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FASHION IDENTITY R&D VIA COLOR, DESIGN AND TECHNOLOGY WITH AI TRANSFORMATION

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ABSTRACT

The aim of this paper is to explore the elements of fashion identity for improving the space design and related elements for improving customer experiences in the post COVID-19 period. Aqualitative research was conducted with four articles published from 2004-2020 referenced. Based on the study, various factors were examined and the key elements identified are: Color Reflection, Design Intervention. Attention Guidance, Feel from Visual Communication for fashion identity. Through this paper, service organizations and business leaders may re-think the use of color analysis, space design and use of AI to improve business performance and customer engagement for business transformations. This serves to enhance the implementation of design and identity related elements in space design for improving customer experiences and building happiness via the use of colors and technology for developing loyal customers attached to spaces of business.

Keywords: Fashion Identity, Color Reflection, Design Intervention, Attention Guidance, Color Analysis.

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1. INTRODUCTION: THE RISE OF COLOR ANALYSIS WITH AI

In recent years, technology applied in education, fashion, healthcare, retail, and catering industries have been on the rise, for example, the use of artificial intelligence (AI). In Korea, there is a rising business on personality color test with analysis which captures female tourists tovisit Korea. Color analysis is a technique used to determine the most appealing colors for an individual based on their skin tone, hair color, and personal characteristics. The rise of AI- powered color analysis may bring in new business opportunities after COVID-19 as customers are looking for happiness and wellness via a variety of new services with "New Tro" – "Newtro ($\exists \tau \sqsubseteq \sqsupseteq$), meaning new plus retro, is a trend that has recently taken off in the past couple of months. Retro can refer to as far back as the 1920s or as recent as the 1990s. No matter the era, it is all about adding a twist to the old. It encompasses their music, fashion, and beauty while having also spread to food and home living." (Korea 2020).

Color analysis has been around for decades. However, there is a lack of research on the application of AI technology in the service industries in relation to the use of colors, lighting, music, fashion and beauty for customer loyalty. In Asia, the demand for color analysis has increased significantly due to the region's large population with female consumers and growingdemand for personalized beauty products.

In the competitive retail landscape of Hong Kong, Korea, and Japan, creating a unique identity with colors and social status with visual images are crucial for brand building. One of the effective ways may be the use of happy colors, the use of design intervention to cater diversity, attention guidance with colors and music for customer diversity and social inclusion, and generate a feeling of community from visual communications. Hence, there is a growing need forinnovative solutions, including the use of AI to integrate other kinds of technology, e.g. IoT and sensors to develop a sense of "New Tro" to differentiate from traditional visual communication techniques in the service industry.

2. LITERATURE REVIEW

Visual communication encompasses several key elements that significantly influence how messages are conveyed and perceived. Here's an overview of the elements you mentioned—Color Reflection, Design Intervention, Attention Guidance, and Feel—along with relevant citations and abstracts from reputable institutions. Wang (2020) identifies that visual communication is a design that expresses and conveys information to the public through visual media. Color elements can determine the visual effects and information conveyed by the design to a large extent. It is very important and necessary to explore the influence and significance of color in visual communication design. This paper studies the application of color elements in visual communication design through the analysis of color characteristics and the performance of color in life and business.

2.1. Color Reflection

Color plays a crucial role in visual communication, influencing emotions and perceptions. Different colors can evoke various feelings and associations, which can be strategically used in design to enhance message delivery. For instance, research indicates that colors can have different meanings based on cultural contexts, making it essential for designers to consider their audience when selecting color palettes. Schloss, et.al (2017) find out that people interpret abstract meanings from colors, which makes color a useful perceptual feature for visual communication.

This process is complicated, however, because there is seldom a one-to-one correspondence between colors and meanings. One color can be associated with many different concepts (one-tomany mapping) and many colors can be associated with the same concept (many-to-one mapping). We propose that to interpret color-coding systems, people perform assignment inference to determine how colors map onto concepts. We studied assignment inference in the domain of recycling. Participants saw images of colored but unlabeled bins and were asked to indicate which bins they would use to discard different kinds of recyclables and trash.

