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# Industry 4.0:

## Welfare literacy to face the challenges of rural community

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***Abstract*—This study identifies literacy that has an influence on improving the welfare of rural communities in the industrial era 4.0. Industrial revolution 4.0 has integrated the physical and digital world that affects all disciplines and sectors. Along with the opportunity arise, industrial revolution 4.0 has implications for the unemployment rate, the emergence of human and machine competition, and the demand for competency that continues to increase, especially in the developing countries. In this era, poor people are vulnerable group who should be concern to improve the ability to survive. In Indonesia, the percentage of poor people in rural areas is twice higher as compared to those in urban areas. Therefore, the competency development of poor people in rural areas become a focus in Indonesia based on the Village Law or Law no. 6 of 2014. Competency can be upgraded by increasing the literacy rate, especially welfare literacy including literacy related to information, entrepreneurship, and productivity. Therefore, this study conducted literature review on welfare literacy within 10 years (2008-2018). The result shows that welfare literacy including literacy of information, entrepreneurship, and productivity are interrelated. Rural communities that obtain information will improve their knowledge, thus capable to develop their productivity that positively influences their welfare. Moreover, digital devices especially smartphone made easy the access to needed information. Community library will help rural community which cannot operate digital devices to obtain information.**

***Keywords—literacy; welfare; rural; industry 4.0***

## I. INTRODUCTION

Klaus Schwab was a German economist who was also the founder and chairman of the Executive World Economic Forum (WEF) to introduce the concept of the Industrial Revolution 4.0. in his book entitled "The Fourth Industrial Revolution". In his book, it is explained that the industrial revolution 4.0 has fundamentally changed human life and work [1].

As the 4th generation industrial revolution, differences are seen on a broader scale, scope and complexity (figure 1). Evolving technology has integrated the physical and digital world that affects all disciplines and sectors. Areas that have experienced breakthroughs due to new technological advancements [2], including: blockchain (example: bitcoin), artificial intelligence robots (3D artificial intelligence), 3D printers, quantum computer technology, biotechnology, internet-based technology, and nanotechnology.

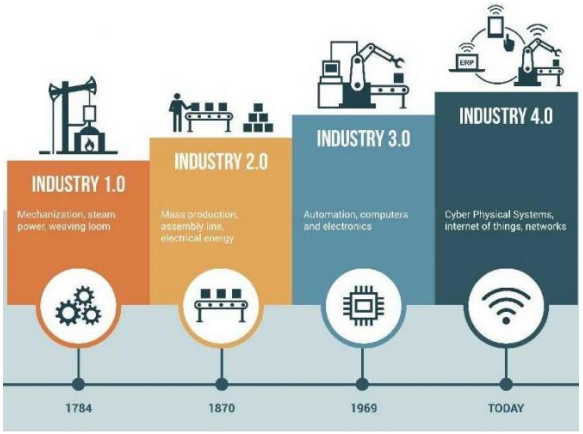


Fig. 1. Revolution of industry 4.0.

Source: kompasiana.com

The fourth generation industrial revolution certainly raises opportunities and challenges. The trigger for the industrial revolution, one of which is the development of science and technology has implications for the unemployment rate, the emergence of human and machine competition, and the demand for competency that continues to increase.

One of them, Linangkung in sindonews.com [3] stated that the industrial revolution 4.0 in the next five years will reduce 35% of work. Moreover, he also mentioned that 75% kind of jobs will be lost in 10 years. This happens because the work using manpower slowly been replaced by technology, the digitization program. This statement was also stated by Bonekamp & Sure [4] that industry 4.0 is predicted to have a negative impact especially from a social and economic perspective. In particular, the impacts that are particularly vulnerable to developing countries with their level of social and economic inequality are still relatively high.

In particular, Figure 2 shows the number of jobs that have the potential of digitization. Some of these jobs, from the highest percentage, are 1) manufacturing business, 2) retail trade, 3) transportation and warehousing, 4) administrative staff, construction, and 5) food and accommodation services. It can be concluded that the fourth-generation industrial

revolution made the higher level of unemployment in Indonesia.

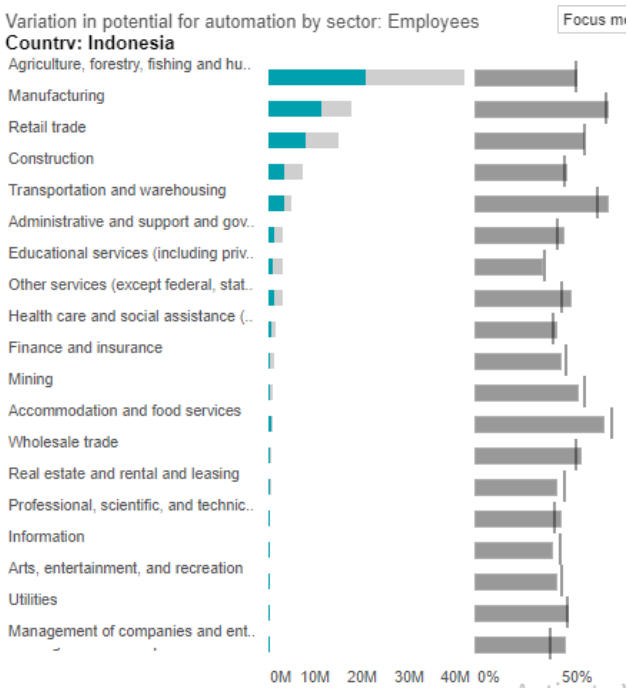


Fig. 2. Jobs having the potential of digitization.

