

## **Saving and preparing the Indigenous Communities to Face the Industrial Revolution 4.0 Era through Local Wisdom and English Language Mastery**

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### **Abstract**

The development of science, technology, and arts, especially information technology occurs dramatically and brings communities to modernity. Everything is changing; life is changing and very transformative because of it. Both positive and negative impacts of modernity appear and exist side by side and the negative ones cannot be avoided. Most victims of modernity are indigenous communities since they are not well-educated, and they do not have life skills meaningful and useful to survive themselves in the modern era, the industrial revolution 4.0. They are naturally marginalized by such conditions. This paper discusses how to save indigenous communities and prepare them to face the modernity. The real actions to facilitate them are 1) helping indigenous communities master English, 2) strengthening local wisdom, 3) improving indigenous' life skills, 4) making resort villages, and 5) marketing indigenous communities' products. These five components should simultaneously be conducted by either the government or non-government organizations. If the prepared programs are successfully conducted, the indigenous community will be able to survive themselves and follow the modernity in the industrial revolution 4.0 era.

**Keywords:** indigenous community, English, local wisdom, life skills, modernity

### **Introduction**

Life changes dramatically. Technology grows very fast. Technology is developed to fulfill human needs. Those who cannot follow the development of technology will be left behind and marginalized. Indonesian indigenous communities are one of them, especially in the industrial revolution (IR) 4.0. Therefore, they need to be saved and prepared to face the IR 4.0 era for their sustainable living. This article discusses how to save and prepare the indigenous communities through local wisdom and English language mastery.

### **The Industrial Revolution 4.0**

The IR 4.0 develops very quickly. Now people use artificial intelligence, robotics, the Internet, autonomous vehicle, bio and nanotechnology to meet their needs and this called the IR 4.0 era. These are such a "quantum advancement" from the previous IRs, IR 1.0, 2.0., and 3.0. Hoppit (1987: 213) states that the IR 1.0 was indicated by the rapid growth of population and the people movement rural areas cities causing the great economic evolution, social developments, and continuity changes from late sixteenth century. The major changes were in agriculture development, overseas trade, the emergence of more consumer-oriented industries, and market awareness (Hoppit, 1987: 214, O'Brien, 2006: 9). However, there was no improvement of living standard as growth in national income was much lower caused by British trying to industrialize and fight expensive wars and simply did not have resources to do both (Williamson, 1984: 688-690). The IR 1 left us steam engine, the iron, and the textile industry (Lavanya, Shylaja, and Santhosh, 2017: 1005).

In the IR 2.0 (1870-1914) era, there was no significant textile industry progress. Some chief developments were the development of sewing machine, development of Donisthrope Nip machine,

Heilmann combing machine and the raising number of people traveling the world (Agarwal and Agarwal, 2017: 1061). Technological developments were in the field of steel, chemicals, electricity, and many other fields (Agarwal and Agarwal, 2017: 1064, Taalbi, 2017: 2). Because of those enhancements, the people's living quality was getting better and they felt to be more connected each other.

The IR3.0 was indicated by issues that mechanisms control the development of innovations in long-rute technology shifts and micro-electronics and the Internet which are two main components of ICT. There was also a history of modern capitalism that was shaped the pervasive and radical technologies for their own called General-Purpose Technologies (GPT) (Taalbi, 2017: 2; Mowery, 2009: 18). Lipety et al. (2005) in Taalbi (2017: 3) found out that the steam engine, the factory system, electricity, and potentially nano-technology developed fast. They were for commercialized by domestic intellectual property regime that facilitated technology diffusion (Mowery, 2009: 19).

As touched upon the previous part, the use of artificial intelligence, robotics, the Internet, autonomous vehicle, bio and nanotechnology indicates the new era, IR 4.0. People make use of them to fulfill their needs (Hussin, 2018: 92). In the IR 4.0, there were horizontal integration, vertical integration, and integrated digital engineering (Crnjac, Veza, and Banduka, 2017: 22-23; and Moraes and Lepikson, 2017: 733) requiring people to have ICT skills, knowledgeable and resourceful. The IR 4.0 is a new interdisciplinary field combining cyber and Internet to build smart factories. IR 4.0 means the next leap in industrial manufacturing enabling synergies coming from possible combinations of technological breakthroughs. It focuses on creating the future where the manufacturing done automatically and self-sustaining without manual intervention at all with the most efficient price. Lavanya, Shylaja, and Santhosh (2017: 1004); and Moraes and Lepikson (2017: 731) state that components of IR 4.0 include big data, autonomous robots, augmented reality, simulation, additive manufacturing, system integration, cloud computing, Internet of things, and cyber security.

