

# INDUSTRIAL REVOLUTION 4.0 BASED ON CREATIVITY ARTS AND CULTURE

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# INDUSTRIAL REVOLUTION 4.0 BASED ON CREATIVITY ARTS AND CULTURE

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## ABSTRACT

The industrial revolution is a sign in history that changes all aspects of everyday life. In its development, society in the world has undergone industrial revolution three times. The first industrial revolution took place when human equipment was replaced by machines. The second industrial revolution occurred when the mass production based on the division of labor introduced. The third industrial revolution occurred with the use of electronics and information technology for production automation emerged. The fourth industrial revolution is marked by the emergence of the Internet of Things (IoT) where everything is a virtual world that connects people, machines and data. The purpose of this study is to see the creative arts and cultures that can be developed based on the fourth industrial revolution. The method used is descriptive qualitative to provide an overview of industry based on artistic and cultural creativity that can be developed in the industry revolution 4.0. The results obtained are artistic and cultural creativity to support the industry revolution 4.0 in Indonesia are quite a lot and varies that it is worthy to be developed.

**Keywords:** Industrial Revolution, Creativity, Art, and Culture,

## INTRODUCTION

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President of the Republic of Indonesia Ir. H. Joko Widodo in a speech at the opening of the Industrial Summit 2018 and the launch of Making Indonesia 4.0 in Jakarta said that Industrial Revolution 4.0 is a great opportunity if prepared, planned and anticipated well. He also mentioned that the impact of the Industrial Revolution 4.0 was 3000 times compared to the impact of the first industrial revolution about 200 years ago. The president is convinced that the Industrial Revolution 4.0 is not a threat but a great opportunity to prepare, plan, and anticipate well (Susilo, 2018). In the opening of the Industrial Summit 2018, President Joko Widodo also revealed that the government has grouped five major industries prepared for the Industrial Revolution 4.0, namely food and beverage, textile, automotive, electronics, and chemical industries. The five industries are examined to contribute more job vacancies and new technology-based investments (Erdianto, 2018).

At the inauguration of the Campus Convention XIV and the annual meeting of XX Forum of the 2018 Rector of Indonesia held at Baruga Building, Andi Pangeran Pettarani, Hasanuddin University, Makassar City, President Joko Widodo said that digitalization, computing power and analytic data have spawned surprising breakthroughs in various fields, which disrupted life. It even disrupted civilization, which changed the global economic landscape, national, and regional economic landscape and global, national, and regional political landscape. Global interaction landscape, national, and regional interactions landscape. Everything will change (rzy, 2018).

In a lecture presentation by Bandung Institute of Technology (ITB), Richard Mengko quoted from A.T. Kearney, reveals the history of industrial revolution until the end touching the 4th generation. The four phases of the evolution of the industry from the past to the present (Il, 2018):

1 End of the 18<sup>th</sup> century

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The first industrial revolution took place at the end of the 18th century marked by the discovery of a mechanical loom that used the first hydropower and steam in 1784. The work tools that originally relied on humans and animals were eventually replaced by machines.

2. <sup>5</sup> Early 20<sup>th</sup> century

The <sup>25</sup> second industrial revolution occurred in the early 20<sup>th</sup> century with the introduction of mass production recognition based on division of labor. The first production line involves slaughter houses in Cincinnati in 1870.

3. <sup>5</sup> Early 1970s

The third industrial revolution occurred in the early 1970s marked by the use of electronics and information technology for production automation. The emergence of the first Programmable Logic Controller (PLC), which is the 084-969 modem makes the industrial machine no longer controlled by humans which impacts production costs becoming cheaper.

4. Beginning of 2018

The fourth industrial revolution (4.0) is characterized by a cyber-physical system where the industry has started to touch the virtual world, in the form of human connectivity, engine and data, all already everywhere. This term is known as the Internet of things (IoT).

Chairman of the Republic of Indonesia House of Representative, Bambang Soesatyo, in the "National Discussion of Industry Revolution 4.0: Challenges of the Future of Workers" held at the Central Board of Golkar Party Hall on Monday 7<sup>th</sup> May 2018 explains the impact of advances in information technology, especially the digitization and the making of robotization the industrial revolution will continue to change the habits of people in their lives. He also give example of online shopping that makes it easy to buy household needs only through mobile phones and so on (Sabran, 2018).

