The Future Coping Strategies in the Field of Beauty in the Age of the Fourth Industrial Revolution

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Abstract

As the Fourth Industrial Revolution has become the biggest issue all over the world for the recent few years, many different efforts have been made to cope with it in every filed along with a lot of research. However, there has been little consideration or research on analysis, prediction, and new development-oriented alternatives to the Fourth Industrial Revolution in the filed of beauty; for this reason, it is impossible to predict the influence or impact of the Fourth Industrial Revolution on the filed of beauty. Considering that the Fourth Industrial Revolution is evolving more rapidly than any other type of previous industrial revolutions, it is inevitable to make academic discussions about the direction and future coping strategies for the filed of beauty in Fourth Industrial Revolution. On this basis, this study aimed to present new creative, original, and development-oriented future coping strategies unique to the filed of beauty to meet the stream of times.

Keywords: Fourth Industrial Revolution, Beauty filed, Artificial Intelligence(AI), Internet of Things(IoT), Virtual Reality(VR), Device, O2O service, Convergence technology

1. Introduction

The World Economic Forum held in Davos in 2016 defined the Fourth Industrial Revolution as a new wave of technological progress bringing about drastic changes in work styles, human-human and human-machine interaction, and human life. It is explained that the Fourth Industrial Revolution based on the Third Industrial Revolution, which was the digital revolution, may form the era of technological convergence with vague boundaries among digital, biological, and physical spaces. [1] We are expected to face the technological revolution that will fundamentally change our styles of living and working within the huge wave of the Fourth Industrial Revolution, and the size, scope, and complexity of the change is expected to differ remarkably from what mankind experienced before. [2] The Fourth Industrial Revolution is expected to affect us more rapidly than any of the First, Second, and Third revolutions and have different speed and influence from the previous revolutions. In such a big wave of change, it is...
necessary to give deep consideration to the changes related to the Fourth Industrial Revolution in every academic field. As if to reflect it, the Fourth Industrial Revolution has already become the most notable theme of research for the recent few years, with the explosive increase of many different studies on the Fourth Industrial Revolution in every academic field. [3] There is little research on the Fourth Industrial Revolution in the academic field of beauty and no research has been conducted on the future coping strategies for the Fourth Industrial Revolution in the beauty field. This implies that unlike other academic fields, the field of beauty fails to go with the stream of times and to cope well with the Fourth Industrial Revolution, which has already arrived. In this situation, the field of beauty is expected to be left behind in the rapidly changing era of the Fourth Industrial Revolution. It is therefore necessary to present a systematic and specific direction for the changes in beauty practice to keep up with the speed of the Fourth Industrial Revolution and design customized future coping strategies unique to the field of beauty. To answer these questions, first, this study defined and characterized the Fourth Industrial Revolution. On this basis, it aimed to present creative and original future coping strategies unique to the field of beauty to keep up with the Fourth Industrial Revolution.

2. Main discourse

2.1 Fourth Industrial Revolution

To discuss the future direction and future coping strategies unique to the field of beauty, as required by the age of the Fourth Industrial Revolution, for the purpose of this study, it is necessary to review some characteristics unique to the Fourth Industrial Revolution.

2.1.1 Definition of Fourth Industrial Revolution

The World Economic Forum held in Davos in 2016 defined the Fourth Industrial Revolution as a new wave of technological progress bringing about drastic changes in 'work styles, human-human and human-machine interaction, and human life.' It is explained that the Fourth Industrial Revolution based on the Third Industrial Revolution, which was the digital revolution, may form the era of technological convergence with vague boundaries among digital, biological, and physical spaces. [1] This convergence of academic, technological, and industrial fields can rapidly shorten the patterns and cycles of technological innovation and speed up the spread of technologies. Specifically, artificial intelligence (AI), virtual reality (VR), Big Data, the Internet of Things (IoT), robot engineering, and healthcare are expected to appear as key technologies to lead the Fourth Industry; as a result, mankind is expected to experience more drastic changes than before. This phenomenon in general can be defined as the Fourth Industrial Revolution. It can also be said that the Fourth Industrial Revolution is characterized by linking of man, things, and spaces, by automation and intelligence, by the removal of industrial boundaries, and by technological convergence in general through the revolution based on Big Data, IoT, and AI in the 21st century. In other words, the Fourth Industrial Revolution is expected to require complementing the functions of the brain, not physical labor, and superintelligence of things, unlike the First, Second, or Third revolution. [5]

