

## RESEARCH ON THE DEVELOPMENT OF DIGITAL FASHION DESIGN THROUGH ONLINE GAMES

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### ABSTRACT

In the 4th industrial revolution, fashion brands are trying to combine with IT in various ways as the digital revolution accelerates. In the fashion industry, digital fashion is being developed through character costume design collaboration with existing online game companies, digital fashion using NFTs or showroom construction on individual metaverse platforms. According to The Fabricant, digital fashion is fueled by technologies such as social media and games (Särmäkari, 2021). Both fashion and game industry are high value-added businesses based on creative ideas, and their value is determined by being separated from the real world (Kim, 2020). Technological innovation has also been applied to fashion brands, increasing the inflow of virtual fashion shows, digital showrooms, and live stream commerce, and additional technology development to realize 3D designs is being made (Cho, 2022).

This study is different from previous studies because it's focused on online games, rather than metaverse or marketing perspective. The purpose of this study is to identify the characteristics that can be obtained through online games and income in the fashion industry and to suggest the prospective direction of digital fashion design. The research method is as follows. First, the significance of fashion design in online games is analyzed through classifying the types of fashion designs based on previous research. Game character fashion styles are mostly classified into 5 categories, and it is important to accurately understand the fashion design elements shown in online games as they have the skills needed to develop digital fashion. Second, the basic theoretical background of digital fashion, which is the basis of this study, is described, and keywords that appear both in online games and fashion industries are derived through case studies. The scope of the case study was limited to fashion brands that collaborated with online games, excluding Metaverse. The case study was derived through simultaneous search of keywords such as 'game and fashion', 'fashion brand and game', 'digital fashion', and 'collaboration between fashion brand and game company'. Third, the direction of design is presented based on the keywords derived from the characteristics of online game character fashion and the theoretical background of digital fashion.

Three strategic direction can be derived from the above research method. First, it is possible to produce a wide range of designs by creating various properties and silhouettes that cannot be worn in reality through the virtual space. In the case of online game designs, storytelling and characteristics of characters should be reflected, while digital fashion is not limited to that and can be designed freely based on the designers' creativity. Second, as digital clothing that can only be worn online, they are free from gender restrictions. Designs can be tailored by individual

consumers without any restriction from gender, which enables transexual customization. Third, digital fashion can have practical aspect as even if it is digital, it can be developed to be worn in reality. This will help develop ESG design and e-commerce.

## **INTRODUCTION:**

As the metaverse industry is drawing attention due to the coronavirus, interest in digital-related fields such as E-Sports and E-Commerce has increased, emerging as a main keyword in the fashion industry. Both fashion and game industries are high-value-added projects based on creative ideas, and their value is determined by being distinguished from the real world (Kim, 2020). Technological innovation has also been applied to fashion brands, increasing the inflow of virtual fashion shows, digital showrooms, and live stream commerce, and additional technology development to realize 3D designs is being made (Cho, 2022). 3D design is developing with the development of the game industry, and games are being applied to various fields due to their high connectivity with other fields. Currently, studies on digital fashion industry mainly centered on metaverse and focused on the field of marketing and design. The purpose of this study is to derive the benefits that fashion brands can gain through convergence with games and to suggest the direction of digital fashion development through the corresponding keywords.

This study aims to derive keywords relevant to the prospect of digital fashion based on the results of analyzing the characteristics of online game characters and digital fashion. Case studies are conducted to examine the fashion styles that currently appear in games. The scope of the case study was limited to fashion brands that have collaborated with online games, excluding metaverse. There were 11 luxury brands and 4 casual brands, which were derived from January to September 2023 through simultaneous search of keywords such as "Game and Fashion," "Fashion Brand and Game," "Digital Fashion," and "Fashion Brand and Game Company Collaboration". It presents three directions through common keywords of game fashion and digital fashion. This study differs from existing studies in that the scope of analysis was limited only to cases of fashion brands that collaborated with actual online games.

