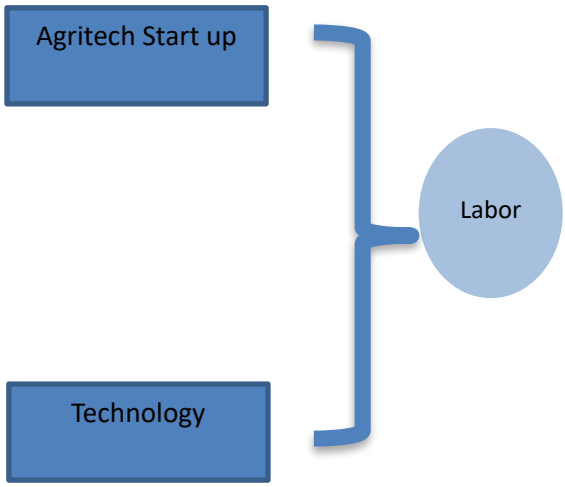

Fig 1 Conceptual Framework

After the data is obtained, it is then reduced. In this reduction process, the researcher reduces the data found to focus on certain problems. In this reduction process, the researcher sorts the data by choosing which data is interesting, important, useful, and new. Data which not used is removed. Based on these considerations, then the data are grouped into various categories that are determined as the focus of the researchs.

RESULT AND DISCUSSION

Sayurbox Company Profile

Sayurbox company is an e-commerce company that provides a platform for customers to order products directly from farmers. Sayurbox Company was established in July 2016 and has started to provide organic, hydroponic, pesticide-free, and anti-chemical products of good quality and obtained directly from the farmers who grow them and have a “farm-to-table” concept. Sayurbox Company cooperates with local farmers and local partners to obtain supplies of agricultural products (foodstuffs). The goal of working with local partners is to break the long and complex supply chain of fresh produce, so it can help local farmers in Indonesia to earn better income for their hard work and help consumers get better quality products at more affordable prices. Sayaurbox Company has a vision to provide fresh vegetable and fruit products sourced from farmers directly with supplies that are always available, easy to get, and cheap. With this vision, the company aims to change the lifestyle of modern society by simply utilizing the platforms available on smartphones without the need to go to supermarkets and markets. Sayurbox also directly takes inventory of its goods from farmers directly at a higher price than the price offered by middlemen so that Sayurbox company has a role in advancing the lives of farmers.

The mission of the Sayurbox company is to become a platform that can be used by all Indonesian people. Based on the informant, Sayurbox company is currently available in the Jabodetabek, Bali, and Surabaya areas. The expansion of business reach to Bali and Surabaya was carried out during the COVID-19 pandemic, in 2020. The Sayurbox company also plans to expand the scope of distribution to consumers by opening branches in other regions in

Indonesia. Sayurbox Company has made technological innovations to cut the supply chain of agricultural products. To get food, especially fresh vegetables and fruit is not an easy matter. This is even more so for urban people who have a high enough busyness that they cannot come to the market or supermarket every day. This is what Sayurbox sees as a business opportunity. Sayurbox company has an application that allows everyone to order vegetables and fruit that can be delivered directly to their homes every day. Sayurbox Company works directly with farmers and makes it easier for consumers to access fresh food ingredients through websites and applications.

On the other hand, there is a view that the main obstacle to implementing new technologies such as artificial intelligence is a very large investment, and entrepreneurs still doubt whether the investment will return or not. On the other hand, there is an assumption that continuing to employ human labor causes wages for workers to be cheaper, and employees are generally able to do many things from managing companies and warehouses, refilling empty shelves, to being cashiers. Even so, the technology-based Sayurbox company can actually absorb a large workforce and business partners. In fact, in June 2022, Sayurbox closed its only offline store. This further shows that technological transformation in the company has a positive impact on business development and employment in Sayurbox company. This positive impact is also in line with business growth which causes expansion of business reach in various regions so as to create more jobs.

The seller only needs to do a one-time registration and spend a very affordable capital, set up a smartphone with general specifications and download a virtual company application. Consumers can order a variety of vegetable products to sellers through the application anytime and anywhere. Ordered goods will be sent from the nearest office to the consumer's house. This company offers a different and cutting-edge shopping experience. Although Sayurbox Company uses many new technologies, this condition does not eliminate the role of human labor. In fact, based on the narrative of speakers during the COVID-19 pandemic, there was an increase in employment by 50%. This happens because the reach of the business is getting wider and transactions are increasing. Sayurbox recorded an increase in transactions last year. in the first quarter of 2021, service demand increased by 30% on an annual basis (year on year). As of 2020, the company has 1,000 farmers in several areas, including Surabaya and Bali, as partners.