Source: Mckinsey, 2017 [5]

Figures 2 illustrate the shift in the use of human labor power to the machine. These challenges need to be addressed by improving the competence of Indonesian human resources in the use of computer technology, communication skills, collaboration skills, and the ability to learn and adapt to change.

In Indonesia, the development of human resources is one of the focuses in the village development program. One of the development goals is based on the Village Law or Law no. 6 of 2014 is strengthening village communities as the subject of development [6]. According to Central Bureau of Statistics in Indonesia, on March 2018, the number of poor people (population with per capita expenditure per month below the Poverty Line) in Indonesia reached 25.95 million people (9.82 percent) [7]. The percentage of poor people in urban areas is 10.14 million people (7.02%) and in rural areas 15.81 million people (13.20%) in March 2018. The data indicates that the number of poor people in rural areas is almost twice higher in percentage. One of the non-food commodities that has a large influence on the value of the poverty line in urban and rural areas are education. Because the level of education is already low, competency improvements can be pursued.

The competencies needed are different for each individual based on work. However, with diverse backgrounds, abilities, and levels of education, there are still many people who do not know what information they need to improve their. A prior study shows that people cannot develop without knowledge, and people can have a lot of knowledge if they realize the importance of information and use information as a tool to develop themselves [8].

As the development of studies on related topics, Shobaruddin states that the villagers, especially the Kalipare and Ampeldento village, Malang District, is actively looking for a job related information and information to increase productivity [9]. This trend is the impact of problems faced by rural communities, namely the level of education and economic limitations. These problems then affect the limited access to information and poor time management in meeting information needs. In the study, welfare literacy including literacy related to information, entrepreneurship, and productivity had an effect on improving welfare. Thus, the needs of the village community not only know what literacy can support the improvement of welfare, but also the gap in access to information faced by rural communities.

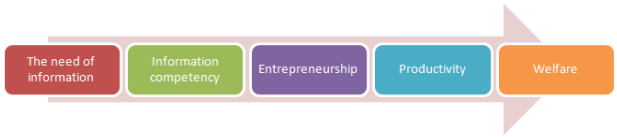


Fig. 3. The model to meet information need to improve the welfare of rural communities.

Source: Shobaruddin [9]

Therefore, the current study will conduct a literature review on previous research related to welfare literacy. This literature review is expected to provide an overview about the types of literacy that have an influence on improving the welfare of rural communities in the industrial era 4.0. In addition to contributing to enriching literacy studies, the results of this study can also be a reference in determining literacy for the development of rural communities.

## II. METHODS

Frels and Onwuegbuzie stated that literature review represents a method since it chooses from an array of strategies and procedures for identifying, recording, understanding, meaning-making, as well as transmitting the relevant information to a topic of interest [10]. Another supportive statement by Leech and Onwuegbuzie stated that conducting a literature review is similat to conducting a research study, with the information that the literature reviewer collects representing the data [11]. Further, the literature review represents a single research study that ends when the literature review process ends. Frels and Onwuegbuzie proposed the most comprehensive form of literature review including a synthesis of quantitative findings originating from quantitative research studies and qualitative findings originating from qualitative research studies [10].

Stake typology of literature review can be classified into an intrinsic case study, an instrumental case study, and a collective/multiple case study [12]. This study conducts a literature review with an approach of collective/multiple case study, which is defined as a design to examine multiple cases in an attempt to examine a phenomenon.

## III. RESULTS

In this chapter, the summary of chosen relevant studies will be explained. The prior studies chosen are published during the last 10 years (2008-2018) in Indonesia. The chosen studies discuss at least three of the proposed keywords, such as rural, village, information, literacy, technology, internet, industry 4.0.

Rohman and Sukaesih conducted a study titled "Tranformation of Village Library for Community Empowerment: Case Study in Margamukti Village - Pangalengan Bandung" [13]. The result shown the existing library not only functions in eradicating illiteracy or increasing the liking for reading, but also seeks to improve the welfare of the community through knowledge and information obtained through the village library. It was further stated that it has contributed to opening business opportunities and increasing the income of the community, especially in the fields of plantations, livestock, snack food processing industries and creative waste-based crafts.

Widyastuti, Nuswantoro, and Sidhi identify the reality of women activities in using digital media conducted at Small Medium Enterprises (SMEs) in Yogyakarta [14]. The initial findings as the basis for developing digital literacy programs including 1) 60% of participants access the information using smartphone, 2) the information accessed are social networks, wood craft, batik craft, homestay, and the latest news, and 3) 53% of participant access facebook. As a result, after the participants informed with ICT knowledge expand the network globally thus increase the demand and profit.