2.1.2 Characterization of Fourth Industrial Revolution

The Fourth Industrial Revolution is characterized by hyperconnectivity and super-intelligence. [6] Hyperconnectivity refers to a phenomenon of thing-thing, human-thing, and human-human connection through the medium of IoT with the rapid improvement in ICT. That
is, the spread of smart devices is expected to consolidate the foundation of networking and make the number of things connected via Internet amount to at least 50 billion by 2020. 'Superintelligence' means a phenomenon of man-made devices surpassing human intelligence. In other words, the Fourth Industrial Revolution is expected to develop with a rapid spread of networks through communication technology based on hyperconnectivity and superintelligence. Furthermore, some tools, such as AI, IoT, and devices, which are equipped with a small but powerful sensor, are expected to make new innovative changes, which we have never imagined, and to change our life fundamentally.

2.2 Future coping strategies for beauty field in Fourth Industrial Revolution

The key words required by the Fourth Industrial Revolution age include artificial intelligence (AI), the Internet of Things (IoT), cloud-based digital technology and robot engineering, drones, devices (3D printers), and virtual reality (VR). [4] It is therefore necessary to introduce new digital technologies, such as AI, IoT, Big Data, and VR, into the field of beauty in the age of the Fourth Industrial Revolution. Since convergence with no inter-field boundary is the key to the Fourth Industrial Revolution age, it is also necessary to build or try to build service, goods, and systems on the basis of convergence technologies.

2.2.1 Digital technology utilization

First, it is necessary to apply AI to the field of beauty. Artificial intelligence (AI) means machine with human intelligence and is generally based on Big Data. [7] AI can be used in the field of beauty; for example, if an application is used to take a picture of the face with makeup, AI can analyze makeup status, score its completion status, and determine where to supplement. Furthermore, it can recommend goods and brands for more complete makeup or even offer makeup skills suitable for individuals’ skin tone or face form. With no temporal or spatial restrictions, AI can give full management anytime and anywhere in the field of beauty, which covers makeup, skin care, and hair treatment. In other words, it can be said that AI is groundbreaking technology the Fourth Industrial Revolution has brought to the field of beauty and the AI-based field of beauty is expected to take one more step forward. Second, it is necessary to introduce virtual reality (VR) to the field of beauty. Virtual reality (VR) is defined as technology that permits one to experience what is possible within a computer software program as if it were reality through human senses, such as hearing and sight, by using special glasses or gloves [7]; it is experience of VR that is most preferred by people in their teens to thirties these days. It is therefore possible to apply VR experience to the field of beauty and employ it as a consumption trend. For example, customers visiting shops can be given chances to have indirect experience of ingredients and properties unique to goods and brands through VR. Then, the customers are allowed to identify emotions and characteristics of each brand through VR experience, which can lead to consumption; if skin care rooms and hair shops introduce such technology and allow customers to have indirect experience through VR before skin care or hair treatment, the customers can have criteria for choosing customized skin care service and hairstyle personally. In other words, it is predicted that using VR experience, which is the key technology in the Fourth Industrial Revolution age, in the field of beauty positively can comprehensively meet both customers' satisfaction and consumption revitalization, which can possibly form the core of the beauty field. Third, it is necessary to use the Internet of Things (IoT) in the field of beauty. The Internet of Things (IoT) refers to the technology or environment that permits real-time information and data sharing via Internet by networking things with a sensor. Actually, efforts are being made to combine AI and IoT in various industrial fields [7]
and they can be used in the field of beauty positively. For example, Big Data made of information about customers' skin can be used to diagnose individuals' skin conditions in combination of IoT technology and recommend customized products, and introducing such technology to skin care rooms is also expected to give customized service suitable for skin status and conditions of individual customers. It is the convergence of AI and IoT that is the future-oriented coping strategy most suitable for the survival of the beauty field in the age of the Fourth Industrial Revolution.

2.2.2 Use of device

Diverse devices are being developed on the basis of technologies specific to the Fourth Industrial Revolution, which has realized all-round intelligence in the 21st century. These devices can be used in the field of beauty positively.