Four trends in IR 4.0 are the increase of centrality of digital information, mass customisation, the increased importance of the service relationship, and increased resource efficiency (Neufeind, O'Reilly, and Ranft, 2018: 8). Digitalisation becomes trends such as a growth in various kinds of precarious jobs, rising inequality, and increasing managerial surveillance power, with employers increasingly able to avoid making any contribution to workers' various employment risks Crouch (2018: 191). The impacts are new social risks of the 21<sup>st</sup> century and in relation to demographic and fiscal sustainability.

Based on the discussion above, there are two implications. The first is for companies. The companies should (1) adopt the techniques of eco-design of products; (2) innovate the business model by including the concept of servitization; and (3) redesign the supply chain using an effective and efficient reverse logistics (Muina, Sanchez, Ferrari, and Blundo, 2018: 2). The second is for people. People living in the IR 4.0 should have ICT competencies to survive as everything is in the forms of cyber physical systems.

### **Life in the Industrial Revolution Industry 4.0 Era**

Each IR brings challenges and advantages into society. What did not exist in the past exists in this IR era, e.g. online shops, online business, e-learning, e-banking, and social media. The IR 4.0 gives people the greatest challenges to overcome. They embrace (1) reliability and stability for critical machine to machine communication; (2) security issues; (3) avoidance of IT snags; (4) maintenance of production processes; (5) protection of industrial know-how; (6) lack of adequate skill sets to expedite the march towards the fourth industrial revolution; and (7) loss of many jobs. However, the IR 4.0 also renders advantages for people having required skills, i.e., (1) customized and quick solutions; (2) more transparency and efficiency; (3) increased efficiency and competitiveness; (4) higher productivity through a reduced setup period; (5) realization of personalised products at the same cost of mass production; and (5) competitiveness of products (Lavanya, Shylaja, and Santhosh, 2017: 1006). Life in IR 4.0 requires new competencies and new skillsets. The mix of skills needed to perform in modern societies becomes increasingly complex and keeps continuing as technology-enhanced work environments raise, requiring future generations of workers to develop digital proficiency and

lifelong learning capacities at an early age (Kangroach, 2017: 7). Consequently, inequalities and social gaps potentially arise from the emerging technological changes. Inequalities will not only result from job destruction and employment polarization, but also from weaker social mobility. Furthermore, the relationship between human and nature is also destroyed by the revolution (Masatoshi, 1974: 40).

The IR 4.0 gives influences for society, called as Society 5.0. It is only at the initial stage of the development and the main achievements can be expected not earlier than 2020-2025, the image of a new paradigm of Industry 5.0 can be seen. It involves the penetration of artificial intelligence in man's common life, enhancing the man capacity and the return of the man at the "Centre of the Universe". The distribution of computer multithreads parallel and asynchronous computings. 'Swarms of robots' represents the self-organized groups of robots, referring to anthropomorphous robots and the distributed smart technical systems. The growing popularity of digital economy and uncountable number of practical applications create strong bases for IR 4.0 technology development and in long terms can serve as the launch pad for creation of Society 5.0 (Skobelev and Borovik (2017: 308-310). However, Society 5.0 or what Takahashi (2018: 199) calls as a smart society has several problems in facing the smart environment, such as problematic Internet use and addiction and the excessive use of ICT. Those psychological problems are sometimes caused by the individualism and the emptiness of social ties in the IR 4.0.

### **Roles of English in the Industrial Revolution 4.0 Era**

English achieves genuinely global status because it develops a special role recognized in most countries in the world. It becomes the medium of communication in all aspects of life. In the IR 4.0, technology grows very fast and it uses English. In commerce, people use English to market their products. Those having no English proficiency will not be able to learn technology and internationally market their products. They will be the customers only, not be able to follow the development, be left behind, and finally be marginalized.

