

Digital Society Ecosystem Impact on Creative Industry

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Abstract Industry 4.0 phenomenon has emerged since many technological breakthroughs developed in the past decades. Human well-being behavior are basically influenced by the digital technology. The current customers incline the need for customized products. This situation drive the production paradigm shift from the mass production to the individual production. This paradigm shift force companies to own more resources. Companies' collaboration is a way to win the competition. Industrial revolution era bring the fact that dominant economic activity is coming from a strong business ecosystem. The major impact of digitalization is faced by the creative industries, an industry priority and a 'laboratory' for studying economic transformation and modern society. This paper will review the digitalization in industry 4.0 era, business ecosystem and society shift, and the digitalization impact on creative industry.

Keywords Industry 4.0; business ecosystem; society shift; creative industry

1. Introduction

The modern market is a dynamic system with the need for permanent adaptation. The new type of industrialization phenomenon known as Industry 4.0 has emerged as a result of many technological breakthroughs in the past decades. These breakthroughs have been considered as a potential game transformer in the creation of new business styles [1].

Technology has brought major changes in the way information is disseminated. The speed and quality of information transmission shift the economy model [3]. The term of 'digital transformation' related to the emergence of various technological innovation forms, both in the industrial and social domains [2]. Digitalization is discussed relatedly to the broader social change [4]. The social aspects within the ongoing transformation have a significant impact on the innovation and future development pace in the business environment [2]. The way human get news, workplace choices, work environment design, customers' relation, and stakeholders in how developing products and how these products are consumed are basically influenced by digital technology. Therefore, not recognizing the potential trends and take advantage of social innovations that will emerge in new environments will brought to a huge loss [1].

In other hand, the complexity and unpredictability of human and social behavior leads to business sustainability problem. Sustainability is a strategy that helps businesses to meet current requirements without reducing their ability to meet human needs in the future [2]. Social change along with the digital transformation drive the production paradigm shift from the mass production to the individual

production [3]. This shift is driven by the circumstances of current customers on various industrial entities underline the need shift for customized products with certain requirements, enable more efficient resource utilization, and provide more personal satisfaction [1]. A business might achieve sustainability by serving the needs of individuals from different stakeholder constituencies [2]. This production paradigm shift force companies to have more resources [3] and pushed the conventional business relationship to reevaluate their partnership. Consequently, a new business style is created based on the resource exchange. Collaboration in inter-organizational networks make it possible to generate benefits through sharing resources, knowledge, competencies, to leads the shared goals and benefits achievement [3].

Industrial revolution era has designed us to live with the fact that the dominant economic activity is coming from a strong business ecosystem. The collaborative work of distributed entities important for the overall productivity and opening up more personal creativity [1]. The challenge is how to make large scale socio economic impact.

Creative industries are facing the major impact of digitalization. These industries are constructed upon sets of sectors which are bound together through symbolic and aesthetic values. Previously considered a frivolous and luxury item, the creative industry is now considered an industry priority and a 'laboratory' for studying economic transformation and modern society [4].

This paper will review the digitalization in industry 4.0 era, business ecosystem and society shift, and the digitalization impact on creative industry.

2. Digitalization in Industry 4.0 Era

The industry 4.0 has attracted international concern among technology-focused producers. In the U.S., industry 4.0 is commonly known as the internet of things, advanced manufacturing, and/or smart manufacturing industry. The industry 4.0 development is now in a path without returns. This situation will be a competitive challenge for companies interested in long-term survival with adequate performance. Therefore, the current business environment companies should be prepared for the new competitive challenges [5].

Several terms are considered as the technologies enabler of industry 4.0, including [5]:

a) IoT

The technology which provides connectivity among machines, sensors, mobile, human devices, and making data more accessible.

b) Big data

An environment to store a large unstructured, structured, and semi-structured data from various sources. This environment is connected through the IoT. The purpose is to provide fast and accurate information to make decision.

c) Cloud computing

A remote and fast access data storage from the IoT.

d) Cyber physical systems

A realtime system combined by computational approaches and statistics to extract data from physical systems with the goal of indicating the best decision.

e) Autonomous robots

The flexible, intelligent, and cooperative robots which interact with each other, interact safely with humans, learning, and making decision.

f) Additive manufacturing

This technology comprises depositing a material layer-upon-layer.

g) Augmented reality

This technology allows human to interact with virtual objects.

h) Artificial intelligence

This technology rationalises, represents, and manages knowledge to achieve the proposed goal.

The traditional business processes are indicated in the digital transformation through this term [6]. In the digital transformation, humans and machines are tend to work together. The humans and machines hybrid in industry 4.0 is shown in the figure 1.

