1. INTRODUCTION

Fast fashion brands have been successful in apparel business in recent years by providing products with current fashion trends to consumers quickly and at low prices. Nowadays most fast fashion brands offer online shopping service in addition to street shops. Therefore it is assumed that their marketing plans and strategies are drawn up by considering both offline and online stores. Some studies relating to these have been conducted so far [1-6]. The aim of this study is to understand features of fast fashion brands that are successful internationally, by investigating their online stores as well as items released on these stores and analyzing quantitatively. The previous study focused on visual presentation and ways to display apparel items in the online stores of three global fast fashion brands [7]: H&M, ZARA and UNIQLO, summarized their features from several factors such as layout design of official site, composition on apparel categories, quantity and color of apparel items. Following on the previous study, this study focused on colors which are worn as fashion trend. Colors of outerwear sold in three fast fashion brands were objectively investigated using image analysis through a whole year, in order to clarify the common and particular color features of clothes of the fast fashion brands. This study focused on the following three aspects.

(1) Hue distribution tendency of colors of three brands’ clothes
(2) Annual change in colors of three brands’ clothes
(3) Basic and accent colors of clothes colors in three brands

2. INVESTIGATIONS

2.1 Research targets

This study focused on the three fast fashion brands: H&M, ZARA and UNIQLO. They are world-renowned global apparel companies with high volume of sales [7]. In this study, colors of clothes sold in the Japanese official online stores of these three brands were collected, and then color features were analyzed and discussed. This study focused only on colors of male and female outerwear, although there were various categories and the huge numbers of items were released from these fast fashion brands’ online stores [7]. There was not a unified outerwear category among these brands, thus we defined an OUTERWEAR category which includes clothes such as coat, jacket, blazer and casual outerwear. The categories include these clothes on their brands’ online stores are shown in Table 1 [8-10].

2.2 Methods

Color information of outerwear was collected from images seen on the webpages of each official online store. When an item had more than one color, a color which was occupying the biggest area was extracted as
its representative color; however, when a representative color was not able to select because of complexity of a pattern, such item was not used as a sample of this study. Some items had several color variations. All colors were included as samples. Thus, the number of samples is greater than the number of collected items. The colors of the extracted image samples were measured using a color measurement software Feelimage Analyzer (Viva Computer Inc.). This software gives us color information in terms of CIELAB values [11] and JCC40 [12]. CIELAB values were used to investigate hue distribution of the samples. A JCC40 system is published by Japan Fashion Color Association. This system classifies colors into 40 groups including 35 chromatic colors and 5 neutral colors shown in Table 2.

The samples were collected once a month from January 2013 to December 2013. Total items were 4439. The number of the collected color samples was 6010 in total including 936 from H&M, 3129 from ZARA and 1829 from UNIQLO. Table 3 shows the number of the samples collected from each brand at each month.

3. RESULTS AND DISCUSSIONS

3.1.1 Hue distribution tendency of H&M

As shown in Figure 1, the colors of the female outerwear of H&M were distributed to all directions at the low-chroma area which were indicated by the plots around the origin. However, at high-chroma area, the colors used for the female outerwear were mostly red and yellow directions. Particularly there were some vivid red, pink and orange colors. Green and blue of medium-chroma were also obvious. In contrast with the female, the colors of the male outerwear had lower lightness and chroma. A small number of vivid colors were found in the red-yellow direction and blue direction. The number of the male samples from H&M was small so that its hue distribution seems narrow.

| COLOR TONE | PK | RE | OR | BR | YE | YG | GN | BG | BL | PU | CG/NE |
|------------|----|----|----|----|----|----|----|----|----|----|-------|
| Vivid tone 1 | vivid pink (rose pink) | vivid red | vivid orange | vivid brown | vivid yellow | vivid yellow green | vivid green | vivid blue | vivid blue | vivid purple | ivory |
| Light tone 2 | light pink | light orange | light yellow (cream) | light blue (sky blue) | light purple (lilac) | white |
| Grayish tone 3 | grayish pink | grayish brown (beige) | grayish yellow green (moss green) | grayish green (smoky green) | grayish blue (saxe) | grayish purple (wisteria violet) |
| Dull tone 4 | dull red (old rose) | dull brown (ocher) | dull yellow green (khaki) | dull green (pine green) | dull blue (turquoise) | dull blue |
| Dark tone 5 | dark red (wine) | dark brown | dark yellow green (olive) | dark green | dark blue (navy) | black |