## **SECTION HEADS 1: ONLINE GAME & DIGITAL FASHION**

E-Sports is an abbreviation for Electronic Sports, which means competing online as a video game via computer communication or the Internet. The game industry is showing a high growth rate as a high value-added industry in the 21st century (Lee, 2006; Lee & Yang, 2008). Game character costumes act as a sculpture that expresses the background, story, and characteristics of the setting. We can learn much about fashion and dressing in general by observing them in virtual environments, which are controlled and easily observable (Makryniotis, 2018). Game characters can be classified into characters controlled by players, monsters, animals, plants, and intangible forms, and they are largely divided into NPC(Non-player characters) and consumers (direct control) (Kim et al, 2012). In modern society, various character designs are introduced for reasons such as character completeness, connection with stories, and rapport with consumers.

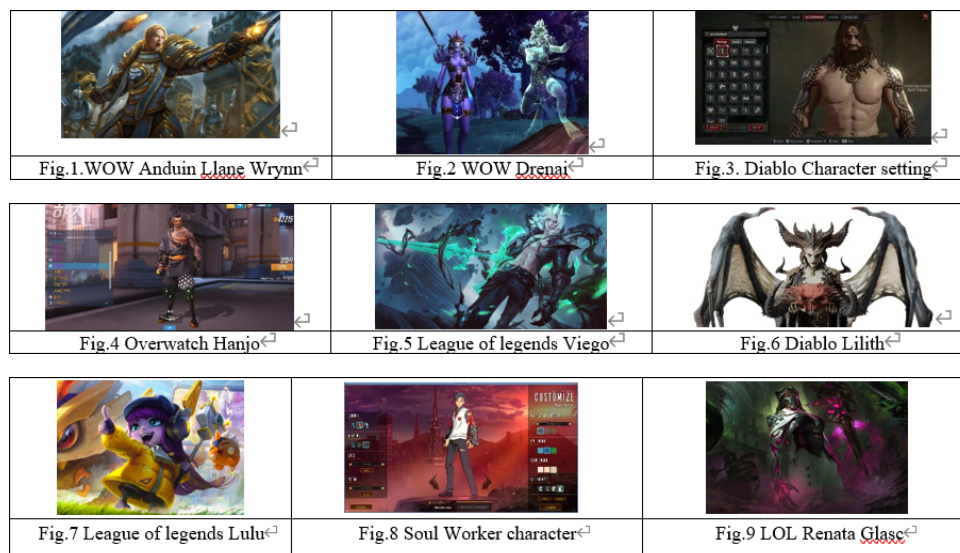
The 'game character fashion style types' proposed in the preceding study were classified into five categories. Creative Style is the optimal style that can be represented in virtual space, based on creativity, and it is a style that often appears in fantasy story-based games, and a mixture of fanciful and gothic styles is common. Among the games, WOW (world of warcraft) which is a large-scale fantasy game created by Blizzard Entertainment in 2004, utilizes excessive decorations or boldly exposed body parts for their game design, as shown in <Figure 1> and <Figure 2>. Currently, online games show a clear distinction between women and men, but various creative designs such as combination between human and animal or shapes that cannot be expressed in reality are required.

Second, Attractive Style stands out for its sexual attractiveness, and it is often seen in female characters and basic characters with attractive or sexy image and sensual designs. Depending on the degree of exposure, the character's ability can be recognized, and most of them are body-fitted designs (Seo & Kim, 2015). In the case of characters

representing women such as <Figure 2>, there are many styles that express sexual attraction through slits. The characters can be customized at stage such as <Figure 3>, and for male characters upper body exposure is common (Figure 4).

Third, the Grotesque Style is mainly used for demonic expression in games with dark and dreary image. Similar to the Creative Style, it shows a fantasy tendency (Figure 5). Moreover like <Figure 6>, the Grotesque Style tends to be cross-exclusive. Male characters have long hair styles like those of females, or female character's muscles are expressed clearly to express men's strength and health beauty. In modern times, beyond this, it represents the fashion design of characters in the form of monsters, not humans, in the realm of horror. This is mostly a style designed in games with dichotomous good and evil stories and acts as an element that can give the game tension (Seo & Kim, 2015; Lee, 2006).