Ngemba and Wahid identify the information accessed by rural people using public internet service in Sigi District, Indonesia [15]. In this study, 65% of the participants are 20 year old or younger. They mostly accessed information including online news, entertainment, sport, music/film/video, game, and health information. On the contrary, the older participant accessed information contains online news, job opportunity, business opportunities, and online business. Based on the education level, participants who are a student most likely consume the information of sport and music/film/video. On the other hand, participants who are not a student most likely consume the information of job opportunity.

Praditya demonstrates the use of ICT by the Village Government Level of Panjalu Village, Ciamis Distric [16]t. The use of ICT has benefits on the human resource capacity and welfare improvements. In terms of human resources, some of the benefits gained include: (1) Reducing the low level of literacy; (2) The community is aware of development activities carried out in the village; (3) Community can easily obtain information (budget, policies, activities, etc.); (4) The community knows information about public services in the village. On the welfare improvements, the village society gain benefits: (1) Facilitating the relationship between farmers and buyers and increase competition among farmers; (2) Promotion of agricultural products and handicrafts (SME) is cheaper in cost; (3) Tourist sites are more visited through tourism promotion on village websites; (4) Facilitate promotion and information on organizing cultural and culinary arts festivals in Panjalu Village.

Subiakto identifies the internet usage for the village and villagers. ICT users in East Java where male users still dominate compared to female users [17]. Besides, the age of both internet users and (mobile) District Internet Service Center (Mobile Pusat Layanan Internet Kecamatan/MPLIK, Pusat Layanan Internet Kecamatan/PLIK) program innovations are school-age children, 15 to 24 years old. Those who are accustomed to use these services are mainly schoolchildren, students in Islamic boarding schools, and college-age teenagers. In addition to facilitating access to communication and information, the existence of programs for some people has been very helpful in finding information related to economic enterprises such as searching for market information (marketing), increasing business networks, reducing operating costs, increasing business income, and seeking information about other business development opportunities. In addition, this program has also accelerated other social services such as education.

## IV. DISCUSSION

It cannot be denied that the role of technology is central in the era of industry 4.0. The emergence of ICTs can be considered as individual empowering [18]. ICT development also increases the level of social interaction and civil society involvement [19]. However, "digital divide" occurs, namely the existence of computer technology, internet networks, and good, fast and cheap telephone services that cannot be accessed equally by all levels of society. Therefore, it is shown in the studies that government provides ICT services to bridge the digital divide called (mobile) District Internet Service Center (Mobile Pusat Layanan Internet Kecamatan/MPLIK, Pusat Layanan Internet Kecamatan/PLIK). On the other hand, some people have owned and used a smartphone to obtain information.

In this case, digital facilities such as computer and smartphone are mostly accessed by young generations. The age are approximately 15 to 24 years old. This range of age are belongs to millenialls generation (1981-1996 or 37-21) and post-millenials (1997 onward or maximum 20 years old) [4]. Regardless their home are in the rural areas, milleanials are known as generation that came of age during the internet explosion. On the other hand, post millenials are predicted as generation whose growing up with a connected with the web was through mobile devices, WiFi, and high-bandwidth cellular service. Therefore, educating both millenials and post-millenials with welfare literacy and competencies to use technology properly are important. It is such an investment for future welfare improvement.

Regarding the content accessed in the internet, young generation are classified into a student or non-student. A "student" accessed more information about lifestyle such as the information of sport and music/film/video. On the contrary, "non-student" accessed more information about job opportunities. Similarly, older generation older generation accessed information contains job opportunity, business opportunities, and online business.

Regardless the age, the use of technology made ease rural communities to access information and expand the network. If

they have no job, they search information about job or business opportunities. If they have started the work or business, they search for information to improve productivity. Regarding to expand the network, they use social network such as facebook to connect directly to the potential consumers.

Moreover, rural communities obtain information about regulations relevant to their work or business. Being an informed community, an individual may develop their business in an appropriate direction.

Besides, community library also have a role to give services to rural people who cannot operate digital devices. In the library, trained people work as an officer. They are specially prepare to know the challenge faced by rural people to obtain information thus give them solution.

As a conclusion, the studies have shown that welfare literacy including literacy of information, entrepreneurship, and productivity are inter related. Rural communities that obtain information will improve their knowledge, thus capable to develop their productivity that positively influences their welfare. Moreover, digital devices especially smartphone made ease the accessed to the needed information.

## V. CONCLUSION

Based on the above discussion, information accessed by rural communities will be different based on the group of age. Besides, their affiliation and level education also shape the pattern of information accessed. It will also differentiate their way to understand and processed the information.

Regardless the classification, welfare literacy including literacy of information, entrepreneurship, and productivity are inter related. Rural communities that obtain information will improve their knowledge, thus capable to develop their productivity that positively influences their welfare. Moreover, digital devices especially smartphone made ease the accessed to the needed information. Community library will help rural community who cannot operate digital devices to obtain information.

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