* words in the ( ) is common color name of this color in japan which determined in JCC40, and the parts of blank are vacancies in this color classification system

Table 2: JCC40 color code

| Brands | Tones | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | total |
|--------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| H&M    | F     | 35  | 35  | 29  | 29  | 16  | 14  | 21  | 44  | 71  | 56  | 39  | 27  | 416  |
|        | M     | 25  | 27  | 21  | 19  | 7   | 9   | 14  | 35  | 57  | 40  | 27  | 19  | 300  |
| ZARA   | F     | 47  | 89  | 140 | 154 | 163 | 176 | 176 | 51  | 150 | 203 | 241 | 299 | 296  |
|        | M     | 2   | 7   | 12  | 13  | 13  | 13  | 4   | 20  | 21  | 21  | 25  | 29  | 180  |
| UNIQLO | F     | 45  | 82  | 128 | 141 | 150 | 163 | 176 | 51  | 150 | 203 | 241 | 299 | 296  |
|        | M     | 9   | 15  | 25  | 27  | 34  | 33  | 11  | 12  | 18  | 17  | 19  | 22  | 242  |

* in this table F=Female, M=Male

Table 3: The number of measured and unmeasured samples
3.1.2 Hue distribution tendency of ZARA

The results are given in Figure 2. Similar to the H&M female outerwear, many achromatic colors and low-chromatic colors were used. But, Zara used more medium and high-chroma colors comparing with H&M. The high-chroma colors were mainly distributing in the red and yellow directions. There were also some vivid green and blue colors. It can be considered that the female outerwear of ZARA in 2013 has mainly gentle colors; meanwhile some active colors were also emphasized. The hue distribution of the male outerwear colors was similar to the female’s, which was mostly achromatic colors and low-chroma colors, plus red and yellow colors in high-chroma. The male outerwear colors were not as vivid as the female’s. For instance, the vivid pink and the vivid green that appeared in the female outerwear colors could not be found in the male outerwear colors. Also, there were more colors in the directions of blue and bluish violet in the male outerwear colors.

3.1.3 Hue distribution tendency of UNIQLO

The results are given in Figure 3. Similar to the other two brands, the female outerwear colors of UNIQLO had many colors around the achromatic and low chromatic color areas. UNIQLO is famous for having clothes with multi-color variation and it can be seen from the results that the colors were distributed widely in the CIELAB a*-b* diagram, particularly the colors in the yellow-green and purple direction at high-chroma and high-lightness colors which were not found in the other two brands. The male outerwear colors were also abundant in variation and widely spreading in the diagram. Compared with the female colors, there were more in medium-chroma of red and blue colors, but few in medium-chroma of purplish red colors.

3.1.4 Color distribution ratio of the three brands

Figure 4 and Figure 5 show the color distribution ratio of all the samples collected throughout the year using the JCC40 color system. From the results, the neutral colors include ivory and achromatic colors account for over half of the total samples regardless of the brand or sex. Black had the highest percentage; white and gray have the following shares. Gray in the female outerwear colors was brighter than that in the male’s. In the chromatic colors, blue colors were used mainly for the male outerwear, and the most used color was dark blue. Blue colors were also found in the female outerwear with a large share, although the ratio was inferior to the one in the male outerwear. Conversely more brown colors and beige were used for the female outerwear than the male’s. UNIQLO used obviously wider range of colors
than the other two brands, which demonstrated that UNIQLO was surely doing a multicolor strategy on its apparel items.

3.2.1 Annual change of the colors

The sampled colors of each fast fashion brand were ranged in the 100% stacked area chart to see the color changes through a year.