Furthermore, the roots of technology innovation were in Europe and America during the 19th century, i.e., why English is used (Crystal, 2003: 99). Therefore, English become the medium of a great deal of the world's knowledge, especially in such areas as science and technology. It triggers countries to add English in their national curriculum and the English Language Teaching (ELT) business becomes one of the profitable industries.

### **Indigenous Communities in Indonesia**

People or nations possessing a historical continuity with pre-colonial societies are commonly defined as indigenous people. Meanwhile, the word *community* refers to a group of people having relations to particular native or cultural identity. Therefore, *indigenous community* is a group of people subjected to the colonization of their lands or cultures and whose cultural identities have been shaped by boundary transgressions. This community commonly refuses to live in the same way as those who colonize their land by maintaining their identity, cultures, and traditions as a fundamental aspect. They consider themselves as the world's first nations living differently from mainstream society (McGovern, 2000: 524; Belton, 2010: 195; Walters and Takamura, 2015: 79; Dyson, 2016: 2).

In Asian context, indigenous people are generally deprived, underprivileged, and excluded. Their lives are at risk, while the mainstream societies get pleasure from most of the socio-economic and political benefits. Although the government and developed organizations have made abundant and significant efforts, their lives do not change much in the postcolonial periods. Indonesia is known as one of the most diverse countries which preserves at least 250 indigenous communities speaking 600 languages, and diverse cultural practices. However, these communities continue to experience stress, change, and suppression even after the colonial period. Some of them choose to live as isolated groups of rain forest inhabitants who live all over the archipelago. In addition, living in isolation disables them from getting influenced by modernity, urbanization, industrialization, and economic

wealth. They find it hard to survive in the modern era, IR 4.0 (Rawski and MacDougall, 2004: 143; Islam, 2015).

Nevertheless, despite all the severe difficulties faced by the communities, indigenous people rely on their local cultural policies and values in order to maintain their simple and modest lives. These cultural policies and values are also known as local wisdom. It refers to basic knowledge, uniqueness, identity, and cultural sustainability owned by a particular community gained from living in balance with nature. It can also be defined as a fundamental value adopted from cultural traditions to give orientation to the community's existence. It is usually used to overcome social problems, increase people's welfare and peacefulness. Moreover, local wisdom, also known as local genius, can also be used to maintain the community's identity by filtering the global influences. It is considered as the only factor keeping the indigenous community exists. The only strategy developed to sustain the communities employs the local wisdom discovered from the area where they live (Ruastiti, 2011: 241; Mungmachon, 2012; Kartika, 2016: 89; and Sibarani, 2018: 1).

### **Saving and Preparing Indigenous Communities to Face the IR 4.0 Era**

The world keeps changing, evolving, interconnecting, and allowing changes as well as happenings from across the globe to influence the actions and conditions of others. These changes are generally in the forms of new technologies, ideas, information, and new ways of living. The current wave of globalization and change is so rapid that the indigenous people are unable to rise along with it. Most indigenous communities in Indonesia survive from the previous industrial revolution by making use of the power of their local wisdoms. However, these people can no longer solely depend on local acts to deal with the effects of IR 4.0, e.g. a Surui tribe of Brazil has recently succeeded in acquiring a satellite from Google functioning as a monitor to prevent illegal logging on their land. This indicates that each community is believed to have the potential to establish sustainable indigenous environments, economies, educations, and others (Belton, 2010; Walters and Takamura, 2015).

There are several attempts which should be made to save and prepare the indigenous communities in Indonesia to face IR 4.0, including helping indigenous communities to master English, strengthening local wisdom, improving indigenous' life skills, making resort villages, and marketing the communities' products. Each point is described as follows.

#### **1) Helping indigenous communities to master English**

English is internationally declared as the language of globalization. This means that English is the language of and for development. The substantial use of English across the world influences the way people live their lives, including their jobs, social relations, health, technological change, market change, and many others. English is used not only for economic transactions, but also for ideological, cultural, and social exchanges (Oberheu, 2017). It affects not only the mainstream societies, but also indigenous communities, e.g. promoting and selling traditional accessories to international visitors, interacting with foreigners staying at their places for tourism purposes. Therefore, local people are expected to adapt English for local purposes, to survive from the rapid development of IR.