Piotrowicz & Cuthbertson (2014) mention technology drives cost reductions and access to big data technology and cloud computing enables personalized services and price optimization. Physical companies that combine data, shopping experiences, personalization, and the human touch are believed to be successful in the future. The variety of technologies is an essential differentiator between conventional companies and modern companies. The stages of shopping at company Sayurbox have a positive effect, namely the convenience of consumers in shopping because it can be done from anywhere. Sayurbox company's technologies are used for efficiency and optimization in many aspects. For example, in the delivery aspect, MileApp is used. One of the keys to increasing the accuracy of same day delivery at Sayurbox company is by optimizing for vehicle capacity and travel routes. MileApp Load and route optimization will help the Sayurbox company team to maximize the number of products that can fit in a courier vehicle in one delivery. Then the courier delivers it based on the suggestion of the fastest and easiest delivery route to consumers that can be seen through the mobile application. That way,

the Sayurbox company team can reduce the occurrence of errors, such as wrong addresses and late deliveries.

The routes displayed by MileApp are real-time data-based routes that are flexible and dynamic in nature based on the company's business parameters. The parameters can be based on location clusters, product volumes, time slots selected by consumers, idle time, and so on. Combined with load optimization, MileApp will provide the best suggestions for the combination of vehicles used with the number of products to be delivered. The system will perform load optimization based on various parameters such as weight, volume, and type of goods. MileApp helps to increase transparency and management's ability to manage data to be part of future business strategy. MileApp Big Data Dashboard is a place that displays all processes in the field in real time. The Sayurbox company management team can see in detail the status of ongoing deliveries, done, delays, and other statuses. The team can also see the courier journey in real time, the length of the delivery journey, to the idle time of each courier. This analytical dashboard can also help companies make reports easier and can be better at making future business strategies based on accurate data. In addition, there is also Demand Forecasting data.

Demand Forecasting is a process where historical sales data is used to see the estimated future demand for buyers' products. This model can provide an estimate of the number of products that buyers will buy in the future. With more than 1,000 products provided by the company, of course the company does not provide all products in the same amount. Seeing the possibility of products that will be popular in the future, companies can prepare themselves and increase productivity. Consumer behavior data includes consumer spending habits in companies, goods that consumers often buy and like. The data can be combined, analyzed, assessed, and the result is a complete insight into consumer behavior.
After that, the marketing team can choose promotions that are suitable for each consumer using existing marketing channels, such as digital newsletters, periodic emails, promotional notifications in the application, and others. In addition, in offline stores, big data can be used to analyze consumer traffic flows within the company thereby helping to improve the layout of shelves of goods and placement of goods (Intel, 2014).

Internet enables people and digital devices to be connected anytime, anywhere, with anything and anyone using any network and services, such as interconnecting and networking devices via the internet, as well as individuals to record, monitor, and optimize their activities. them in real time. This technology is driving renewed interest in the use of big data to obtain huge amounts of consumer behavior data that can be stored, processed and accessed. Data is obtained from interconnected digital devices such as smart cameras, smart shelves, sensors, RFID labels and others. In the operational field, the internet for everything supports the task of company managers in increasing company efficiency, namely reducing queues, studying the effectiveness of company layout designs, to managing staff schedules better. RFID (Radio-Frequency Identification) is one of the IoT technologies that works using radio waves. This technology consists of a reader and a label attached to each product. RFID readers are able to recognize various objects that are labeled with an RFID tag automatically as long as they are within a predetermined range. Each RFID label contains a chip and an antenna that contains wireless sensors to track the movements and traffic of people within the company with a high degree of accuracy.