Fourth, there is Usual Style which is the style most often seen in metaverse these days. Usual Style increases the user's immersion in the game the most, and enables "interaction" which is the unique characteristic of games to function. In addition, due to the increase of female game users, the development of Usual Style is becoming active. In general, character design has shown more subtle depictions of women (Makryniotis, 2018), and casual-style fashion design also appears in characters depicting animals (Figure 7). In addition, collaboration with various brands is most common in Usual Style, and demand for reflection of reality in styles such as <Figure 8> is gradually increasing. Finally, Suit Style is not a representation of tailored jackets and suit-fit pants and skirts that we generally think of, but is a form of armor or robots. Most were found to be designed by inspiration from medieval armor (Figure 1), a mixture of humans and robots (Figure 9), or a futuristic suit such as an Iron Man suit. Good-looking people are likely to have better interpersonal interactions and attain more satisfying interpersonal relationships (Townsend & Levy, 1990). They spend a lot of time expressing themselves in the virtual world of games by making their characters look cooler and getting items to differentiate themselves from others. It is a mixture of humans and machines, and borrows a lot from the battle uniforms and weapons of ancient knights.



## SECTION HEADS 2: CORRELATION BETWEEN DIGITAL FASHION AND ONLINE GAMES

With the increasing evaluation of convenience in digital domain and the maximization of materialism, consumers are interested in the ego of the online virtual world. Accordingly, global luxury brands are working on collaborating with game platforms that can explore the full virtual world using avatars. For the development of creative and dynamic fashion industry, we have begun marketing products and selling virtual clothing and accessories within games (BoF, 2020; Fashion Insight, 2022). Moreover Neustaedter and Fedorovskaya (2009) found that avatar applications in 'Second Life' are affected by social environment. Digital fashion acts like a 'skin' used in games, and characters develop over time providing new experiences to players (Makryniotis, 2018). In the virtual space of games, fashion is com-

posed of Animal Crossing avatars as well as humans, and the scope of fashion methods is expected to increase due to the realization of the fantasy, which was the exclusive consumption culture of gamers (Gibson, 2021).

We would like to propose a case study on clothes released in collaboration with fashion brands and game companies and the direction of digital fashion that should proceed in the future through existing game character fashion style types. The examples that have appeared so far are as follows. First, through collaboration with Animal Crossing: New Horizons, which was released in 2020, fashion brands introduced various designs. Marc Jacobs, Anna Sui, Valentino, H&M, and FILA collaborated with this Nintendo Switch game. <Figure 10> is a Valentino 20S/S work that introduced 24 new products for men and women, and features a design with a large layout of their logos. <Figure 11> was released by Marc Jacobs and announced on Twitter that they will present their favorite #THEMARCJACOBS work to the fantasy world. FILA collaborated with Nook Street Market to showcase its mini-collections. They launched Hoodies, Cap, and Sweetshirts using logos and drew attention for their designs similar to those previously sold (Figure 12). Anna Sui and H&M also participated in "My Design Producer" which is a content that allows users to create their own designs and conducted marketing that continuously exposes the brand. The design of the brands that collaborated with Animal crossing: New Horizons shows that the focus is on Usual Style with simplified silhouettes and product-oriented designs sold in the real world.