Helping the indigenous communities to master English is not a one-day work nor a simple duty. As it is mentioned previously, indigenous communities are lacking education access and facilities. There are numerous issues affecting the indigenous communities in terms of their educational needs, such as limited access and resources for English language learning, the unavailability of educational facilities as well as educators in the area (Romero, 2010 and Oberheu, 2017).

The government of Indonesia is responsible for providing proper education, especially English language teaching for the indigenous people. Both the government and the Non-Governmental Organizations need to participate more on helping the communities master English. In order to reach the expected results, both sides need to understand that teaching English for indigenous communities is not the same as teaching the mainstream learners.

Appropriate teaching method should be employed by the educators. Most of them do not learn English to obtain a university degree, instead to culturally empathizing and assimilating with English speakers. Therefore, English should be contextualized; combining local contexts and local knowledge with the language learning is necessary (Kumaravadivelu in Oberheu, 2017: 19)

## 2) Strengthening local wisdom

The local wisdom used for people' welfare or prosperity includes several points, such as hard work, discipline, education, health, mutual cooperation, gender management, culture creativity and preservation, as well as environment care. Meanwhile, politeness, honesty and integrity, social loyalty, harmony, commitment, positive thinking, and compliments are the examples of local wisdom used for the communities' peacefulness. Considering the fact that globalization always brings impacts to the communities' lives, those two core values become very essential to survive and thrive in the IR 4.0 era (Dahlioni, Soermano and Setijanti, 2015: 158; Sibarani, 2018: 1).

Local wisdom can come in various forms and types, such as foods which can indicate the climate and 'branded' plants grown, herbal medicine, techniques of production, housing, and clothing or fashion which is suitable with the iconic materials as well as the climate in that place. These types of local wisdom should be developed as one of the ways to improve the locals' quality of life. Local genius should feature in the planning and implementation of the development. They need to formulate strategies which are cost-effective, time-effective, and generating relevant insights, that meet the demands of development to strengthen the local wisdom (Padmanugraha, 2010: 3; Sillitoe and Bicker, 2004).

Strengthening the local wisdom can only be carried out when the indigenous people have awareness as well as the ability to read the potentials of nature where they live in, and manifest them as traditions. There are ways which can be applied to strengthen the local wisdom and make the benefits of it. First, the communities have to understand the surrounding nature and culture, e.g. *Thiwul* and *gaathotare* indicating the local wisdom owned by the societies of Gunung Kidul since the main ingredient of those foods are grown well in Gunungkidul. Second, understanding that local wisdom is flexible/dynamic to the global situation. Indigenous people should have the ability to filter outside influences selectively to create other creations through the creative process. Third, local wisdom should be used to provide income and reduce expenses which can improve their quality of life (Padmanugraha, 2010: 3 Dahlioni, Soermano and Setijanti, 2015: 159).

## 3) Improving indigenous' life skills

In this era, most distant-communication is no longer done through sending letters. The fact that societies have invented a mobile phone for communication, a coffee machine to grind coffee bean, a motorcycle to support mobility instead of horses bring us to sense that technologies and innovations are powering the revolution. They enhance indigenous personal autonomy as well as bring wide-ranging improvements of their lives. Moreover, people are expected to be computer-illiterate in this era. The same as writing a letter requires a skill, sending an e-mail also requires particular skills. To keep up with all of the innovations available this year, indigenous people need to upgrade their life skills by having experiences on the technologies (Read, Meyers and Reece, 2006; Ooi, 2007: 56; Dyson, 2016).

As stated above, to improve indigenous' life skills, indigenous people must be given equal access to receive relevant education and training. They are encouraged to attend meetings at global institutions and share their knowledge on how globalization is affecting them so that the government, activists, and organizations can provide them with not only supporting facilities, but also activities useful for improving their life skills. Islam proposes four steps of improving indigenous' life skills for many aspects of life which can be carried out by the government or

organizations. First, creating awareness to form a group of people to learn the new skills. Second, dividing the community into several small groups. Third, providing training on certain skills. Lastly, encouraging the societies to keep applying the skills on their daily activities and make use of them to improve the quality of their lives (Read, Meyers and Reece, 2006; Belton, 2010: 204; Islam, 2015: 65; Dyson, 2016: 5).