2.2. Design Intervention

Design interventions involve purposeful changes made to improve communication effectiveness. This can include altering layouts, incorporating user feedback, or integrating new technologies to enhance user experience. Effective design interventions are often grounded in user-centered design principles, ensuring that the needs and preferences of the audience are prioritized. Sen (2024) discovers that visual communication involves using visual elements to convey information, tell stories, or inspire change. It combines communication design and graphic design to create messages that educate, engage, and motivate an audience. At its core, visual messaging is about choosing the right elements—such as text, icons, shapes, images, and charts—to create meaning and make an impact. Visual communication can take many forms, including design, illustration, photography, art, and advertising. It could be an image, a campaign, a quote, a video, or an animation. It is often used in marketing, social media, and content creation to capture attention and convey messages effectively. Common strategies in visual messaging include using charts to show impact, icons, and symbols to make information more memorable, and color to highlight important points. Ultimately, visual messaging helps make complex ideas easier to understand at a glance and connects better with audiences by adding meaning and context through visual assets.

2.3. Attention Guidance

Attention guidance refers to techniques used to direct viewers' focus to specific elements within a visual composition. This can be achieved through visual hierarchy, where the arrangement of elements leads the viewer's eye to the most important information first. Strategies such as using contrasting colors, varying sizes, and strategic placement of elements are common methods to enhance attention. Sen (2024) shows that most people are visual learners, preferring images or videos to absorb and retain information. This preference isn't just limited to classrooms or meetings; it also plays a significant role in consumer behavior. For example, 62% of consumers are more likely to buy a product when they see customer images. Visuals can help clarify complex ideas, break down language barriers, and improve overall comprehension. Incorporating visual messaging can improve information recall and retention, making content more engaging and memorable. Whether it's marketing, teaching, or internal communication, visuals add clarity and highlight key messages more effectively than text alone. This approach helps people connect with the content, fosters better understanding, and ultimately leads to more effective communication.

Ng (2023) declares that one of the key challenges in designing for a fashion school is striking a balance between the dynamic and ever-changing trend of fashion and the long-standing reputation of the institution. We introduced multiple 3D renderings of the SFT symbol to address this challenge. This approach allowed us to maintain the authority and recognition associated with our logo while incorporating trendy and visually engaging 3D elements that reflect the evolving nature of the fashion industry.

2.4. Feel from Visual Communication

The emotional resonance of visual communication is critical in establishing a connection with the audience. The overall aesthetic, including color schemes, typography, and imagery, contributes to the "feel" of the communication. Consistency in visual style across different platforms helps build brand identity and trust, while storytelling elements can enhance engagement and memorability. Schloss, et.al (2017) find out that in Experiment 1, they tested two hypotheses for how people perform assignment inference. The local assignment hypothesis predicts that people simply match objects with their most strongly associated color. global assignment hypothesis predicts that people also account for the association strengths between all other objects and colors within the scope of the color-coding system. Participants discarded objects in bins that optimized the color-object associations of the entire set, which is consistent with the global assignment hypothesis. This sometimes resulted in discarding objects in bins whose colors were weakly associated with the object, even when there was a stronger associated option available.

In Experiment 2, they tested different methods for encoding color-coding systems and found that people were better at assignment inference when color sets simultaneously maximized the association strength between assigned color-object parings while minimizing associations between unassigned pairings. Our study provides an approach for designing intuitive color-coding systems that facilitate communication through visual media such as graphs, maps, signs, and artifacts. Understanding these key elements of visual communication—Color Reflection, Design Intervention, Attention Guidance, and Feel—can significantly enhance the effectiveness of messages. By strategically applying these principles, designers can create more impactful and engaging visual communications

3. RESEARCH SCOPE

From the above literature review, it is eminent that the 4 key elements for successful fashion design are: Color Reflection, Design Intervention, Attention Guidance & Feel from Visual Communication. They are discussed in greater details as follow:-

3.1. Colour Reflection

In Hong Kong, Korea, and Japan, color is a crucial aspect of visual communication in retail spaces. Colors can evoke emotions, convey brand identity, and influence consumer behavior. AI-powered color reflection technology can analyze customer preferences and reflect those preferences back to them through personalized color schemes. For example, a fashion brand could use AI to analyze a customer's skin tone and hair color and recommend matching colors for their clothing. This technology can be applied to retail shops, coffee shops, and even spacedesign.

3.2. Design Intervention

Design intervention is another key aspect of visual communication in retail spaces. AI-powered design intervention technology, for example, 3D immersive team lab experiences, can analyze customer behavior for suggested design-action elements that enhance the shopping experience. It is undoubtedly that AI may optimize service design, customer engagement, product placement, lighting appealing experience, and space of layout design to maximize the volumn of sales via color analysis, space intervenion, and customer engagement. To quote an example, coffee shops in Hong Kong, Korea and Japan are integrated with AI for suggested table arrangements and decorations to create a cozy atmosphere.