Another strategic function is to supply valuable information about consumer spending habits in real-time, for example what products are in demand and purchased by consumers, or which products are not selling well. This information helps operations teams monitor and manage company inventory at any time, faster and more accurately than traditional bar codes. For example, an RFID reader conveys information that some shelves are out of stock, then the operations team can immediately refill them (Levy, Weitz, & Grewal, 2014; Stelter, 2015). Companies, entrepreneurs, workers, scientists, and engineers have a role in encouraging technological development in an effort to solve problems and meet economic, social, and political needs (Nübler, 2016). Sayurbox is an example of disruptive innovation, which means that new entrants or businesses will not necessarily replace old players or traditional businesses. Incumbent players who utilize high technology can survive by concentrating on satisfying consumers who are demanding, as well as price sensitive.

Schuelke-Leech (2017) said that technological innovation is the core of economic innovation. New products, services and knowledge provide the means to create value, solve problems, and improve quality of life. The first disruption is a micro-level disruption characterized by a new product or service being introduced to the commercial market. The second disruption is a macro-level disruption that triggers large-scale changes to many industries, changing the norms and institutions of society significantly. The triggering factors for the second level of disruption originate from the interaction of technology with social systems. A strong network of engineers, entrepreneurs and financiers, and workers with the ability to absorb new knowledge and skills must be present for an innovation ecosystem to be created. This technology can disrupt social interactions, organizational structures, institutions, public policies, and the physical environment. The second disruption has the main characteristics, namely: first, the technology is the result of the development of fundamental technology that is not localized and dynamic, and combines many single technologies. Second, this technology has wide-spread applications in different industries. Third, this technology rearranges, disrupts social norms and standards, institutions and standards, operations, production, trends, is not limited to a particular market or industry.

Globalization is attracting more players to the competitive scene and intensifying competition between entrepreneurs, forcing industry players in Indonesia to innovate by applying new technologies to make their business sustainable. Rihanta (2012) explains that people's consumption behavior is increasingly advanced, characterized by consumers who want to shop quickly, choose shopping places that provide good quality products at competitive prices according to their income level, ensure payment security, and provide added value. Added value refers to special nuances that can attract consumers to shop. Entrepreneurs must innovate by taking advantage of technological changes to keep their business operations growing and efficient (Caro & Sadr, 2018). People who live in big cities like Jakarta have transformed into people who like technology, like everything that is instant and efficient.

Furthermore, the impact of transformation is discussed in terms of threats, challenges, and opportunities.

Threats

The results of observations on Sayurbox show that some jobs are disappearing and new jobs are appearing. The jobs that disappeared due to offline store closures were the cashier and security guard professions. This happens because humans in the future will tend to serve themselves

(self-service) and technology will dominate so that interaction between humans will be reduced. The crimes of the Industrial Revolution 4.0 against countries such as Indonesia which are still struggling in the third or second industrial revolution because they are not ready to switch to digitalization are that consumers and entrepreneurs benefit more than workers. As technology advances, products will get better. The price of hardware and software will go down. All these conveniences help accelerate the spread of technology so that disruption in the labor market that is not ready to adapt will be greater and trigger mass unemployment. Indonesia's demographic bonus with standard or substandard quality will have difficulty surviving in an increasingly flexible and complex world of work. The Industrial Revolution 4.0 allows countries that have a lot of data and master the field of information technology, such as the United States, China, and Japan, to get more resources. The most valuable resource in the future is data, not natural resources anymore. User countries will be increasingly exploited and left behind. The threat posed by the Industrial Revolution 4.0 with the previous revolution is more sinister because Indonesia has the potential to become a useless and forgotten nation.

Challenges

Next, the challenge for the workforce. There are many challenges that a workforce with basic education qualifications will face. First, the income gap. Workers with low education will find it difficult to get career advancement and wages because they will only earn below the average income according to the regional minimum wage. The standard of living of skilled and middle-income workers will fall because they are less flexible in adapting to the tide of technological change. Meanwhile, highly skilled workers have the opportunity to earn high incomes and have a better quality of life (Baweja, et al., 2016). Second, the development of the quality of Indonesia's human resources is still stuck in the middle rank. Indonesia has an oversupply of labor at the lower levels, but there is still a shortage at the middle and upper levels. Third, the challenge of employment. Sayurbox company has proven that technology has replaced repetitive and manual work and has finally closed its only offline store.

In other hand, there are million new jobs globally related to technology, such as data analysts and scientists, artificial intelligence specialists, software and application developers, big data specialists, digital transformation specialists, new technology specialists, development specialists organization, and so on. For example, a data scientist is tasked with collecting, processing, analyzing, and processing the abundant data stored in big data into knowledge or knowledge needed by company leaders to make decisions. However, all of the above work can only be done by highly skilled workers because they understand new technologies more effectively, are able to adapt and maximize economic benefits (Baweja et al., 2016). There are three areas that must be mastered by a data scientist, like information technology, basic statistics, and business.

