Applying Smart Economy of Smart Cities in Developing World: Learnt from Indonesia’s Home Based Enterprises

W P Tyas1, P Nugroho1, S Sariffuddin1, N G Purba1, Y Riswandha2 and G H I Sitorus3

1Urban and Regional Planning Department, Engineering Faculty, Diponegoro University. Jl. Prof. H. Soedarto, S.H.Tembalang, Tembalang, Kota Semarang, Jawa Tengah, Indonesia.
2Ministry of Agrarian and Spatial Planning, Indonesia
3Ministry of Public Work and Public Housing, Indonesia

w.p.tyas@pwk.undip.ac.id

Abstract. The smart city has a lot of dimensions. Part of dimension is the using IoT using. Home-based enterprises (HBEs) in developed countries widely use the ICT for their business. However, based on the current literature perspective it does not occur in developing countries. This study explores the application and use of internet to the HBEs in Indonesia with case studies in Semarang, Salatiga, Boyolali, Surakarta and Surabaya home industries. The study mainly used the qualitative approach, but it uses both qualitative and quantitative data. The study findings that the ICT have been a part of the HBEs. In HBEs, the internet is useful, for searching information, contact to buyers/customers and also for marketing purposes.

1. Introduction

Nowadays, the world is in the industrial revolution era 4.0 or fourth generation. The Industrial Revolution 4.0 is a new model of the development of industrial activity which can greatly influence changes to the pattern of world development today. Theoretically, industrial revolution 4.0 can be defined as an automation trend that is built with integrated digital systems that are simpler than physical forms but more optimal in terms of providing information [15]. The industrial revolution 4.0 also relates to the trend of increasing internet capacity or Internet of Things (IoT). Based on its terminology, IoT encompasses everything that can be connected from one device to another, with the connection between devices will create system automation, access information, analyze data in real time, and make actions in response [5].

The concept of governance based on smart city or smart city is an idea of urban development that was born during the industrial revolution 4.0 in which this concept was made because of the more advanced, increasingly complex urban problems. The world is moving faster as well as the growth of cities, but often the urban governance system that is built is unable to move as fast as the growth of the city itself. Population density, building density, congestion, environmental pollution, and various other problems arise as a result of errors in the governance system that are not proportionally straight with
the tempo of changes in community activities within them. Smart city is considered as a transformation of the urban governance system that is more impulsive and more dynamic, the utilization of technology is maximized to develop and monitor urban activities by providing integrated information and infrastructure in which the city government with business, community, and other elements are interconnected in terms of access to information [14].

Smart city as a planning conception is currently being applied to cities in the world. The transformation of urban sector governance by prioritizing effective and efficient principles and focusing on the field of ICT (information communication technology) is the main reason why the concept of urban development with the smart city concept approach is currently widely practiced in cities in the world [18]. There are many definitions that experts say about smart city. Marinaro (2016) states that the concept of smart city aims to improve the quality of life of urban communities and strengthen the city’s economic sector [11]. Another definition of smart city is the concept of urban development with ICT-based development that provides integrated information and infrastructure between the city government and the components of business, society, and also the potential of the city [14]. Smart city is formed from six development dimensions that represent elements of urban governance activities, namely smart people, smart government, smart economy, smart living, smart mobility, and smart environment [6]. These six dimensions are the basic elements that exist in the wheel of city life.

The concept of smart economy as an innovative economy is an effort and strategy of an area for economic progress. Smart economy relies on a new model of cooperation in production, distribution and consumption. These six smart economy principles include [16]:

- Smart city driven by innovation and supported by the University that focuses on research aimed at economic development and competitiveness.
- Smart cities have an open thought and appreciative of ideas and creativity.
- Smart city enhance and stimulate the growth of entrepreneurship.
- Smart city offers better economic opportunities.
- Smart city prepared to create a globally powerful competitive economic sector.
- Smart city thinking locally, acting regionally, and globally competitive.

