ICT Based Activities as Part of Smart Economy in Developing World: Learnt From Indonesia's Home Based Enterprises

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ICT Based Activities as Part of Smart Economy in Developing World: Learnt From Indonesia's Home Based Enterprises

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Abstract. The study of home industries which place economic activities at home, as part of SMEs, has been explored world widely. When this kind of economic activity in developed countries is more in technology based activities, such as ICT based activities, in developing countries start to have this kind of activities. This research will explore how an ICT based activities affect to support home-based enterprises in Indonesia, with case studies in Magelang Regency and surrounding areas of Rawapening Swamp, Semarang Regency. By using both quantitative and qualitative data, this research aims to a better knowledge on how technologies also part of home-based enterprises, therefore proper responses in policies and programmes can be formulated.

Keywords: *Home-based enterprises; ICT; digital; smart*

1. Introduction

Globalization and Industrial Revolution 4.0 is the latest development trend of the world, and digital technology is part of this. At the same time, the complexity of development increases as times goes by. Not only advantages of development, but also its disadvantages and seems a negative impact of development appears as well. In dealing with the problems in economic, social, employment due to development, the local government needs to have strategies to find a way out to solve the problem.

One of the concepts of planning that are considered capable of encouraging various urban sectors to run more effectively and efficiently is the concept of a smart city. The concept of the smart city is a concept that focuses on creating a more effective and efficient urban governance system because it focuses on ICT (Information Communication Technologies) and is able to face the challenges of sustainable development [1]. There are several aspects in the application of the concept of a smart city, including the economic aspects, aspects of society, environmental aspects, aspects of government administration, infrastructure aspects and so on. One aspect of smart city concept which is a focus in this study, is the intelligent economic aspect which, in the sense of intelligent economic aspect is an effort to achieve a prosperity, effectiveness of an economic system, and strengthen economic competitiveness in a city [2].

There are many aspects or dimensions as prerequisites to create and implement the concept of a smart city, such as the economy, society, mobility, environment, government administration, and so forth. One of the dimensions that exist in the concept of the a smart city is the intelligent economic dimensions which in a sense the intelligent economy is an effort to achieve prosperity, the effectiveness of the economic system, and strengthen the competitiveness of the city's economy [2]. This can be achieved by the application of integrated systems and the utilization of ICT. There are several indicators that experts say to create a smart city system including the smart economy. Achievement indicators in

intelligent economic development or other intelligent city dimensions must be based on the characteristics of the city and its needs so that it can be concluded which indicators are appropriate to create a smart city system.

The study of home industries which place economic activities at home, as part of Small, Micro Enterprises (SMEs), has been explored world widely. Study of home-based enterprises (HBEs) means that house become as a place for family to stay, live and have social interactions in this millennium as has been studied since decades ago [3–14]. It has tasted a high technology dimension of home based activities, with the use of ICTs to generate income for households[15–21] .The existence of home-based enterprises and ICTs thus is important, particularly when technology has a bigger roles nowadays. When this kind of economic activitiy in developed countries are more in technological based activitities, such as ICT based activities, however in developing countries start to have this kind of activities. Different with developed countries which are familiar with ICT since years, the Indonesians feel the importance of ICT just starts from a few years back.

This research will explore on how an ICT based activities affect to support home based enterprises in Indonesia, with case studies in Magelang Regency and surrounding areas of Rawapening Swamp, Semarang Regency.

To analyze the indicators of how an ICT based activities to support home based enterprises in Indonesia are Emerging Characteristics, Internet of Things (IoT), Creativity and Innovation, Mutual Cooperation, Innovation Cluster, Competitiveness, Eficiency and Green Economic.

2. Data and Method

This research is basically using a case study method. The case study method allows the research object to be explored in depth and produce rich data, and ultimately able to answer the research question about 'how' in applying the concept of the smart city in Kampong. The superiority of the case study method is its strength in empirical research that investigates contemporary phenomena in depth and in a real-life context.

This research uses both quantitative and qualitative data to identify the application of the concept of the smart city at two locations in Magelang and Semarang Regency. The 2 case studies were chosen, namely A Digital Design Village: Kaliabu Magelang (10 respondents) and the area of Water Hyacinth Souvenirs of Rawapening Swamp-Semarang with 14 respondent in ICT/Digital based HBEs out of a total of 60 Water Hyacinth's Home-based Entrepreneurs. The data were acquired through Questionnaires, Observation, Interview with several home-based entrepreneurs, government staff or local leadersas well as secondary data such as from webpage, Instagram account, or Facebook page. By using both quantitative and qualitative data, this research aims to a better knowledge on how technologies also part of home-based enterprises, therefore proper responses in policies and programmes can be formulated.

