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# Innovation and Commercialization of Indonesian Traditional Food in the Industrial Era 4.0

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## ABSTRACT

The industrial revolution 4.0 considers an information technology-based human life. In this practical modern era, the choice of food types has been very diverse. Consuming modern food (fast food) has been a common choice for urban community with busy activities. In addition, restaurants that sell (Indonesian) traditional food were hard to find. Time consuming or less practical to prepare the food was the most possible reason of the decrease in the consumption of this kind of food. This phenomenon encourages efforts to improve people's attention towards this traditional food to conserve its existence by diversification of the traditional food. It is important to introduce and incorporate Indonesian traditional food in industries, in response to the challenges of the industry's revolutionary era. This research is an exploratory study with a mixed method approach. The population in this study was small and medium size enterprises (SMSE) in Semarang city, Indonesia. Fifty SMSEs were involved in this study, with various traditional food products for sale such as Batagor, Pecel, Kupat Tahu with vegetables, Rujak, Lunpia, Rendang, Gudeg, Getuk, etc. A 12% of micro small and medium size enterprises (MSMSE) of traditional foods improved the quality of the produced food through a product innovation, whereas a 20% of SMSEs through a process innovation. Furthermore, marketing and organizational innovation were done by 78% and 4% SMSE, respectively. The traditional food producers showed a low level of innovation readiness, indicating their incapability in the implementation of innovation. Supports from many parties were needed to maintain the existence of the traditional food in their competition with the modern ones.

**Keywords:** commercialization; innovation; industrial era; Indonesian traditional food.

## 1. INTRODUCTION

We are now at the 4.0 Industrial Revolution era. In this era, everything is related to industrialization. It stimulates the advancement of science and technology with the Internet of Things (IoT) and its supporting technology to the Cyber-Physical Systems (CPS) backbone and advanced machines used as promoters for optimizing production circuits. Such progress crosses the boundaries of the organization and territory, consisting of agility, intelligence, and networking. This scenario triggered the efforts of the industry actors (including food industries) to preserve.

Indonesia is rich in natural resources with various biodiversity. The combination of this biodiversity with ethnics, cooking arts, cultures and regions would produce a remarkable diversity of food. Indonesia is well-known as the largest gastronomic kitchen in the world, that could potentially promote the traditional food, beverages and culinary industries. Traditional food is a cultural phenomenon. Food is not merely to sustain life, but also to preserve culture (Dewi, 2011). Traditional food today has been very rare because of the time changing. Some people think that traditional foods are outdated delicacies and began to move on to a modern life. An innovation to preserve the existence of Indonesian traditional food is of importance.

Innovations could promote the economy growth. The countries in the 1-20 ratings measured by the Global Innovation Index (GII) turned out to be linear with their shipping revenue. Indonesia currently ranks 87 out of 127 countries. From several indicators of the progress of a country, Indonesia is at a low level. It was reported that over the past few years, Indonesia's economy has slowdown. To address the ongoing transaction deficit, the most potent way is to increase the export of value-added products and services, not only the export of raw commodities. The greatest obstacle to realizing this is the low national competitiveness. It reported by the World Economic Forum (WEF), Indonesia was ranked at 41 (in 2016), declining compared to the previous year, which was ranked at 37 and 34 in 2015 and 2014, respectively.

Food industries have been the largest contributor to national economy. In order to establish sustainable and systemic national capabilities, fundamental structural efforts are necessary to enhance the technological innovation capabilities and support the national industry. Innovation is needed to conduct interaction and coordination, as well as to build the network. The innovation ability needs to be directed, prioritized, and supported by policies controlling with definite and measurable targets with the support of human resources, funds, infrastructure, incentives and continuously implemented. Generating new innovations is very important for the current economic transformation, as it enables the continuity of a more long-term economic growth. This paper reveals the innovation of MSMSEs and SMSEs in Semarang, Indonesia to enhance the commercialization of Indonesian traditional food. The innovation observed was in term of the product quality, process, marketing and organizational innovations.