In the concept of smart economy, where currently the urban community lives as a digital society, the city’s economic sectors are built and developed by encouraging economic activity in the direction of collaborative and sharing economy or in other terms referred to as DCC (Digital Collaborative Consumption)[8]. Correspondingly, Von Hippel (2005) added that the application of a smart economic system will create a participatory system in problem solving and business development [20]. This cooperation system is called 'democratic innovation'. In the concept of smart economy, urban activities are digitally driven by more transparent access to information to create higher productivity [12].

The intelligent economic dimension is appointed because of its role which is very important for the sustainability of urban activities and the welfare of urban communities. According to Kurniawan (2011), Micro, Small, and Medium Enterprises (MSMEs) are the backbone of a populist economic system that can reduce poverty and in its development are also able to expand the economic base and can contribute significantly to improving the local economy and the region and even the national economic resilience [10]. Bank Indonesia in its book on business profiles of MSMEs shows that MSMEs have a proportion of 99.99% of the total business operators in Indonesia. but even so, the average MSME sector in Indonesia has not yet been in a favorable position, there are several reasons that underlie this thought. Referring to Anggraeni, Hardjanto, & Hayat (2013) some problems that are mostly experienced by MSMEs in Indonesia, such as human resources that do not yet have the knowledge and skills in developing their business, access to capital that is still difficult, limited facilities and infrastructure, and lack of access to product marketing [1]. Added based on data from Bank Indonesia (2015) explains that some of the characteristics that become weaknesses of MSMEs include; quality that is not standardized, limited product design, limited product types, capacity and price list of products is limited, raw materials are not standardized, and product continuity is not guaranteed and less than perfect. Then, MSMEs become one of the potential sectors and priorities to be developed as an effort to develop a more dynamic city economic system.
The digital economy market in Indonesia includes the financial sector, internet of things (IoT), and online service providers. This increase in digital utilization continues to be encouraged to support economic progress. Digital business in Indonesia can absorb more workers and can directly reduce unemployment. The Head of the Central Statistics Agency (BPS) stated, the Unemployment Rate decreased from 7.56 million in August 2015 to 7.03 million in August 2016. That is, the number of unemployed has decreased by 530 thousand people in the past year. The decline is in line with the increasing number of people working in the informal sector through the application of the concept of digital economy, namely online.

The digital era requires MSME players including HBE to market their products online. Social media has the potential to help HBE players in marketing their products. Social media is defined as a group of internet-based applications that create a foundation of ideology and technology that allows the creation and exchange of user generated content [17]. Social media applications are available from instant messaging to social networking sites that offer users to interact, connect and communicate with each other. The application aims to initiate and circulate information online about the user's experience in consuming a product or brand, with the main aim of engaging the community.

Research on the use of digital marketing explains that Wardhana (2016) found that digital marketing strategies affect up to 78 percent of the competitive advantage of MSMEs in marketing their products [21]. The use of the internet allows HBE to do marketing with global market goals, so that opportunities to penetrate exports are very possible. This is reinforced by Suyanto (2005), there are positive impacts that can be obtained by utilizing the internet network and technology (digital media) in developing businesses [19] including:

1. Enhance the promotion of products and services through direct, information-rich, and interactive contact with customers
2. Creating a distribution channel for existing products
3. The cost of sending information to customers is more economical when compared to parcels or post services
4. The time needed to receive or send information is very short, in just minutes or even seconds.

Nowadays, the influence of technology can be seen through the application of digital economics [3], internet of HBE operators. The use of the internet or social media in HBE increase the access of communication, buying and selling transactions, and information seeking to develop a business. Stockdale, et al., (2012) identifies that the business value of the use of social media increases short-term income and long-term sales, decreased advertising costs by 70 percent, reduction in overall marketing costs, creation competitive advantage, increases of promotion across social media platforms, popularity of brands and products, also introduces organizations or companies to the community [17]. The main purpose of all forms of social media applications is to involve individuals or groups in business and business that lead to income generation [7]. In his research, Stockdale (2012) argues that business planning through the use of technology used to improve communication and coordination, as well as to achieve economies of scale with increasing market share [17].