Rawapening is a semi-natural lake in 2,670 hectares area, located in 4 sub-districts of Semarang Regency. They are Ambarawa, Tuntang, Bawen and Banyubiru, located on the border between Salatiga and Ambarawa. About 80% of the water surface in Rawapening is overgrown with water hyacinth and 5% of other aquatic plants caused the degradation of the lake the ecosystem and affected land use change. Not only a threat to aquatic biodiversity, but water hyacinth also holds great potential for community economic development efforts on Home Based Enterprise. Although water hyacinth is based on natural materials and tends to be traditional, there is digital economic support in increasing access of communication, buying and selling transactions, and marketing purposes so that it is interesting to study further. The sample of a previous study of Water Hyacinth souvenirs HBEs is 60 in total. Home-based entrepreneurs who are the object of research were divided into 2 types, namely non-digital/ICT Home-based Entrepreneurs and digital/ICT Home-based Entrepreneurs. The grouping of the two HBE business people is based on the use of a digital economy that is utilizing internet or social media support. However, this study only focuses on the digital/ICT home-based entrepreneurs.

The other case study is Digital Design Kampong of Kaliabu-Magelang. Kaliabu is a village in Magelang Regency. The village then well-known as a digital kampong, as several young people have the main income from digital design activities through their home-PC. Started only 1 or 2 people, then

the village has more people gain income from digital design, including from the logo design contest world-widely. A success story has given inspirations to the neighbors to learn and gain income from an internet based business.

3. Result and Discussion

An analysis is part of this section to identify and explore on how an ICT based activities affect to support home-based enterprises in Emerging Characteristics, Internet of Things (IoT), Creativity and Innovation, Mutual Cooperation, Innovation Cluster, Competitiveness, Efficiency and Green Economic.

3.1 Emerging Characteristic of Digital Home-based Enterprises

Characteristics of the HBEs of the 2 locations are different. Rawapening-Semarang only has 23 % ICT based Water Hyacinth Souvenirs HBEs, and the rest are not using ICT for the economic activity. The elderly women are part of this group, and they produce the Water Hyacinth souvenirs traditionally. And they are not familiar with the technology, including the mobile phone.

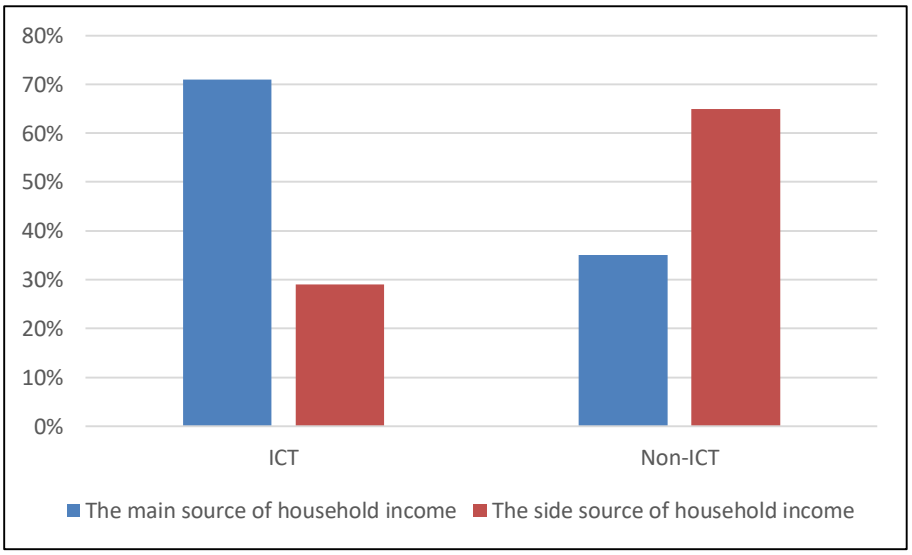


Figure 1. Source of Income in Water Hyacinth Home-based Enterprises at Rawapening-Semarang

Furthermore, Figure 1 shows that Digital/ICT based HBEs is a main financial source in 70 % out of total ICT HBEs in Rawapening-Semarang, On the other location, 100 % of Kaliabu Magelang HBE activity as the main source income for households. Kaliabu Magelang HBEs are 'the one-man show' business while Rawapening-Semarang 93 % of the home business owners have family member or workers to help them to operate their business

The market area of Kaliabu Magelang are international (almost all go for international logo design contest and a little number in stock exchange market), while the market for the Water Hyacinth are local or national, but some of them in 28 % has exported to overseas such as Turkey, the Middle East, US, and Malaysia. All the case shows that the ICT based HBEs open the opportunity to open market internationally.