3.3. Attention Guidance

Attention guidance is essential in directing customers' attention to specific services, products and/ or promotions with design of counters and availability of vending machines, like popart shop. AIpowered attention guidance technology can analyze customer behavior and provide personalized recommendations. For example, AI can suggest relevant products based on a customer's browsing history or purchase behavior. In retail shops, AI-powered signs and displayscan direct customers to specific products or promotions.

3.4. Feel from Visual Communication

Feel from visual communication refers to the emotional response customers have when interacting with a brand's visual identity. AI-powered feel technology can analyze customer emotions and respond accordingly. For instance, AI-powered scent diffusers can release specific fragrances to evoke a particular mood or emotion.

Based on the above-mentioned key elements in the service industries, it is time to explore the ways to create an immersive customer experience and engaging retail shopping experience inAsian countries with female customers dominated in the market. The following are suggested solutions based on observations:

- (a) AI-powered Color Reflection: Develop an AI-powered color reflection system that analyzes customer preferences and reflects those preferences back to them through personalized color schemes.
- (b) AI-powered Design Intervention: Implement an AI-powered design intervention system that optimizes product placement, lighting, and layout to maximize sales and engagement.
- (c) AI-powered Attention Guidance: Use AI-powered attention guidance technology to suggest relevant products or promotions based on customer behavior.
- (d) AI-powered Feel Technology: Implement AI-powered feel technology that analyzes customer emotions and responds accordingly through scent diffusers or other sensory experiences.
- (e) Integration with Social Media: Integrate social media platforms with AI-powered visual communication systems to create a seamless customer experience across online and offline channels.

To sum up, AI-powered visual communication is a game-changer for fashion brands, coffee shops, and retail spaces in Hong Kong, Korea, and Japan. By integrating AI technology with traditional visual communication techniques, businesses can create immersive and engaging experiences that drive sales, increase customer satisfaction, and build brand loyalty.

4. A.I. DEVELOPMENT WITH SPATIAL AND SENSES

Based on the findings of Gu (2023) that 'New-tro design style is popular in Korean culture. He mentioned that a new fashion of cafe design is a modern reinterpretation of past objects and design features in the interior space to bring a sense of nostalgia to the middle-aged and elderly,but also brings new fun to the millennial generation. The study of Gu contributes a better understanding on New-tro design culture by researching the interior colors and materials of New-tro style cafes in Seoul, South Korea. After examining the concept and status quo of new- tro design through literature survey, Gu (2023) reflected that the new-tro café with "Korean standard color analysis

procedure (KSCA)" is a kind of analysis method to analyze the color, material and modeling characteristics of indoor space.

"Good company either as customer's eating companion/s or other guests is considered the most important factor to predict dining experience for the latter can become an important reference of how customers expect from the restaurant in terms of financial value, said Anderson and Mossberg (2004) as quoted by Azizi (2010). Oldenburg (1997) gives a clue that people may tend to seek informal eating or drinking places as " neutral ground;", which allow everybody to come, be humble, and lead them to create a sense of belonging for the places making them feel free andfun to talk about personal, community and world issues. On the contrary, there might be the casewhen places fail to welcome or attract people because they cannot meet those criteria." (Wardono, 2010)

Besides, Gilchrist (2009) mentioned that community development workers are themselves a resource or a tool in this process, but do not usually have a 'stake' in what happens as a result of those connections. He highlighted that networks are important in community development. "Responsibility for network development and management is increasingly recognised approachhas been explicitly incorporated into some models for community engagement."

4.1. AI-Powered Color Analysis

Technology inspires us to think out of the box. Humanistic caring triggers us to integrate technology for service/ process/ product transformations. The following theories are to AI-powered color analysis for business transformations:

- (a) **Hue-Value-Chroma Theory**: This theory proposes that colors can be divided into three primary dimensions: hue (color), value (lightness), and chroma (saturation). AI algorithms can analyze an individual's skin tone and hair color to determine their optimalhue, value, and chroma. Korean' fashion and skin care products may apply this theory fornew services of color analysis for personality and image.
- (b) CCT (CCT = Correlation Color Temperature) Theory: This theory suggests that skin tone can be classified into four categories: cool, warm, neutral, or mixed. AI algorithms can use this theory to identify an individual's skin tone and recommend corresponding colors so as to build appealing dining and shopping vibes to customers.
- (c) Color Harmony Theory: This theory proposes that certain colors complement eachother when used together. AI algorithms can analyze an individual's skin tone and recommend harmonious color combinations, for example interior design and designintervenion in space usage.