Home based Enterprises (HBEs) which are defined as part of MSMEs which uses house or plot of land surrounding the houses as business activity seems start use IoT to support the business. HBEs operators or owners who use digital media in marketing their products through the internet or social media such as Facebook, Twitter, YouTube, are included to practice the smart economy concept. The digital economy relates to the number of internet users and communication with others effectively.
Digital marketing as part of digital-based business focuses on buying and selling transactions. Buying and selling transactions can also be seen from the use of the main components of digital economy. This study aims to explore the use of HBEs in Indonesia. This study took five locations of HBEs, namely Kampong Bandeng/Milk Fish, Krobak-Semarang City; Metal Craft Village, Tumang Village, Boyolali Regency; Kampong Getuk/cassava snack, Kelurahan of Ledok-Salatiga City; Batik Village, Laweyan and Kauman-Surakarta City; and Kampong Lontong/Rice Cake, Banyu Urip Lor-Surabaya. The location of the study can be seen in Figure 1.

![Figure 1. Map of research location.](image)

### Table 1. Case studies.

| Case Study                                          | Respondents no. (HBE Operators) |
|-----------------------------------------------------|---------------------------------|
| Bandeng/Milkfish Kampong, Krobokan- Semarang City  | 12                              |
| Getuk/Cassava Snack Kampong, Ledok-Salatiga City   | 7                               |
| Metal Craft village, Tumang- Boyolali District      | 19                              |
| Batik Kampong, Laweyan and Kauman, Surakarta City  | 18                              |
| Lontong/ Rice Cake Kampong, Banyu Urip Lor- Surabaya City | 40                              |
| **Total**                                           | **96**                          |

The analysis are the exploration of transformation the conventional to digital mode of business or offline to online mode, which are in the type of internet use and the purpose of internet using.

### 3. Results and Discussion

This research is located in five districts / cities in Indonesia, especially in Central Java and East Java. The five study areas have different characteristics of HBEs. The characteristics of these HBEs are described as follows.
3.1 Kampong Bandeng/Milkfish, Krobokan-Semarang City

Milkfish-Processing Krobokan Village, Semarang; is a village producing milkfish processing in the city of Semarang. Although not many HBEs actors in this kampong, but this business supports the leading business in the city of Semarang, as pressure cooked milkfish are one of famous food from Semarang City, and this HBEs are the source of income for household who are involved.

![Figure 3](image)

(a) Cooked milkfish HBEs (b) Pressure cookers (c) Packaging of cooked milkfish (d) Vacuum machine

3.2 Kampong Getuk-Casava Snack, Ledok Village - Salatiga City

This Kampong is a home-based which started in 2000s with a traditional food processing business made from raw cassava and finally entreprises followed by neighbors in the culinary effort of other traditional foods that flourish in the region. The traditional food is not only purchased by the citizens of Salatiga city, but instead many buyers from out of town who buy food products as a typical Salatiga souvenir.

![Figure 4](image)

(a) Cheesed casava of D-9 (b) Casava burger (c) Cheesed cassava making observation (d) Argotelo HBE
3.3 Kerajinan Logam, Desa Tumang-Kabupaten Boyolali

Kerajinan Logam-Tumang, Boyolali; is a home-based UMKM that has started since decades and even centuries ago, beginning with the manufacture of metal crafts such as brass with traditional kitchen tools. In its development, the area of metal craft center is able to survive and adjust to market desires. Even households producing metal crafts are increasing, and even to export. As well as Kasongan Bantul pottery center is an effort made at home, in Tumang area itself this business has been done decades or even centuries ago, in a traditional way but has an international market.

![Metal craft making process of D-9](image1)
![Metal crafts showroom](image2)
![Metal crafts workshop](image3)
![Showroom](image4)

Figure 5. (a) Metal craft making process of D-9 (b) Metal crafts showroom (c) Metal crafts workshop (d) Showroom

3.4 Kampong Batik, Laweyan dan Kauman-Kota Surakarta

This kampong is a batik-producing village that has been known to the general public and has been doing this activity for a long time. This home industry business contributes important not only to business actors, but also to the city of Surakarta.