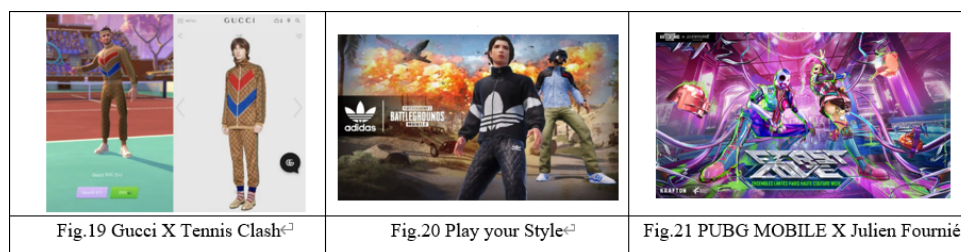


Second, in case of collaboration with the role-playing game(RPG), is the designs are close to the Usual Style, but there are also designs combined with Creative Style. In celebration of the 10th anniversary of League of Legends(LoL), Louis Vuitton collaborated to present 'True Damage Senna Prestige (Figure 13)' and 'True Damage Qiyana Prestige' Skin for new champions (Song, 2020). Balenciaga and Polo Ralph Lauren collaborated with Fortnite. Polo Ralph Lauren introduced the "Polo Stadium" collection item, which combines automobile racing and iconic streetwear products, with four designs from <Figure 14> securing the means for players to show off as they want (Disignb, 2021). Balenciaga, which emphasized the Usual Style and Attractive Style, introduced designs that emphasized brand identity, while Nike also introduced 'Airy' and 'Maximalist Max' outfits and 'Air Max 1 '86' sneakers on Fortnite. Nike completed the Creative Style through a dreamy and fanciful design like <Figure 15>, and Gentle Monster also released 'GENTLE TOKKKI (Figure 16)' as a limited edition in OverWatch 2, showing a new framework for digital fashion. Berberry released the exclusive "Spirit of Nature Yao" skin design for the Chinese mobile game Honor of Kings. Like <Figure 17>, it is a design that features Berberry's signature check on the fairy's costume, and it is a combination of Usual Style and Creative Style's fanciful appearance (Kristine, 2021). The fantasy feeling can also be seen in the Fortnite skin using Moncler's padding. The space suit-like Moncler padding and the game's fanciful tendency have combined to gain a lot of popularity. As RPG is a game that determines the role of a person in a virtual environment, it features cyborg costumes that appear in future science fiction games, and designs that embody humans, virtual creatures, and robots.





Third, game companies work on mobileizing online games to attract many consumers. Gucci collaborated with “Tennis Clash” to digitize products actually sold like <Figure 19> and market them so that real products can be purchased in the game. It is characterized by accurately dividing women’s and men’s clothing, and it is the same as the actual clothes. Adidas Originals digitized clothing sold and released it so that characters can wear it, as shown in <Figure 20>. With the slogan “Play your Style, All Together”, it is a product that can be worn on Battleground Mobile, and both Gucci and Adidas Originals aim to promote the product. PUBG Mobile collaborated with French Haute Couture fashion house Julien Fournié. <Figure 21>’s “First Love Collection” attracted the attention of game users through future-oriented colors and designs, which can be seen as digital fashion that many consumers think of in that Creative Style and Grotesque Style are in proper harmony.



### SECTION HEADS 3: DIRECTION OF DIGITAL FASHION

Digital fashion was classified and developed from game clothes, and it is similar to games in that creative expression, action, casual, and activities that goes beyond reality’s fashion design appears (Makryniotis, 2018). Brands can acquire more dynamic image through combination with games, and the game industry should provide users with opportunities to express their personality and experience differently through brands (Jung, 2021). However, there are a lot of marketing-focused Usual Style designs. Game character fashion design can be combined freely with things that cannot be realized in reality because the materials and silhouettes used vary depending on the story of the game and the characteristics of the character. Digital fashion should be proposed in a wider variety of styles by utilizing the weirdness and eccentricity of the Grotesque Style among the types of game character fashion. Through novel and artistic products such as Nike and JULIEN FOURNIÉ’s, consumers need many creative digital fashion products (Barton, 2021). Game characters have various shapes such as animals and robots that goes beyond human figures, and they are sometimes mixed. This can give consumers various identities, requiring androdinus design rather than a product that reveals one identity. According to the previous case study, cross-sexual fashion that goes beyond cyborg design, which is a fantasy genre’s fashion design shown through combination with robots like “GENTLE TOKKI” should be proposed. Furthermore, digital fashion is sustainable because it can be purchased according to personal characters and does not get old (Fashion Insight, 2022). Because it is made of pixels, the design can be shown using various physical properties, and since it is not actually made, there are no discarded fabrics or products, which can compensate for environmental problems caused by the fashion industry. Accordingly, the researcher proposes the direction of digital fashion style as ‘Extensive Design’, ‘Androdinus Design’, and ‘Realization of ESG’.

### CONCLUSION

The boundaries between real and virtual experiences are fading, and the number of consumers longing for luxury fashion is increasing (Särmäkari, 2020). Demand for game fashion items is increasing as even products that can-

not be purchased in reality can be owned by using much less than the actual price using currency in games. Some brands collaborate with existing games, but there is also a tendency to produce and release games within the brand itself, so it is necessary to look at trends in both game and fashion industries in the future. In addition, digital fashion is a new direction currently attempted by fashion brands, so continuous research is expected to be needed. (2235)

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