I. **LITERATURE REVIEWS**

In a lecture presentation by Bandung Institute of Technology (ITB), Richard Mengko quoted from A.T. Kearney, reveals the history of industrial revolution until the end touching the 4th generation. The four phases of the evolution of the industry from the past to the present (II, 2018): 1) End of the 18<sup>th</sup> century; 2) Early 20<sup>th</sup> century; 3) Early 1970s; 4) Beginning of 2018. Creativity is the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints) (Sternberg & Lubart, 1999).

## II. PROBLEM STATEMENTS

How are the forms of Indonesian art and cultural creativity in the industrial revolution 4.0?

## III. RESEARCH METHOD

The research method used is descriptive qualitative to provide an overview of the industry based on artistic and cultural creativity that can be developed in the industry revolution 4.0.

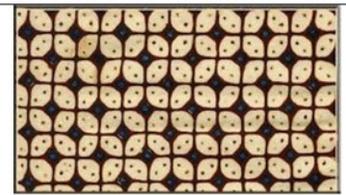
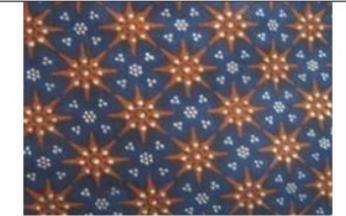
## IV. RESULT

Art and culture is a hereditary heritage given by the ancestors of a nation. Indonesia, which has 17,504 islands and 300 ethnic groups or more precisely 1,340 ethnic groups according to the 2010 BPS census, certainly has a lot of art and culture.

### **Batik**

*Batik* many exist and spread throughout Nusantara. Each region has different *batik* motifs. Yogyakarta has *batik* motif *kawung*, motif *parang kusumo*, *truntum* motif, *tambal*, *pamiluto*, *sidomukti*, *sidoasih*, *wahyu tumurun*, *ceplok/grompol*, *lereng*, *nitik* motif, *semen* (Batikazizah, 2016).

Table 1. Yogyakarta *Batik* Motifs

 <p style="text-align: center;"><i>Kawung Motif</i></p>	<p>Used : As Long Cloth            Element Motifs : Geometric            Philosophical Meaning: This Yogyakarta <i>batik</i> motif is commonly used by the king and his family as a symbol of courage and justice</p>
 <p style="text-align: center;"><i>Parang Kusumo Motif</i></p>	<p>Used : As cloth in ring exchange(engagement)            Element Motifs: <i>Parang, Mlinjon</i>            Characteristic : <i>Kerokan</i>            Philosophical Meaning: <i>Kusumo</i> means bloomed flower, expected the wearer looks beautiful</p>
 <p style="text-align: center;"><i>Truntum Motif</i></p>	<p>Used : At weddings            Characteristic : <i>Kerokan</i>            Philosophical Meaning: <i>Truntum</i> means to lead, hoped that the parents can guide the future bride and groom.</p>
 <p style="text-align: center;"><i>Tambal Motif</i></p>	<p>Used : As Long Cloth            Element Motifs: <i>Ceplok, Parang, Meru, etc</i>            Characteristic: <i>Kerokan</i>            Philosophical Meaning: There is a belief when sick people use this cloth as a blanket, the pain quickly healed, because <i>tambal</i> means to add a new spirit</p>

 <p><i>Pamiluto Motif</i></p>	<p>Function : As Long Cloth during engagement          Element Motifs: <i>Parang, Ceplok, Truntum</i>, etc          Philosophical Meaning: <i>Pamiluto</i> is derived from the word "<i>pulut</i>", means adhesive, in Javanese means <i>kepilot</i> [pulled].</p>
 <p><i>Sidomukti Motif</i></p>	<p>Function: As a cloth in marriage ceremony          Element Motifs: <i>Gurda</i>          Philosophy: It is expected that the wearer is always in well off condition and happiness.</p>
 <p><i>Sidoasih Motif</i></p>	<p>Used : <i>Temanten Putri</i>(used on wedding night)          Element Motifs: <i>semen</i> derived from the word <i>semi</i>          Philosophy: Two souls become one</p>
 <p><i>Wahyu Tumurun Motif</i></p>	<p>Element Motifs: The flying crown pattern that became the main motif, symbolizes the holiness.          Philosophy : This Yogyakarta batik motifs reflect the hope that the wearer gets guidance, blessings, grace, and the abundant grace of Almighty God. Hope to achieve success in achieving goals, position or rank. Whereas in a special case such as marriage, this motif implies the blessing of inner life in married life, harmony and lasting and eternal happiness. In it the meaning of this household life that makes the motif of <i>wahyu tumurun</i> selected as a special motif often</p>