The colors of H&M as shown in Figure 6 reveal that the female outerwear had a high proportion in achromatic colors and ivory, which account for about 70% of the total. Various chromatic colors were found at the beginning of the year, and then the percentage of warm colors began to decrease and the percentage of cool colors such as light blue and dull purple increased considerably from March. In summer, chromatic colors consisted of red with vivid and dark tone, brown with grayish and dark tone, and blue colors. Dull purple appeared in autumn and winter season. The percentage of the chromatic colors of the female outerwear reduced gradually during the second half of the year; however, it inverted to rise in December because of the releasing of spring wear. Colors polygonal lines in the chart of male appear ups and downs sharply, because the numbers of male outerwear items and color variations in H&M official online store were few. Achromatic colors accounted for half of the total share. Unlike the female outerwear, the percentage of dark gray was high in the male outerwear. White was used more in the spring and summer than other seasons. Similar to the female result, the colors for the male outerwear were also few and unvaried in summer. In this study a category OUTER-WEAR was set as a target, and the OUTER-WEAR is generally thick outside clothes (Table 1). By observation, H&M rarely released this type of clothes, especially items of Jacket&Coats, in spring and summer. Blazers and suits are dominantly achromatic colors, blue and red. The few item numbers and relatively more blazers led to lack of colors directly.

The results of ZARA are given in Figure 7. The percentage of achromatic color was high that accounts for about 60% of the total. More than 50% of the achromatic colors were white in spring and summer. Black had grown in number and became a main color in autumn and winter. For the female outerwear, gray was relatively few. Red, brown, blue colors were frequently used. The vivid and bright colors came out in the spring and summer: vivid red, vivid orange, vivid yellow, light pink, light orange, light yellow, also bright green and blue colors. Vivid colors were disappeared in autumn and winter, then brown and dark blue became the main.

Also vivid red reduced and dark red appeared in autumn and winter. The used colors for the male outerwear were less than the female’s. Red, brown and blue colors were frequently used all year round for the male outerwear; however the colors were darker than colors of the female outerwear. Vivid and bright blue and grayish green were used in spring and summer. Dark red and brown were used more in autumn and winter. A little dull purple was found to be used throughout the year.

The results of UNIQLO are shown in Figure 8. UNIQLO was rich in color during the whole year, the polyline of the most colors extended smoothly. Vivid red, vivid yellow and vivid green were often used in spring and summer, but the percentage of dark tone colors was increased since the beginning of the autumn such as dark red and dark brown. Similar to the other two brands, black was fewer in spring and summer, and it greatly increased in autumn and winter. The male outerwear had fewer chromatic colors than the female outerwear, but there were a high percentage of white in spring and summer.

3.2.2 Color difference between Spring-Summer and Autumn-Winter

According to the annual change of color showing the change in the 3.2.1, it could be observed that colors were brighter and had more hues in spring and summer, darker and fewer hues in autumn and winter. Here we roughly separated timeline to spring-summer (from Mar. to Aug.) and autumn-winter (from Sep. to Feb.) seasons to investigate color difference between the 2 seasons.

As shown in Figure 9 and Figure 10, overall for both female and male there were more light and vivid colors in spring-summer, more dark and dull colors in autumn-winter. Percentage of achromatic colors of 3 brands did not change a lot between the 2 seasons, among which it was obvious that ZARA and UNIQLO had more white, ivory and bright gray in spring-summer, but more blank and dark gray in autumn-winter. In the chromatic color, ZARA and UNIQLO had more bright red and bright brown in spring-summer, but more dark red and dark brown in autumn-winter. Oppositely H&M had more dark red and dark brown in spring-summer, and these colors reduced rate in autumn-winter. It was mainly caused by the reason had been explained in 3.2.1 that H&M rarely released outerwears in spring-summer, and when new outerwears came out in autumn-winter some commonly used colors increased their rate.