3.2 Internet of Things (IoT)

All HBEs uses internet such as a webpage, WA, FB page to support their HBEs activities. In a more detailed, the IoT used for in searching for information such as knowledge of raw materials, innovative product ideas, production processes, marketing in similar businesses or not similar; in interacting or communicating with buyers, suppliers, customers or sub-contractors via email / FB / BBM / WA / Line; and in marketing business products / services of HBEs through social media via email / FB / BBM / WA / Line / or Instagram.

HBEs of Rawapening-Semarang have various purposes in using the internet to support their business of Water Hyacinth souvenirs production. The majority using FB page, Whatsapp, Instagram or other platforms for communication in 43 %, while the other purposes are in fewer percentages. The Kaliabu-Magelang HBEs tend to have various purposes of using IoT to gathering information about design, or updating trend of design, to communicate and also other things, for example, to start in joining stock market (Figure 2).

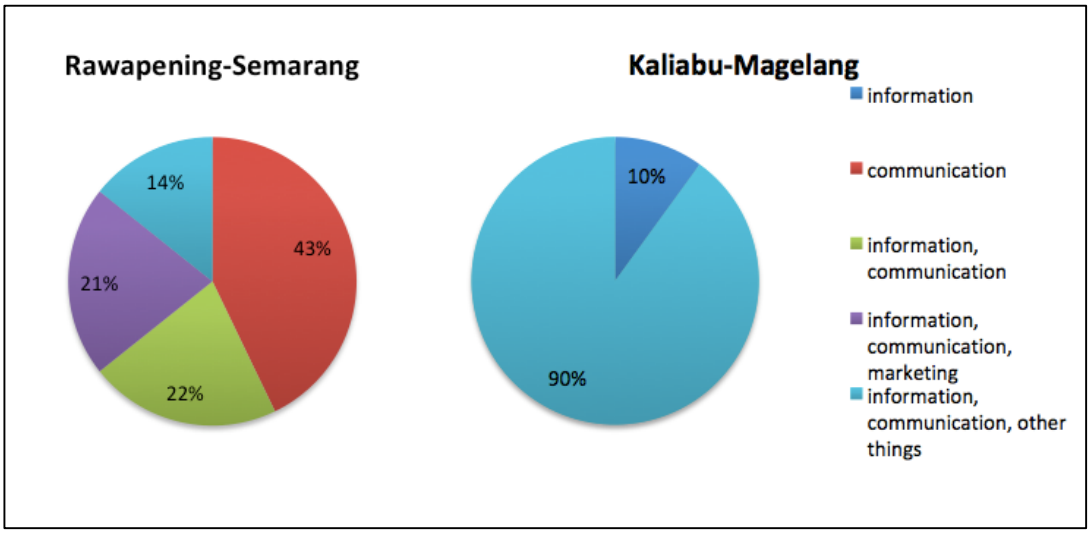


Figure 2. Purposes of ICT in HBEs of Rawapening Semarang

Figure 3 depicts on where or how home-based entrepreneurs learn to use information technology to support their home business. They are in self-study or autodidact through observing and practicing, learn from friends or family with asking questions and practicing or learn through school or training, or even workshop. It shows that autodidact person becomes dominant in Rawapening-Semarang in 71 %, while in Kaliabu-Magelang only 10 % of the HBEs are self-studying or autodidact. Almost all Kaliabu-Magelang HBEs are learning from family/friends and or through courses/workshop/school to use and apply ICT to support their business. It seems that the ICT in Kaliabu-Magelang is more complex and have a higher level of skills such as in digital designing rather than in Rawapening- Semarang which basically uses the ICT or internet for acquiring information about the trend, communication with buyer, and marketing purposes merely.