	worn in the traditional wedding ceremony of Java
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This *batik* motif can be applied in various industries. In addition to clothing, this motif is used as decoration on other products. Here is an overview of the application of Yogyakarta *batik* motifs on existing products.



Picture 1. Application of *batik* motifs on various products



Picture 2. A combination of *batik* motifs by Darbotz and Ykha Amelz

Darbotz (graffiti artist) and Ykha Amelz (illustrator) became the first two local artists who had the opportunity to design a limited edition of Guinness One Indonesia using *batik* motif. Darbotz and Ykha Amelz also started the design process by first studying various motifs and

philosophy of *batik* in a workshop for one month. Both admitted it is the first time to draw with the theme of *batik*. "After doing the research, I chose *batik parang* motif. Coincidentally *parang* symbolized the water, and I got the element of water and fire, and there was also another visual that added in accordance with my style. Although the demands must be *batik*, there is my ego here," said Darbotz in interview with Liputan6.com, at Applebee's, Plaza Senayan, Jakarta recently (Nadya, 2017).

### Food and Beverage Industry

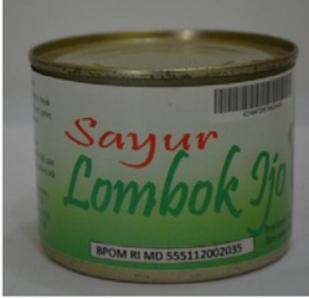
Regional food and beverage type in Indonesia are quite a lot. In fact there are some foods that have been well known by the people outside the country such as ayam betutu come from the area of Bali, gudeg originating from the area of Yogyakarta, and so forth. The traditional foods of this region are in great demand by the foreign community because it is considered to have a distinctive taste. In the 29th Trade Expo Indonesia (TEI) held at the Jakarta International Expo (JIExpo) on October 8-12, 2014 themed "Towards Green Business", placed processed food products to be prima donna. This product is increasingly appreciated after able to record export increase up to 12,76%. The buyers appreciate in terms of quality, packaging, up to the story telling behind the creation of the product. The export value of Indonesian processed food products in 2013 reached US \$ 4.63 billion. While the export value in the period of January to July 2014 amounted to US \$ 2.98 billion or an increase of 12.76% compared to the export value of the same period in 2013. Viewed from the trend of export growth of processed foods during the period 2009-2013, this product is experiencing positive growth of 15.43% per annum (Baihaqi, 2014). According to data from the Ministry of Industry, the value of processed food export transactions in 2017 was recorded at USD 2.61 billion, while for April 2017 it was USD 2.44 billion. As for the same period in 2016, recorded processed food industry recorded exports of USD 1.99 billion. Data from the Ministry of Industry also shows that the total export of manufacturing industry is still in positive trend. In month-to-month, the manufacturing industry grew by 8.72%, while the year-on-year increase was 18.09% (Kertiyasa, 2017).

On 8-10 september 2017, a traditional food product exhibition was held which was the socialization and branding of the Center for Traditional Food Packaging Technology "BPTBA

LIPI" held at *Taman Pintar* Yogyakarta. There are at least 42 types of traditional culinary food recipes that have been packed with traditional food packaging technology that has been through the stage of traditional food packaging research since 2004 and began to be used by the community since 2008 (Handito, 2017). Here are traditional food products that have been using packaging technology.