## 2. METHODS

This research is an exploratory study with a mixed method approach according to Johnson et al. (2007). It is a combination of qualitative and quantitative research. Qualitative research was conducted with the observation method and visual research by Sanoff (1991). Further tests were conducted according to the recommendation from Stojanovi et al. (2010) with simplifications using digital questionnaires to facilitate the retrieval of data. Such modified could be called as a hybrid data collection.

50 out of 5,327 SMSEs in Semarang, Indonesia produced various traditional food products such as Batagor, Pecel, Kupat Tahu, Rujak, Lunpia, Rendang, Gudeg, Getuk etc. were involved in this study. The types and sources of data used were primary and secondary data. The data collection was done through documentation, observation and interviews. The collected data was analyzed using various techniques, both textual and contextual, domain analysis and context analyses. The resulting data were displayed in a narrative form in various ways such as descriptions, ethnography, and reflection in depth with thematical, textual, contextual and interpretative analytical techniques.

## 3. RESULTS AND DISCUSSION

The Industrial Revolution of 4.0 has gained much attention currently. This Era will also disrupt various human activities, including in the field of science, technology, and the arts, without excluding the field of education (Suwandi, 2018). We are accustomed to online transactions such as ticket bookings, hotels/inns, tour packages, buying household appliances, general and special needs, books, and more. Such conditions have posed significant social and economic influences. Technology is therefore one of the main reasons why incomes have stagnated, or even decreased (Schwab, 2016). For a majority of the population in high-income countries, the demand for highly skilled workers has increased while the demand for workers with less education and lower skills has decreased (Schwab, 2016). This raises a kind of adage dividing low-skill/low-pay and high skill/high-pay segments.

### 3.1. Innovation and Commercialization of Indonesian Traditional Food

Indonesian traditional food has been culturally in Indonesian society, concentrated with local traditions (Muhilal, 1995), giving rise to certain sensory experiences with high nutritional value (European Communities, 2007). Traditional foods are commonly consumed since generations, consisting of dishes that correspond to human tastes, not contrary to local religious beliefs, and made from locally available ingredients and spices (Sastroamidjojo, 1995). Traditional food is often eaten by ancestors up to today's society (Almli et al., 2010) or consumed by specific ethnics and regions, processed based on a hereditary recipe (Hadisantosa, 1993). The raw materials used are from the local area so that the food produced is also according to the taste of society. Therefore, Indonesian traditional food is all kinds of authentic Indonesian food (and drinks) made and processed using locally sourced ingredients and characterised by the local regions. Traditional food demonstrates the characteristics of an area and the value that exists within the area (Aprile et al., 2012; Krystallis et al., 2007; Perrea et al., 2015). It is formed by years of developmental and adjustment processes with the types of existed foodstuffs as well as the form of local activities. The attraction of food such as flavor, color, shape, and texture, plays an important role in assessing the food prepared (Soekarto, 1990).

In this practical modern era, urban community with busy activities intends to choose modern food (Mufidah, 2012). This phenomenon can also be seen from the emergence of various fast food stalls. It has been found that the restaurants selling Indonesian traditional food were very rare due to the decrease of people's interest towards the traditional food. An innovation in the commercialization of Indonesian traditional food is important to gain people's interest.

Innovation is the spirit of knowledge-based economy (KBE). The knowledge and information revealed as the key to economic growth in KBE, actually is materialized in the innovation. An innovation is defined as a research, development and/or engineering that aims to develop practical applications of new science value, or a new way to apply existing technology into products or production process. An innovation could involve the implementation of a new product or a result of a repair (in the form of goods or services), or a new marketing process, or method, or a new organizational method in business practice, the location of the organizational work or in an external relationship. The minimum requirement for an innovation is a new (or significantly better) product, process, marketing or organizational method for the company. Innovation activities are all rare-scientific, technological, organizational, financial and actual commercial or intended for the implementation of innovation. Innovation activities also include R&D that are not directly related to the development of certain innovations.