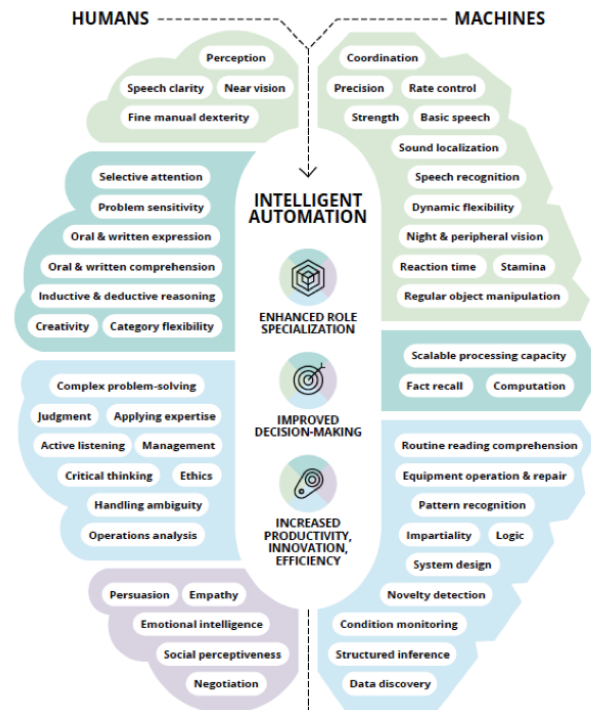


Figure 1. Humans and Machines Hybrid

Digital transformation is defined as the accumulation of many digital advancements to improve business efficiency and productivity [2]. The digitalization process shift the business model by changing the value creation chain for customers (value propositions) and the value captures (money making). Thus, the industry 4.0 is not only bring effect on the production and products, but also on the business model. The industry revolution also enables new markets creation by reinventing new way to do things. This impacted on the more customer oriented and more efficient business model along with the connectivity and analytical capabilities increasement. The major effect is the mass customization production emergence. In this situation, sell the product accessibility and functionality will be the main concept instead of sell the real products [6].

3. Business Ecosystem and Society Shift

Modern solutions and technologies in the new industrial revolution enable the new business model adoption. This business model is based on the exchange and optimal use of available assets. Innovative information technology and network connections enable productivity and business process efficiency increasement. Thus, the business are ready to conduct tasks related to the stream of physical resource flow and information exchange. This impacted on the production increasement with the same resources. The production shift from mass to individual is known as the changing paradigm of production where the resources exchange is justified [2].

Customer is not involved in the mass production, but in the case of mass customization, customer determines the final product. This situation is fit to the new objectives

related to the flexible market activities and the assumptions that no entity has the all resources needed to achieve market objectives. Hence, both of horizontal and vertical collaborations are important for the effective asset management of a company [2].

The new collaborative organization networks supported by the digital technology advancement is known as the digital business ecosystem. In the digital business ecosystem, entities are involved to co-create business value through information and communication technologies. This ecosystem is able to exceed the traditional boundaries of an industry to foster the open collaboration and competition. Digital business ecosystem in many occasion presents the innovative approach to leverage specialized services and technology across various different industries to respond the customer needs [7].

The complexity and unpredictability of human behavior and needs lead to the business sustainability problems. Sustainability is defined as a strategy to help businesses meet the current requirements without reduce the ability to meet the future needs. A business might achieve sustainability by serving the individual human needs from different stakeholder constituencies. The specific needs of different stakeholders including customers make sustainability become a complex issues for managers to identify the match strategy [3].

4. Digitalization Impact on Creative Industry

Creative industries are facing the major impact of digitalization. These industries are first considered as a shallow and luxury item, but recently considered as an industry priority and a 'laboratory' to study economic transformation and modern society [4].

Digital technology is considered as a growth and innovation driver. Digitalization is shaking up creative industries such as film and music publishing fundamentally. Older business models are often held while many new opportunities are depend on the willingness and ability of a company to implement new production tools, recognize the consumption patterns shift, and mobilize institutional gaps to be the rules changer of wider game [4].

Modern technologies in the new industrial era lately allow sharing economy style [3], including in Indonesia. The sharing economy style is a new form of exchange in the world's leading economies which involve significant level of collaboration. This business style contributes to the efficiency of consumption, production of goods and services, cost reduction, waste, and the more humane society [1].

The sharing economy style has a strong business ecosystem since requiring the players' participation to share their respective roles and empower the unemployed assets. In many cases lately, the collaborative work of distributed entities important for the overall productivity and opening up more personal creativity [1]. Hence, the changes through digital technologies are becoming increasingly urgent to be

debated related to the cultural production, entrepreneurial activities, and the nature of creativity [4].

5. Conclusion

In this paper, we conduct a systematic review to understand the digital society ecosystem impact on creative industry. The digitalization in industry 4.0 impacted on the human behavior on purchasing products. The nowadays customer need for the customized product. Creative industry, as the major impacted industry, should move from the mass production to the mass customization paradigm where customers are involved in the production. To win the sustainability, creative companies should collaborate one to another and build a strong business ecosystem to fulfill the specific needs from different stakeholders.

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