Table 2. List of Canned Products  
(Source :LIPI, 2015)

Product Name	Description
	<p><i>Gudeg</i> has been so strong to be a typical culinary icon Yogyakarta. But as a wet culinary product, <i>gudeg</i> storage does not survive in the long term. So the packaging technique can be an alternative model of choice. The preservation technique used is with physics so that the material is completely natural without any mixture of chemicals. <i>Gudeg</i> stored in a tin can last up to one year.</p>
	<p><i>Mangut</i> catfish is a typical food from the region of Bantul, Yogyakarta. Catfish cooked with mangut spice that is dominated by gravy from coconut milk</p>

	<p><i>Sayur lombok ijo</i> can is a typical food in Wonosari area, Yogyakarta. <i>Sayur lombok ijo</i> is a vegetable consisting of green chili and <i>tempe</i> plus sauce and other spices.</p>
	<p><i>Tempe</i> is a fermented product of soy that is popular among all the people in Indonesia because of its cheap price. <i>Tempe</i> canned curry is packed with cultivated in a hygienic and durable curry spice.</p>
	<p>.Sea snails are members of the gastropod <i>mollusca</i> class of soft animals that have shells. <i>Keong Usal</i>(<i>Turbo argyrostomus</i>) is one type of sea snail from <i>turbinidae</i> tribe that has not been used as a value-added product. So far the usage of <i>Keong Usal</i> only in the form of culinary dish that is found in the coastal area of Gunung Kidul Regency.</p> <p>Sea snail used is a type of sea snail "<i>usal</i>" (<i>Turbo argyrostomus</i>, <i>Linnaeus</i>) originated from the Gunung Kidul beach. Developed 2 kinds of processed products namely <i>rica-rica</i> and <i>tongseng usal</i>. Stages of canning include precooking, exhausting, sterilization and quarantine.</p>



Arts and culture are quite numerous and diverse in Indonesia, very supportive in the development of industrial revolution 4.0. Art is not only visual art but also other performing arts and other arts. The local arts that are present in community groups which are further developed and passed down through generations and live in a sustainable manner in the community which further becomes the icon of the region need to be continuously preserved and developed. This is important because local art and culture that flourish in society can become the brand ambassador for the region. Like for example in Bali which has traditional art of dance *barong* and *rangda* has become brand ambassador for Bali and become identity of Bali wherever located. Even art and packaging products utilize that identity in their products. The picture below shows the utilization of brand ambassador *barong* in its product.



Picture 3. *Barong* as brand ambassador

Note: a. T-Shirt; b. *Pecel* Seasoning; c. *Pie Susu Bali*; d. Sticker; e. Handbag; f. *Arak Bali*

In general it can be said that the arts and culture that exist in Indonesia can be a supporter in government efforts in the face of industry revolution 4.0. The Indonesian government needs to give more serious impetus and guidance to the artists and culturists in order to continue to develop the creativity that has economic value so as to improve the living standard of the community.

#### V. DISCUSSION

In the opening of the Industrial Summit 2018, President Joko Widodo also revealed that the government has grouped five major industries prepared for the Industrial Revolution 4.0, namely food and beverage, textile, automotive, electronics, and chemical industries. *Batik* many exist and spread throughout Nusantara. Each region has different *batik* motifs. Regional food and beverage type in Indonesia are quite a lot. In fact there are some foods that have been well known by the people outside the country such as ayam betutu come from the area of Bali, gudeg originating from the area of Yogyakarta, and so forth.

## VI. CONCLUSION.

The industrial revolution is a sign in history that changes all aspects of everyday life. In its development, the world community has undergone industrial revolution three times. The first industrial revolution took place when human equipment was replaced by machines. The second industrial revolution occurred when the introduction of mass production based on the division of labor. The third industrial revolution occurred when the emergence of the use of electronics and information technology for product automation. The fourth industrial revolution is marked by the emergence of the Internet of Things (IoT) where everything is a virtual world that connects people, machines and data.

The art and cultural creativity that is quite a lot and diverse in Indonesia to support the industry revolution 4.0. worthy to be developed. Various art and culture owned by the community can become the brand ambassador of the area so as to bring the identity for the region. The Indonesian government needs to give more serious impetus and guidance to the artists and culturists in order to continue to develop the creativity that has economic value so as to improve the living standard of the community.

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