3.3 Basic colors and accent colors

In the apparel industry, it is said that there are some colors which are regularly used in clothes and seldom
Color Feature of Fast Fashion Brand Outerwear on Official Online Store

Figure 6: Proportion of outerwear colors in every mouth of H&M

Figure 7: Proportion of outerwear colors in every mouth of ZARA

Figure 8: Proportion of outerwear colors in every mouth of UNIQLO

Figure 9: Color distribution ratio of female outerwear colors in S/S and A/W seasons

Figure 10: Color distribution ratio of male outerwear colors in S/S and A/W seasons
change with time. This sort of colors is called basic color. Furthermore, there is an accent color which attracts people’s attention and exists in a short period. An assumption was that there are some colors used frequently with no seasonal influence, and some colors used as a sales strategy in short-term to attract consumers. The collected outerwear colors of three brands were compared to understand basic colors and accent colors in fast fashion brand clothes.

Monthly distributions of the colors of the three brands are shown in Figures 11-13. It can be seen that the number of the colors used for the outerwear were the least in H&M, and the most in UNIQLO. Moreover, in the same brand, the colors of the female are more than the male’s. Black (NE5), dark gray (NE4) and dark blue (BL5) were used for the female and the male outerwear of each brands in every month. These colors can be considered as basic colors. White (NE2), dark brown (BR5) and grayish brown (BR3) were used intermittently in male outerwear of H&M, however these colors were used in ZARA and UNIQLO almost year-round. Considering the small number of the H&M male outerwear items, these three colors are also considered as basic colors for three brands.

When looking at the H&M female result (Figure 11), not only these basic colors but also ivory (CG1), gray (NE3), vivid red (RE1), grayish green (GN3), light blue (BL2), dull blue (BL4) and dull purple (PU4) were used frequently through the year, and they can be also considered as basic colors of H&M. In a short period of January-April, vivid and bright colors such as vivid pink (PK1), light orange (OR2), light yellow (YE2), dark yellow-green (YG5), vivid green (GN1) and dull blue-green (BG4) were used. From August, moderate warm colors like grayish yellow-green (YG3), grayish yellow (YE3) and dull red (RE4), and high-chroma yellow colors like vivid orange (OR1) and vivid yellow (YE1) came out. These colors are considered as accent colors of the H&M female outerwear. About the male outerwear, several dull colors and vivid colors were released in February-April, for instance there were dull red (RE5), dark red (RE5), grayish yellow (YE3), grayish yellow-green (YG3), dull green (GN4), dark green (GN5), vivid blue-green (BG1), light blue (BL2) and vivid purple (PU1). In addition, a few vivid yellow colors like vivid orange (OR1) and vivid yellow (YE1) were used in August-September. They are regarded as accent colors of this year. Grayish green (GN3) and dull purple (PU4) which came out both at the first half of the year and the latter part of the year, are regarded as second basic colors of the H&M male outerwear.

Figure 12 shows the results of ZARA. Red, brown and blue colors were regularly used in both the female and the male outerwear of ZARA. In the female outerwear, vivid red (RE1), dark red (RE5), grayish brown (BR4), grayish green (GN3), dull green (GN4), light blue (BL2), Ivory (CG1) and gray (NE3) were used through a whole year. Therefore, these colors can be considered basic colors. In spring and summer, many vivid and light tone colors were used, such as vivid pink (PK1), light pink (PK2), vivid orange (OR1), light orange (OR2), vivid yellow (YE1), light yellow (YE2), vivid green (GN1), light green (GN2) and vivid blue-green (BG1). The male outerwear colors were a bit darker than the female’s, but still vivid orange (OR1), light orange (OR2) and light yellow (YE2) were found in the spring and summer period. Thus it can be inferred that ZARA adopted the strategy of releasing items with high-chroma and high-brightness colors primarily in spring and summer in 2013. In addition, grayish purple (PU3) was used in the male outerwear, and grayish yellow-green (YG3) was used in both the male and the female outerwear. Therefore, these colors can be seen as their own accent colors in spring and summer. However, new colors were hardly seen in autumn and winter; only the basic colors were used. There were some colors appeared for only one month: dark green (GN5) in the female outerwear, dark yellow-green (YG5) and dull yellow-green (YG4) in the male outerwear.