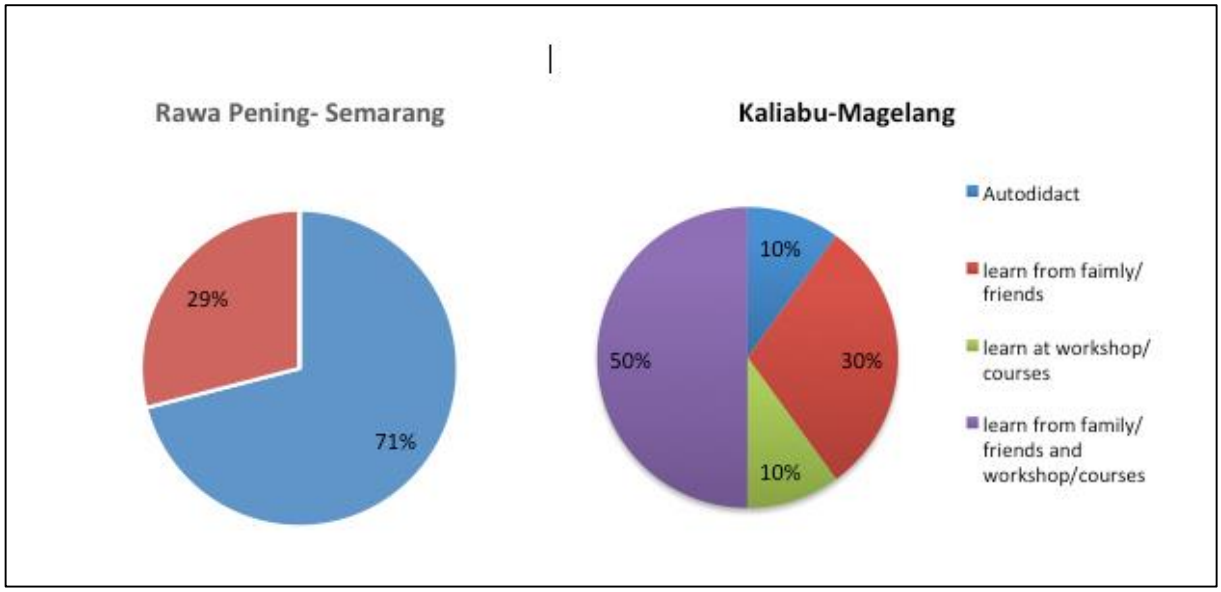


Figure 3. How to learn in using ICT/Internet for Business

Both of cluster of HBEs are using internet and or ICT and learn how to use the technologies in various ways.

3.3 Creativity and Innovation

The type of business in Rawapening-Semarang to produce souvenirs from Water Hyacinth is not only based on hand-made, need internet and ICT. On the other hand, the digital based of home–based enterprises of Kaliabu-Magelang in digital design needs more technology-based economic activities, for example, uses software to design, or even before to gathering information about how to design or concept of design.

However, both of HBEs need creativity and innovation to support their economic activity. The creativity and innovation as part of the smart economy are to find new types or models of goods and services, the find a new process of producing new goods and services, and find new marketing, and other way in innovative way.