Fourth, the mismatch between the quality of education graduates and industry needs. The current curriculum cannot keep up with the development of the Industrial Revolution 4.0 and the digital economy. Changes in the character of the job affect the character of the skills needed in the future. Vocational access and retraining are important because they bridge the new workforce, which statistically averages at 2.9 million people/year, not all of whom are able to enter the labor market due to skills mismatch issues and low qualifications. Of the 10 people, only 3-4 people or 37 percent meet the work requirements, on the contrary 6-7 people or 63 percent do not meet the requirements. Specific vocational skills must be developed and combined with basic knowledge related to literacy, numeracy, adaptability and problem

solving. Fifth, the importance of realizing a digital culture mindset among Indonesia's young generation. The competition in the future will be different from the competition today. Competition has become social capital in various places and fields. Competition occurs between individuals, between villages/cities, between provinces/countries, between continents, between entities, and will occur in all places. Human resources with quality above the standard will definitely win. For example, young people who have strong digital skills will have the opportunity to work abroad and become hosts in their own country, so that Indonesian companies no longer need to bring in a lot of foreign workers to work on their projects. Meanwhile, standard workers can win and lose, if they are below the standard, they will definitely lose.

Opportunities

Indonesia must be optimistic because Faisal in Wahyudi (2018) stated that young people in urban areas are easier to adapt to the transformation of industrial work challenges. The Industrial Revolution 4.0 has actually given birth to new jobs. The number of companies and institutions in Indonesia that utilize technologies such as big data and artificial intelligence continues to grow, requiring many experts in the next few years. Digitization of education comes at the right time, and allows everyone regardless of economic background, profession, education, and age to learn the sciences that are relevant to the latest industrial developments. There are many online courses from within the country and abroad on the internet. When someone has completed the course, they will receive a free or paid certificate which can be used to complete a curriculum vitae or apply for a job. Everyone can make the best use of this opportunity, decide what new field they are most interested in, and then try to become a specialist in one particular field, for example in the field of data analysis. Technology giants such as Google and Microsoft do not consider diplomas and academic degrees as the main requirements to be able to work in their companies. Young people with basic education qualifications with excellent digital skills may be more likely than prospective undergraduates with mediocre digital skills.

Future work is related to coding and technology so mastering coding is everyone's obligation. The basis for sophisticated products such as smart phones, applications to super computers is coding (Rahardja & Widodo in Saragih, 2019). Smartphones play an important role as workers no longer need to come to class on Saturdays and Sundays. They who don't have time to study on weekdays can access coding lessons on their smartphones anytime and anywhere. The Indonesian government has also collaborated with technology-based private companies, and organizations such as the G20, the United Nations, ASEAN, the Asian-European Association, and Germany as the pioneer of the Industrial Revolution 4.0 to provide internet and technology access to various levels of society in Indonesia. An example is the program for 1,000 beginner entrepreneurs, or the program for training 100,000 programming experts (Hadianto in Saragih, 2019). Piotrowicz & Cuthbertson (2014) emphasize that technology should solve human problems, not create new problems; When humans want to implement a technology, it must be based on clear reasons and goals. Fauzan in Saragih (2019) states when something is automated, it will happen. Maybe it hasn't happened yet, but in the future, maybe our work will be replaced by artificial intelligence, so the Indonesian people must always think ahead, add skills and knowledge on an ongoing basis because humans may be replaced by machines one day.

CONCLUSION

The author concludes several things based on the research conducted. First, technology is basically neutral and plays a very important role the development of human civilization. New technologies are nothing to be afraid of because humanity has coexisted with machines and automated processes since the first industrial revolution, but it is something to be aware of. The Sayurbox company is a start up company engaged in agritech and reflects that the human workforce is capable of working with machines in operating a company and adapting to automation processes. Meanwhile, on the consumer side, technology has revolutionized the consumer shopping experience. The impact of artificial intelligence and big data is predicted to be different from the previous industrial revolution. Second, globalization cannot be prevented. A large population and consumption base, strategic-geographical position for trade, and a business-friendly government have attracted many multinational companies to come to invest in Indonesia. These investors bring in new technologies that have never existed in Indonesia before, and are sure to cause disruption. The positive impact is to encourage Indonesia to make new progress and leave behind. Meanwhile, the negative impact is that Indonesian industry and human resources that are not ready to adopt and adapt to these technologies will experience industrial shock and manpower shock. Large population but low quality or standard will face many problems in the future. The government should give full support to individuals or companies or institutions that have the initiative to create a digital learning platform to accelerate the distribution of digital education.