Figure 13 shows the results of UNIQLO. A variety of colors were used continuously for a whole year. For instance, vivid pink (PK1), vivid orange (OR1), light orange (OR2), grayish yellow green (YG3), grayish green (GN3), dull blue (BL4), vivid purple (PU1), dull purple (PU4), ivory (CG1) and gray (NE3) of the female outerwear, and vivid red (RE1), vivid orange (OR1), light yellow (YE2), grayish green (GN3), grayish blue (BL3), dull blue (BL4), vivid purple (PU1) and gray (NE3) of the male outerwear. Although UNIQLO always has large color variations, a number of outstanding colors appeared in short term; red colors with low-chroma and low-brightness such as grayish pink (PK3) and dull red (RE4) in spring, cool colors with high-chroma such as vivid yellow (YE1), vivid blue-green (BG1), dull blue-green (BG4) and dull blue-green (BG4) in summer, dull colors such as dull yellow-green (YG4) and dull green (GN4) in winter.

4. CONCLUSIONS

Color features of male and female outerwear of fast fashion brands were discussed based on the results of the investigations about their outerwear selling on their
Color Feature of Fast Fashion Brand Outerwear on Official Online Store

Figure 11: Monthly distributions of outerwear colors of H&M

Figure 12: Monthly distributions of outerwear colors of ZARA

Figure 13: Monthly distributions of outerwear colors of UNIQLO
official online stores in 2013. The features were analyzed in terms of the hue distribution, annual change and the basic and accent colors of the outerwear. The findings were as follows.

(1) From the hue distribution, the sampled colors of the outerwear are mainly distributed in the achromatic and the low-chroma area. The achromatic colors were used for nearly half of the collected outerwear and black was the most used color. The results also shows that the colors in the area between red and yellow direction are often used for both the male and the female outerwear of all three fast fashion brands. From the color distribution ratio, dark blue is the most used color in chromatic colors.

(2) Regarding to the annual change of the outerwear colors, the achromatic colors have a year-round high percentage in both the male and the female outerwear of every brand. Moreover white and gray are main colors in spring and summer; and black is main color in autumn and winter. In chromatic colors, red, blue and brown colors are used for a whole year: the vivid and bright tones of these colors are used in spring and summer, and mainly the dull and dark tones are for autumn and winter. Thus, it is believed that outerwear color of fast fashion brand is affected by two seasons: spring-summer season and autumn-winter season.

(3) In the investigation of basic color and accent color, the common basic colors among the three brands are black, dark gray and white of achromatic colors, and dark blue, dark brown and grayish brown of chromatic colors. This result is consistent with the basic colors in the apparel industry [1] which are “white, black, navy blue, brown, gray”. This indicates that the basic colors of the apparel industry are also used in fast fashion. All the tree brands used the accent colors mainly between February and April and between August and October. It is considered as the result of new items releasing in the beginning of seasons.

(4) To investigate the feature of each brand, H&M had the fewest colors among the 3 brands. Because of its seldom released outerwears in summer, few colors could be observed during this period. Alone with new items were released in autumn and winter, striking colors such as vivid yellow and vivid orange came out. ZARA had a high rate of achromatic color, which was almost made up of white and black. White hold sway in spring-summer season, and black grew in number and became a main color in autumn-winter season. Red, blue, brown with middle and low brightness were existent all year round. It made people to feel dignified and elegant. Seasonality could be seen clearly in the chromatic color. There were mainly vivid colors in spring-summer season, and they converted to dark in autumn-winter season. UNIQLO were performing a colorful strategy. Although percentage of its abundant colors was barely changed during the year, white and colors of vivid-bright tone were more in spring and summer, blank and colors of dark-dull tone were more in autumn and winter, from which seasonality can also be read.

This study investigated the hue distribution, seasonality, basic and accent colors of the three fast fashion brands just for one whole year, therefore it is necessary to continue in order to clarity color features. It would also be worthwhile to have a comparison study between the color features in fast fashion brand and the trend colors.

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