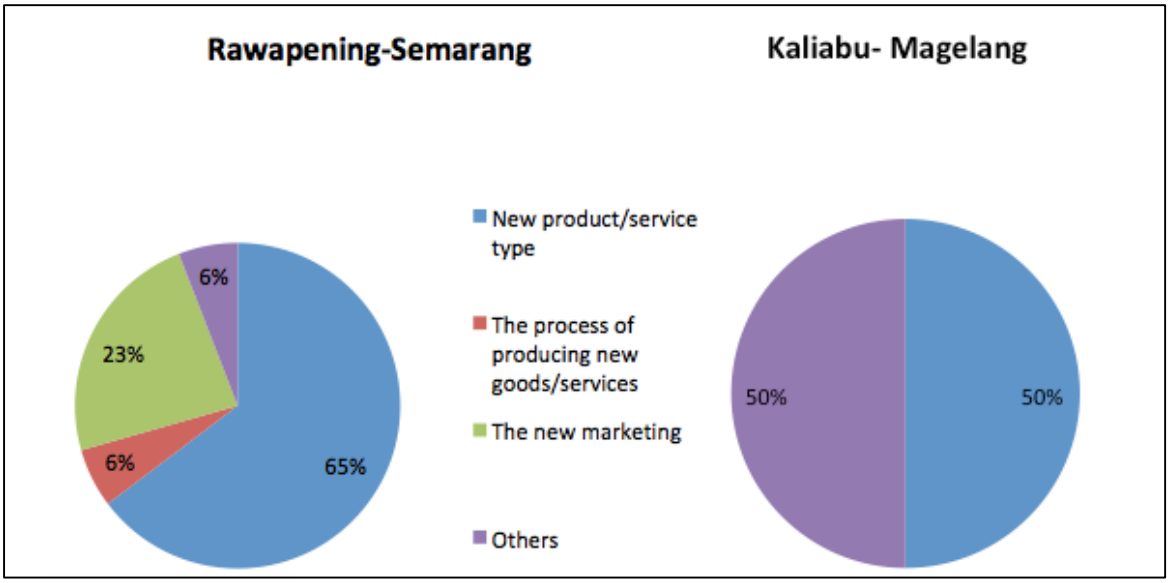


Figure 4. Type of Innovation and Creativity

Both of HBE cluster have an innovation to find a new product, particularly in new design, which are 65 % in Rawapening-Semarang and 50 % in Kaliabu-Magelang. A new design of souvenirs can be also in a variaty of small part or materials of souvenirs with other materials such as rattan or wood. For Kaliabu-Magelang HBEs, new design means a new model of a logo that they offer. Furthermore, marketing through a website such as FB Page, Instagram, or Webpage become a new innovative way of Rawapening- Semarang HBEs in 23 %. A new design of water hyacinth souvenirs is published through that platform which can be accessed publicly. So, it adds the conventional marketing way, which previously are only through exhibition or family/friend (Figure 4). So, innovation and creativity are parts of both clusters.

3.4 Competitiveness

In Kaliabu Magelang, all respondent has own perception that their business in a less competitive stage, and almost all states that the increasing number of competitors as the main reason. This is also in the same way of the phenomenon that there a decreasing of income. Although 50 respondents have made a strategy to innovate the design (while the rest have nothing to do with the strategy to adapt with the competitiveness) that there is still a decreasing of income due to the increasing number of competitors from other areas, such as Yogyakarta, Semarang or other parts of Magelang.

However, Rawapening Semarang home-based entrepreneurs seems that have a better stage of competitiveness. Based on their own perceptions. More than 80 % feels that they have better and stable condition of competitiveness level, only less than 20 % feel in less competitiveness stage. Various strategies seem works well to maintain even increase the competitiveness such as to maintain product quality, works professionally with timely and product specification as ordered, innovate product design and sensitive to the market trend, promote the product through internet or exhibition, even collaborate with many stakeholders (see Figure 5).

> *....We can make a design as ordered, even we never make it before. As far as the buyer sends through email about the sample or picture of a design, we can make it.(Pak S)*