IMPLICATION/LIMITATION AND SUGGESTIONS

This study has limitations in finding comparisons between the online store at Sayurbox and its offline store because it has been closed. When this research was conducted, the offline store of the Sayurbox company was closed in June 2022 so it was not possible to explore the comparison between the application of existing technology in online and offline stores. Therefore, it is recommended in the next similar research, in order to dig deeper into the comparison between the impact of technology on companies that have online and offline stores.

REFERENCES

[1] Azali, K. (2017) Indonesia's Divided Digital Economy. Perspective, 17(70),1-12. https://www.iseas.edu.sg/images/pdf/ISEAS_Pers pective_2017_70.pdf

[2] Baweja, B., Donovan, P., Haefele, M., Siddiqi, L., & Smiles, S. (2016). Extreme automation and connectivity: The global, regional, and investment implications of the Fourth Industrial Revolution. UBS. https://www.ubs.com/global/en/about_ubs/ follow _ubs/ highlights/davos-2016.html

[3] Caro, F., & Sadr, R. (2019) The Internet of Things (IoT) in retail: Bridging supply and demand. Business Horizons, 62(1), pp. 47-54. doi: 10.1016/ j.bushor.2018.08.002.

[4] Intel. (2014). Getting Started with Big Data Analytics in Ritel. Diakses dari https:// www.intel.com/content/www/us/en/retail/retail-big-data-solution-lueprint.html.

[5] Knickrehm, M., Berthon, B. & Daugherty, P., (2016) Digital Disruption: The Growth Multiplier, Accenture,Dublin. (https://www.accenture.com/_acnmedi a/pdf-14/ accenture-strategy-digital-disruption-growth-multiplier-brazil.pdf)

[6] Levy, M., Weitz, B.A., & Grewal, D. (2014). Retailing Management 9th Edition. New York, NY: McGraw-Hill Education

[7] Mesenbourg, T.L., (2001) Measuring the Digital Economy, US Bureau of the Census

[8] Musafak (2012) Budaya ekonomi digital kalangan masyarakat menengah atas. Universitas Gunadarma.

[9] Nübler, I. (2016). New technologies: A jobless future or golden age of job creation? International Labour Organization. https://www.ilo.org/wcmsp5/ groups/public/--- dgreports/--- inst/documents/publication/wcms_544189.pdf

[10] Piotrowicz, W., & Cuthbertson, R. (2014). Introduction to the Special Issue Information Technology in Retail: Toward Omnichannel Retailing. International Journal of Electronic Commerce, 18(4), 5–16. doi: 10.2753/JEC1086-4415180400

[11] Rihanta, T (2012). Membangun Sinergi Pasar Tradisional dan Modern. Dalam Basri, M.C. (Ed,). Rumah Ekonomi Rumah Budaya: Membaca Kebijakan Perdagangan Indonesia (240-241). Jakarta: PT Gramedia Pustaka Utama.

[12] Saragih, Luciana. (2019) Identifikasi Dampak Perkembangan Teknologi Terhadap Tenaga Kerja Toko Ritel Indonesia: Studi Kasus Toko X. Jurnal Kependudukan Indonesia. 14 (01), 13-28.

[13] Schuelke-Leech, B.-A. (2018) A model for understanding the orders of magnitude of disruptive technologies. Technological Forecasting and Social Change, 129, pp. 261-274. doi: 10.1016/j.techfore.2017.09.033.

[14] Stelter, S. (2015). Understanding Real-World ROI for RFID in Retail. ChainLink Research. http://www.clresearch.com/media/docs/original/ UnderstandingRealWorld ROIforRFIDRetail20150415.pdf

[15] Wahyudi, M. Z. (2018). Milenial Penentu Indonesia Emas 2045. https://kompas.id/ baca/utama/2018/09/27/kaum- milenial-penentu-indonesia-emas-2045/