### 3.2. Product Innovation of Traditional Food

Product innovation is an innovation of new goods or services or significantly better in terms of their characteristics or for certain uses. This includes significant changes in technical specifications, components and materials, software used, user convenience or other functional characteristics. Product innovation can use new knowledge or technology, or it can be based on new uses or a combination of existing knowledge or technology.

Based on the results of the study, of the 50 samples there were only 6 samples (12%) that

had innovated the products. The products were Getuk, Rendang and Tempeh chips. Getuk has been produced with various flavors with various toppings such as chocolate, tiramisu, taro, matcha, etc. In addition to meat-based Rendang, lung- and jengkol-based Rendang were also produced. In the case of Tempeh chips, it was produced in various flavours such as Balado, BBQ and cheese.

### 3.3. Process Innovation of Traditional Food

Process innovation is the implementation of new or better production or shipping methods. This includes significant changes in engineering, equipment and/or software. Process innovation can be intended to reduce the production or the shipping costs per unit, improve the quality, or produce or ship a new product or a significantly better product.

It was found that of the 50 samples there were only 10 samples (20%) that innovated the process. Rendang and Gudeg have been packaged in cans. Batagor was also packaged using a vacuumed packaging. It could maintain the product quality in term of durability and lifetime. The production of Getuk has used a large capacity mixer. It allowed a low energy process and a more hygienic product. Moreover, Bandeng Presto (milk fish cooked by reduced pressure) was prepared using a high pressure-low temperature machine. However, there were still many traditional food industries using makeshift tools and packagings.

### 3.4. Traditional Food Marketing Innovations

Marketing innovation is the implementation of new marketing methods that involve significant changes in product design or packaging, product placement, promotion or product prices. Marketing innovation is aimed at better targeting customer needs, opening new markets, or positioning the company's products in the market aimed at increasing company sales. There have been many traditional food industries that utilized online marketing through social media and marketplaces. Of the 50 samples there were 39 (78%) that have used online marketing such as social media (WhatsApp, Instagram and Facebook).

### 3.5. Organizational Innovation of Traditional Food

Organizational innovation is the implementation of new organizational methods in company business practices, organizational work locations and external relations. Organizational innovation can be aimed at improving company performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus worker productivity), gaining access to non-traded assets (such as uncodified external knowledge) or reducing supply costs.

Based on the results of the study there were still many samples that do not carry out organizational innovation. The MSMEs involved in this study have not been organized either in terms of finance, HR, production and marketing. Of the 50 samples there were only 2 (4%) who had carried out organizational innovation through the use of an android-based bookkeeping and online stock recording system. The level of innovation and commercialization of traditional food was relatively low.

In the industrial revolution era 4.0, the competition with modern food is getting tougher and at the company level, it should also be seen from the technological and market dimensions. Food diversification policy has been launched by the government since 1960. So far, the results are still not satisfactory. Many aspects need to be addressed to implement food diversification. Starting from the cultivation of food plants to eating culture. Factors inhibiting the implementation of food diversification are not developing upstream and downstream linkages, lack of appreciation of local food, low income and purchasing power, development of policies and science and technology that are too biased in rice (Gardjito et al., 2013). The factors driving the implementation of food diversification are the spirit of back to basic based on local resources, all-round modern lifestyle with limited time, research results in the field of cultivation and postharvest, and agroindustry development at the local level. If it is formulated, the food diversification strategy is truly based on local strengths and conditions.

## 4. CONCLUSIONS

The industrial revolution era 4.0 raised hopes and challenges that deserved to be faced and overcome. Traditional foods deserve to be introduced and included in the realm of industry, in response to challenges in this era of industrial revolution. However, the readiness of innovation of traditional food producers was not yet able to implement innovation. As the result, it still needs the support of many parties to continue to maintain the existence of traditional food amid competition against modern food.

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