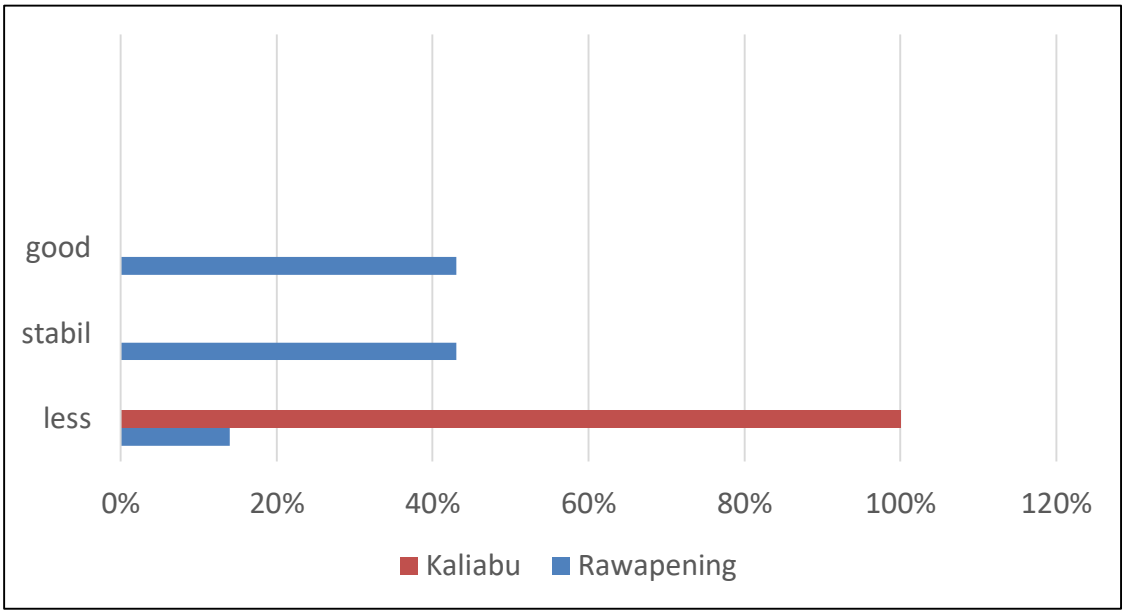


Figure 5. Perception on own competitiveness

It seems that Rawapening Semarang HBEs has a better condition of the competitiveness level.

3.5 Mutual Cooperation

Based on Figure 6, it seems that the Rawapening Semarang has a lot of cooperation with many stakeholders including Government, Universities, Private Companies and also communities in a Water Hyacinth cluster and other stakeholders for the business such as raw material supplier, middlemen/'pengepul', even the craftsmen from other cities.

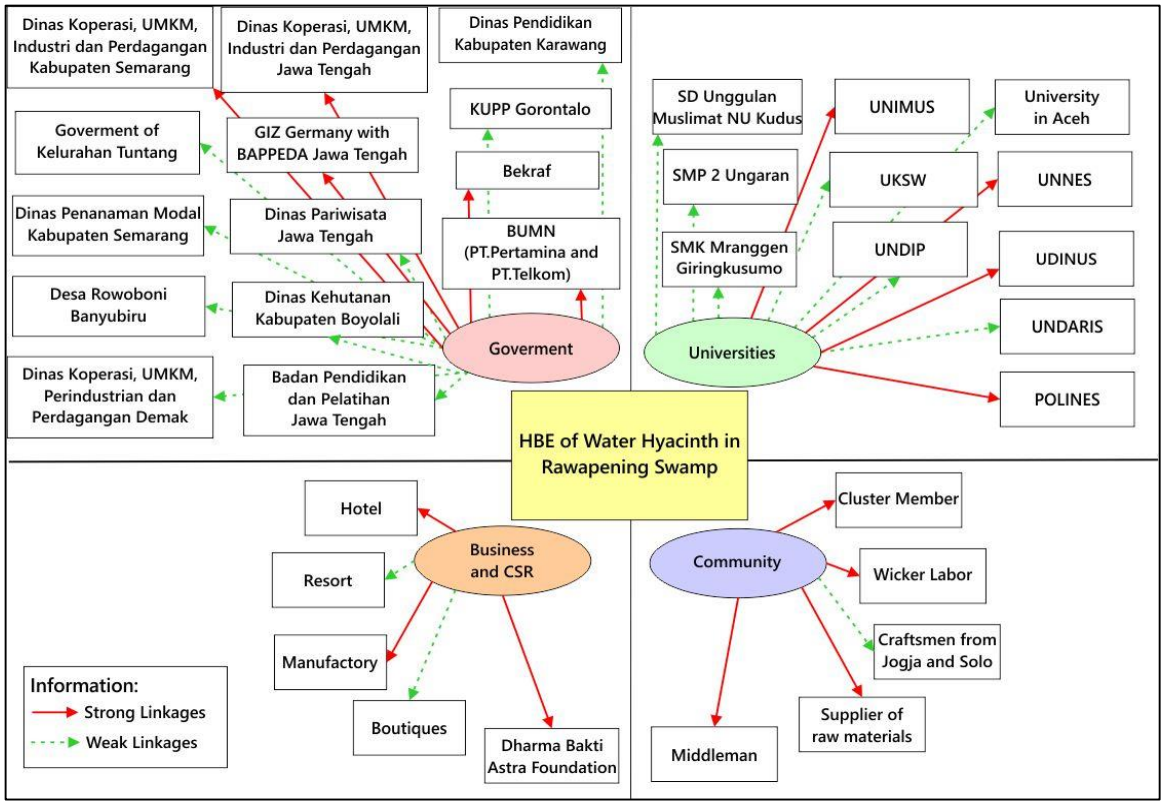


Figure 6. Mutual Coooperation/Collaboration of Water Hyacinth HBEs

The Kaliabu-Magelang home-based entrepreneurs have a group of digital to share experiences even to learn how to make the digital design at the beginning with the group name 'Rewo-rewo'. All were the member of the group, although then 1 or 2 people left the group. The majority of the Kaliabu-Magelang digital home-based entrepreneurs in 64 % feel the contribution of the group to them both to learn how to design at the beginning, or as the medium to share experiences among the home-based digital designers. However, the role of government or other stakeholders seems to lack. Only at the beginning, the support of government was the access of internet through Wifi through telecommunication wire. The role of other stakeholders seems lacking in support the Digital kampong activities.