![Map of the Kauman Batik Village](image5)
![The process of making printed Batik](image6)
![The process of making Handmade-Batik](image7)
![The business of Laweyan ‘Merak Manis’ Batik](image8)

Figure 6. (a) Map of the Kauman Batik Village (b) The process of making printed Batik (c) The process of making Handmade-Batik (d) The business of Laweyan ‘Merak Manis’ Batik
3.5 **Kampong Lontong/Rice Cake, Banyu Urip Lor-Surabaya**

Kampong Lontong –Banyu Urip Lor, Surabaya; is a village producing lontong in the city of Surabaya and fully supported by the government in its development. The business has been in existence since the 1980s, started from 1 home-based entrepreneur only, but later developed into hundreds of home-based businesses. Lontong is marketed to the city of Surabaya and its surroundings areas is the result of home-based business that is now a source of income for hundreds of households in the region.

3.6 **Use of the Internet in Running a Business**

Information technology has an important role in increasing business competitiveness, including in HBE. Information technology offers various advantages in addition to having complexity. The trend of information technology development is currently focused on the rapid growth and development of mobile technology with its superiority in flexibility [13]. Based on internet usage for HBEs, four of the five study areas have used internet in running their businesses. Of course with different presentations at each HBE. The internet use is mostly found in Metal Craft Villages and followed by Batik Village with a difference of 1%. Both HBEs are labor-intensive businesses and require special expertise in the process. New innovations in products are needed to improve competitiveness. Both HBE are handicraft products that follow market trend.

![Table 2. Percentages of internet using.](image)

In the next position there are Kampong Bandeng and Kampong Getuk. Both HBE are food processing and are more focused on product marketing. Whereas in the last position there is Kampong Lontong which does not use the internet at all. Lontong village is a very traditional HBE and uses simple processing methods so that it does not use the internet in running its business.

3.6.1 **Social media**

Social media allows businesses to reach consumers and build more personal relationships [4]. Zhu and Chen (2015) divide social media into two groups according to the nature of connections and interactions [23]:

1. Profile-based, namely social media based on profiles that focus on individual members. This group social media encourages connections that occur because individuals are attracted to these social media users (e.g. Facebook, Twitter, WhatsApp).
2. Content-based, namely social media that focuses on content, discussion, and comments on the content displayed. The main goal is to connect individuals with content provided by certain profiles because these individuals like it (e.g. Youtube, Instagram, Pinterest).

Based on the data reported by ‘We are Social’, a digital marketing agency in America, said that the most widely used social media platforms in Indonesia as of January 2017 are Youtube (49%) and by Facebook (48%). The next position was occupied by Instagram (39%), Twitter (38%), Whatsapp (38%), and Google (36%). The rest is occupied sequentially by FB Messenger, Line, Linkedin, BBM, Pinterest, and Wechat [9]. Social media as a means for businesses to open and widen communication with millions of people about their products and have created new marketing opportunities. In this study, there are 3 social media that are most widely used by businesses. These social media are Whatsapp, Facebook and Instagram.
A. Facebook
According to data from ‘We are Social’, Facebook is the most widely used platform in Indonesia after Youtube. MSME business actors prefer to use Facebook rather than Youtube because the process of making graphic media or photos on Facebook is not as complicated as creating video content on Youtube. Through the Facebook platform, business people market their products with their respective creativity. As an example in Figure 7, is a Facebook account of one of the cassava processed cassava in Kampong Getuk Salatiga. On this Facebook account, this business does marketing by creating a photography competition for its products. There were several participants who took part in this competition so that it became an arena for the promotion of these business products. In this way, these HBEs products can be promoted to the public.

![Figure 7. Facebook page.](image)

B. Instagram
Instagram is the third most widely used social media platform in Indonesia after Facebook. As with Facebook, Instagram management process is not complicated, only requires graphics and interesting sentences. In figure 8 is one of the Instagram accounts of one of the metal craft HBEs (copper and brass) in Tumang Village, Boyolali. The use of Instagram is very helpful for business owners in marketing. Many of their customers come from any other regions who know about this business through social media. (Figure 8).

![Figure 8. Instagram for marketing.](image)
C. Whatsapp

Whatsapp is an application that is owned by almost all businesses in this study. This Social Media is used to socialize with buyers and also fellow business people. At HBEs which has a community or cooperative, business actors have groups that are used as a medium of communication and discussion.