One of the examples related to this point is having the knowledge on how people operate mobile phones these days. Many indigenous people in developing country has the impacts on the revolution involving the transformation from no ICT access to mobile ICTs or mobile phones. The ability in using the mobile phone becomes very essential since they can make use of this development to carry out cultural projects and display or education programs funded externally by the government, NGOs, and corporate donors. However, simply giving out money to individual community is an incorrect way of helping them to improve their life skills, instead, as it is described previously, conducting training and education is very crucial (Mungmacho, 2012: 176; Islam, 2015; Dyson, 2016).

#### 4) Making resort villages or ecotourism

Indigenous communities are generally known as ideal models of harmony with nature, social and emotional coherence as well as continuity. These communities are believed to have the potentials to create a source of life or income accordingly by influencing, changing, and forming the environment into a place with identity, namely resort villages or ecotourism objects. Various heritage, culture, local wisdom, and efficient planning should be taken into account in creating the resort villages and ecotourism objects, e.g. Beaches in *Bangka Belitung* islands filled with stunning giant-sized granite stones which make the views and appearance of the landscape becoming one of the most beautiful beaches in Indonesia, Sunflower Park in *Bantul* which decorates the road along the beaches creating great atmosphere. Indigenous societies living near this place can make use of this local characteristics as resort spots or tourism objects to eliminate the poverty (Strang, 2004: 93; Himawan, Sjarkowie, and Alfitri, 2014; Dahliani, Soermarno, and Setijanti, 2015: 160).

Various community characteristics and inter-community coalitions should be considered in facilitating the sustainability of the projects. Ecotourism or sustainable tourism are both ecologically and socio-culturally strategic to sustain the indigenous communities possessing the natural resources. These projects are expected to include mechanisms that both guarantee the profits generated by the ecotourism are primarily allocated for the indigenous community rather than the outside agencies, as well as to build the community's capacity to create additional revenue-generating and other sustainable development projects. Moreover, ecotourism is considered to have less negative environmental impacts compared to traditional tourism (Grieves, Adler and King, 2014). The indigenous people should be involved in developing the projects to examine how local interests intersect with international interests (Grives, Adler, and King, 2014).

#### 5) Marketing indigenous communities' products

In this era of highly competitive environment, business marketing and trading have become one of the most promising challenges which can be applied to tackle the poverty issues amongst indigenous communities. Through remarkable strategy of local economic development, known as urban marketing, indigenous societies can breathe at ease. Urban marketing is a long-term marketing strategy that focuses on preserving and developing the natural, economic, and hand-made potential of the indigenous or local societies. There are several reasons why urban marketing is considered as the most suitable marketing strategy, such as establishing positive image for the community, attracting companies, tourists, institutions, as well as finding markets for their exports, and for a longer term, creating an "urban brand" (Stanciulescu, 2009).

The societies must be prepared to compete effectively utilizing their local uniqueness as well as looking for the marketing prospective, possible or target market. Indigenous societies basically take the benefits of local wisdoms which are available in their areas in producing stuffs and crafts. Each community has its own uniqueness in producing local products since it adapts its own tradition and culture. As it is explained in the previous section, indigenous products can come in many forms, such as foods, medicine, accessories, handicrafts, clothing or fashion, and many more. In short, by applying the urban marketing strategy as well as reading the target market, indigenous people will have the ability to produce goods required by the potential inhabitants and companies (Stanculescu, 2009; Padmanugraha, 2010: 3).

## Conclusion

Regarding the discussion above, some conclusion can be made. Indigenous communities in Indonesia do not need modernizing; however, they need saving from being marginalized. They can live with their own indigenous properties and local wisdom, but they need to upgrade their life skills to produce indigenous products and maintain their local wisdom. Furthermore, they need English mastery to market their products and ecotourism for their sustainable living.

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