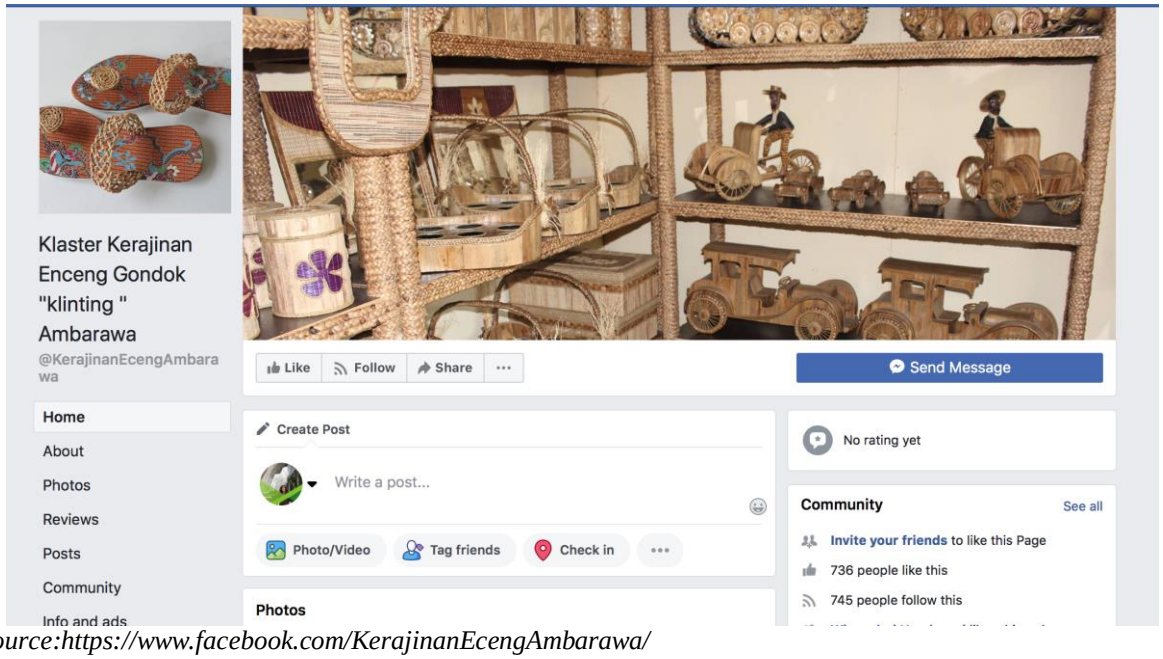
3.6 Innovation Cluster

Both of Kaliabu Magelang and Rawapening Semarang have community group in a cluster.

Source: https://wodeol.wordpress.com/

Figure 7. Website of Kaliabu- Magelang HBEs Cluster

The cluster of 'Rewo-rewo', as depicted in Figure 7, exists since several years ago, however, the activities of a community group or cluster seems up and down. This seems that the lack of other stakeholders contributes to the condition of the community. Another reason is that the type of business seems individual and much depends on the individual creativity to win the market seems to contribute to the function of the cluster.



Source:https://www.facebook.com/KerajinanEcengAmbarawa/

Figure 8. Klinting Cluster Facebook Page of Water Hyacinth Rawapening-Semarang HBEs

Klinting Cluster is the name for water hyacinth home-based producers. The cluster has several sub-groups who specialized on particular design or product. For Example, Pak Slamet Renita focused on sandals or bags, when bu Chomsah focuses on laundry basket production. The cluster works together and always shares information and jobs depends on the market order.

The cluster also has a Facebook page as depicted in Figure 8. Through the website, sometimes the order comes to particular sub-group of a cluster. In addition, the water hyacinth home-based producers also have own webpage or Instagram or Facebook page to promote their product to the market.