3.6.2 Website

According to Yuliana (2000) the purpose of companies building commercial sites on the World Wide Web is to attract new consumers through Web marketing and advertising; improve existing customer service through customer service and Web support functions; develop new marketing and distribution channels based on the Web for existing products; and develop new information from products that can be accessed via the Web [22]. The use of websites on MSMEs is found in Batik Surakarta, Kampung Bandeng, and Tumang Metal HBEs. The website in Surakarta Batik Village is managed by the local government of Surakarta City. This website aims to introduce Kampung Batik Kauman and Kampung Batik Laweyan as a tourist village to attract tourists. Whereas HBE in milkfish processing and HBE Metal is owned and managed individually by business owners.

![Website for HBEs](image)

Figure 9. Website for HBEs.

3.7 Purpose of Internet Use

HBE's use the internet in their business. The main objective of all forms of social media applications is to involve individuals or groups in business and business that lead to profit [7]. The purpose of internet usues as depicted in Table 3 below.
Table 3. Purpose of internet use.

| Purpose of internet uses                                                                 | Kampong Bandeng, Semarang | Kampong Getuk, Ledok-Salatiga | Metal Craft Village, Tumang Village, Boyolali | Krompong Banjir, Boyolali | Kampong Banjir, Laweyan dan Kauman, Surakarta | Kampong Lontong, Banyu Urip Lor-Surabaya |
|----------------------------------------------------------------------------------------|----------------------------|-------------------------------|-----------------------------------------------|--------------------------|-----------------------------------------------|------------------------------------------|
| Searching for information (eg knowledge about raw materials, innovative product ideas, production processes, marketing in similar businesses or not) | ✓                          | ✓                            | ✓                                            | ✓                        | √                                            | X                                        |
| To Interact with buyer suppliers, customers or coworkers via email / FB / BBM / WA / Line / etc. | ✓                          | ✓                            | ✓                                            | ✓                        | √                                            | X                                        |
| Marketing home business products / services through social media via email / FB / BBM / WA / Line / Instagram / etc | ✓                          | ✓                            | ✓                                            | ✓                        | √                                            | X                                        |

3.8 The Internet Using

The use of the internet in HBE is a very useful innovation. Turning on Innovation for HBE allows information technology to have several advantages [13]. The advantages are: ease of sale and purchase transactions, expanding information to develop business, creating sustainable marketing channels, increasing short-term revenue and long-term sales, reducing advertising and marketing costs, creating competitive advantage, ease of promotion across social media platforms, increasing brand popularity and product, introduction of organization or company for ease of communication. The main purpose of all forms of social media applications is to involve individuals or groups in businesses and businesses that generate profits. [7][17][13]. In this HBE case study, there are several benefits that businesses get. These benefits are summarized in the following table 4.

Table 4. Effect of internet.

| Case      | Effect of Internet Use                                                                 |
|-----------|----------------------------------------------------------------------------------------|
| Semarang  | Improve marketing and revenue, facilitate the communication system with customers, strengthen the relationship of the community / cooperative, |
| Salatiga  | Increase marketing and income                                                          |
| Boyolali  | Improve marketing, knowing new innovations, strengthening the relationship of the community / cooperative, facilitating the communication system with customers |
| Surakarta | Improve marketing, increase batik village visitors as tourist destinations              |
| Surabaya  | Due to the lack of internet use, the effects seem also absence                           |

4. Conclusions

The effect of using technology is one of the external supporting factors in the development of HBE. The impact of technology known through the application of a digital economy. The use of the internet or social media in HBE provides benefits: ease of buying and selling transactions, expanding
information to develop business, creating sustainable marketing channels, increasing short-term revenue and long-term sales, reducing advertising and marketing costs, creating competitive advantage, ease of cross-platform promotion social media, increasing the popularity of brands and products, the introduction of organizations or companies to the ease of communication. The main purpose of all forms of social media applications is to involve individuals or groups in business and business that lead to earning a profit [7][17][13]. This is appropriate with the findings of this study. Indonesia as developing country has used the internet in Home-based enterprises (HBEs) widely in their business. The use of the internet has provided benefits for the development of HBE in Indonesia.

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