2.2.2.1 LED mask

The most recent trend in the field of beauty is decisively an 'LED mask'. An LED mask is a product applying photo therapy, which uses the principle of photo facilitating biochemical reaction within skin to treat damaged skin, and gives various effects, including anti-inflammatory effects, alleviation of pain, anti-allergic effects, and blood circulation facilitation at local sites, without damage to tissues or eyes through exposure of an LED light source of a specific wavelength to the skin. [8] The device market is drastically expanding in the field of beauty, with exponentially more enterprises releasing LED masks. [9] The use and development of such devices as an LED mask is presented as a vision to be pursued by the field of beauty in the Fourth Industrial Revolution age.

2.2.3 Establishment of new distribution structure

In addition to superintelligence, such as Big Data, AI, and digital, which characterizes the Fourth Industrial Revolution age, service is important as hyperconnectivity to link it to man. This can decisively be combined with O2O service in the field of beauty. O2O—Online to Offline—service means a type of service to connect online to offline. [7] In the Fourth Industrial Revolution age characterized by all-round superintelligence and hyperconnectivity, for example, people can be given service by making a comparative analysis of price among several shops, locating a shop, and making a reservation all at once at home through an application if they want to change their hairstyle. In addition, those who don't bother going shopping for cosmetics or who have no time to visit a cosmetics shop can be given delivery service through such types of service as Beauty Takeout and Beauty Delivery. [7] It can be said that this service is to use the core characteristics of the Fourth Industrial Revolution properly to connect human beings with things.

2.2.4 Convergence technology utilization

What is most noted in the Fourth Industrial Revolution is convergence across academic, technical, and industrial fields. Convergence can be realized between the beauty field and many different sectors; most of all, it is expected to be feasible with biotechnology. For example, genome analysis and a 3D printer can be applied to the field of beauty. Genome analysis is expected to determine innate skin type unique to each person, on which basis it is possible to predict the future. A 3D printer can be used to apply what is widely used in many other fields to various types of structural design for cosmetics. [10] In other words, it enables us to generate
products with various natural colors, shapes, and efficacy and produce ground-breaking beauty products; on the basis of this technology, it is also possible to develop customized goods, instead of the existing uniform ones. [10] Therefore, if genome analysis is used to determine skin type of each customer correctly along with 3D printing to design customized products that meet customers’ skin status and conditions and, furthermore, design products as desired by customers, and even satisfy their emotions, this can be a customized future coping strategy to pursue in the field of beauty in the Fourth Industrial Revolution age.

3. Conclusions

The Fourth Industrial Revolution is a next-generation industrial revolution, which involves innovative changes in up-to-date information and communication technologies, including artificial intelligence (AI), the Internet of Things (IoT), Big Data, virtual reality (VR), and mobile. In particular, the Fourth Industrial Revolution, which is characterized by hyperconnectivity and superintelligence, is expected to spread more rapidly into wider fields than the previous ones and to have a tremendous impact. [11] However, no research has been conducted on the future direction and future coping strategies in the beauty field in the Fourth Industrial Revolution age, which has already started in the 21st century, and the field fails to cope quickly with this situation, contrary to other disciplines. Therefore, this study defined and characterized the Fourth Industrial Revolution, in relation to which a lot of research has already been conducted [4], and, on this ground, largely presented four creative and original future coping strategies unique to the field of beauty to meet the needs of the Fourth Industrial Revolution age. First, it is necessary to positively apply AI, VR, and IoT, which are three core technologies that lead the Fourth Industry on the basis of digital technology, to the field of beauty. Using digital technology in the field of beauty can provide customized goods and service for individual customers’ face form, skin tone, and skin conditions, leading to high customer satisfaction and consumption revitalization. Second, it is necessary to positively use such devices as an LED mask developed on the basis of improved technology specific to the Fourth Industry. The use of a superintelligent device specific to the Fourth Industry seems to bring innovation to the field of beauty. Third, it is necessary to establish a new distribution structure that meets the stream of times and customers changed needs, provide service in a direction desired by customers, and complete future-oriented service that satisfies both suppliers and consumers. Fourth, it is necessary to use convergence technology valued in the Fourth Industrial Revolution age to connect the field of beauty with other disciplines. This is expected to lay the ground for the beauty field to become a more wide-ranging industry than ever. Therefore, using the core technology in the Fourth Industrial Revolution strategically will make the Fourth Industrial Revolution age a site of chances for the beauty field to take a radical leap, not to face a crisis.

References

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