3.7 Efficiency and Green Economic Principle

The green economics and efficiency are only recognized in Rawapening-Semarang HBEs, while at Kaliabu- Magelang the principle has not been recognized. It seems that the individual and ICT based home-based enterprises in Kaliabu-Magelang do need green economic principle, and it is different from Water Hyacinth souvenirs home-based producers who rely on natural resources to produce it.

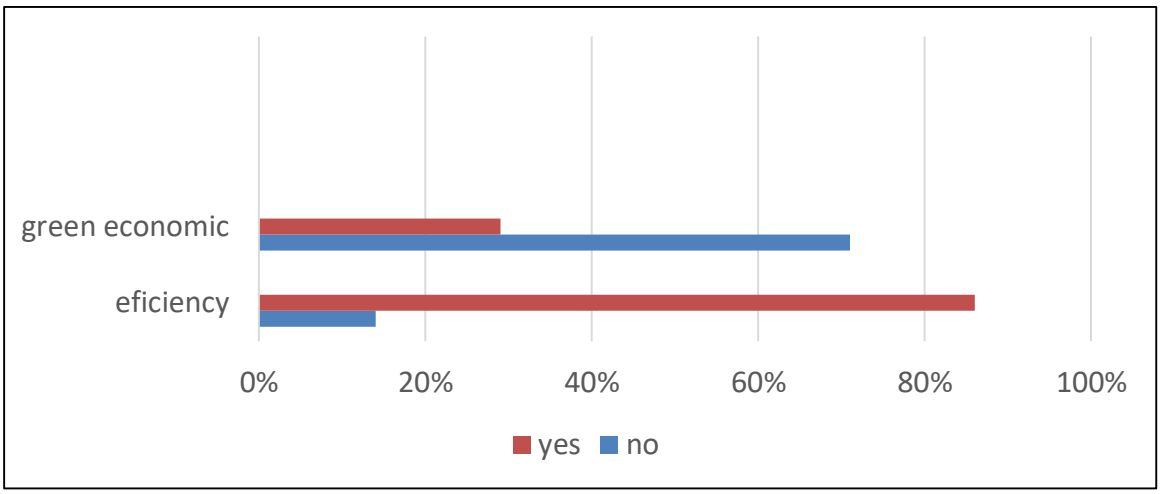


Figure 9. Green Economic of Water Hyacinth of Rawapening HBEs

However, it is still not all of Water Hyacinth producers apply the green economic principle, only about 30 % recognize a principle of green economic such as 3R(Reduce, Reuse, Recycle) and about 90 % to practice efficiency to produce souvenirs, for example, to use recycle materials (Figure 9).

4. Conclusion

Home-based enterprises start to use ICT or digital technology to support their business. From the indicators of emerging characteristics, Internet of Things (IoT), creativity and innovation, mutual cooperation, innovation cluster, competitiveness, efficiency, and green economy, it seems that both clusters have all the indicators although in a various level. The type of economy activities seem to affect the indicators, for example, a digital or ICT based home-based enterprises seem not to give attention to green economy principle. On the other hand, a natural resources based HBEs such as Water Hyacinth souvenir producers give attention to the green economy principle, because it also is started by the concern of utilizing a weed.

Even the ICT or digital based is also as the main business as in developed countries (Commission 2004; Anwar & Daniel 2014;Ueasangkomsate 2015; Burgess & Paguio 2016; Bosworth & Newbery 2015; Sellitto et al. 2017). The home-based enterprises in Indonesia, or maybe in other developing countries start to use ICT or digital based technology to support their business. Therefore, a support of the government or other stakeholders can be formed in a certain policy or program. These can be applied to support the development of HBEs nowadays.

Home-based enterprises can be relied on ICT, whether another type of Home-based industries which are usually in conventional or traditional ways also start to use ICT to support. Governments, universities, private sectors are an important part in introducing the innovation through ICT-based HBEs [24]. Training, facilitation, tools, and material are the way to support HBEs to know ICT/internet. Networking, both formal and informal group, in conventional or e-group are also important to gain updating information or get an idea or new knowledge. Also, a set regulation, which recognizes the

importance of ICT or digital technology for Small, Micro Enterprises and HBEs, is also important. Thus, it could be part of Industrial Revolution 4.0, even though it is only in a smaller scale of industries from Home-based Enterprises

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