4.2. AI-Powered Challenges

Despite the benefits of AI-powered color analysis, several challenges and issues are worth to be considered for business transformations. They are:

- (a) **Data Quality**: The accuracy and relevancy of AI-powered color analysis depends heavily on the quality of the data used to train the algorithms. In Asia, we may have to explore the standardized data collection processes to ensure the processes are good enough to generate quality data for strategic business decisions.
- (b) **Cultural Factors**: Color symbolism and preferences vary across spaces and cultures. AI algorithms may not be able to account for these differences, leading to inaccurate recommendations that manual adjustments are needed.
- (c) **Regulatory Framework**: There is a need for a regulatory framework that governs the use of AI-powered color analysis in different industries with compliance considerations, for

example, the beauty and skincare industry. A clear and user-friendly guidelines on color analysis, data privacy and security are needed with consultations from key stakeholders.

The rise of AI-powered color analysis has brought about both opportunities and challenges in Asia's beauty and skincare market, retail shop design and space intervenion. While AI algorithms have improved accuracy and personalization, concerns about data quality, cultural factors, regulatory frameworks, privacy concerns, lack of standardization, and ethnic diversity remain significant issues that need to be addressed. To ensure the continued growth of this industry, it is essential to develop a regulatory framework that balances innovation with consumer protection and cultural sensitivity.

This paper highlights the need for further research into the issues surrounding AI- powered color analysis in Asia, particularly with regards to data quality, cultural factors, regulatory frameworks, privacy concerns, lack of standardization, and ethnic diversity. By understanding these challenges and addressing them effectively, policymakers can create a moresustainable and inclusive beauty industry that meets the diverse needs of consumers across Asia.

5. METHODOLOGY AND CONTENT ANALYSIS

Communication is to send textual messages - verbal and non-verbal for co-ordinating, integrating, controlling and persuading purposes. Hence, textual messages are tools for persuading people's minds to accept ideas. Organizational behavior is to understand, predict and control others' behavior. Management is to manage resources within an organization for achieving organizational goals. These three principles – business communication, organization behavior and business management bear an inter-related relationship.

Textual messages are data for conducting content analysis during the process of grounded theory which helps us to induce a concept for generalization and future prediction. From the following quotation, we can realize that content analysis is a technique to enable researcher to study human behavior in an indirect way. It is analysis of written contents drawn from a certainkind of communication paper, like textbooks, essays and articles from newspapers. Through analyzing these written work of people, the researcher can:

- understand the behavior of people and organizational patterns
- infer attitudes, values and cultural patterns in different countries or organizations
- gain ideas of how organizations are perceived
- can see the trend of certain practices
- differentiate practices among certain groups of people

"Content analysis as a methodology is often used in conjunction with other methods, in particular historical and ethnographical research. It can be used in any context in which the researcher desires a means of systematizing and quantifying data. It is extremely valuable in analyzingobservation and interview data." (Fraenkel & Wallen, 2003)

Content analysis is a systematic and objective analysis of selected text characteristics. This includes counting the number, frequency of words, finding out the characteristics of themes, characters, building relationship among items, paragraphs, finally establishing meaningful concept. It is not simply a quantitative research method but also a qualitative one as the purpose of the writing is also reflected through the analysis.

6. RESULTS AND DISCUSSION

To examine factors that would be possibly related to Fashion with Identity, a qualitative research was conducted. In this research, in total of four articles published from 2004-2020 were referenced. Based on the study, various factors were especially more relatable to the topic, such as Color Reflection, Design Intervention. Attention Guidance, Feel from Visual Communication,Self Direct with Matching Colors, Critical Marketing for Unique Personality, Behaviour Changes with Positive Thinking, Live Well with Colors, Wisdom Development, and Inputs fromEnvironment. By performing a text search process with Nvivo, the interrelationship between the factors mentioned above and Fashion with Identity was examined. The text search results showed that part of the factors such as Color Reflection and Attention Guidance were noticeablymentioned more often with 170 and 115 times accordingly. On the other hand, some of the factors including Wisdom Development were relatively less mentioned. (**Table-1**).

Factors	Sources	References
Color Reflection	4	170
Attention Guidance	4	115
Design Intervention	4	115
Feel from Visual Communication	4	112
Critical Marketing for Unique Personality	4	82
Self Direct with Matching Colors	3	76
Behaviour Changes with Positive Thinking	3	48
Live Well with Colors	4	46
Inputs from Environment	3	14
Wisdom Development	3	8

 Table 1: Findings of the Keywords Search

According to the result of the quantitative research, four of the keywords mentioned above apparently had a more considerable relationship with the topic, including Color Reflection, Attention Guidance, Design Intervention, and Feel from Visual Communication. A graphicalmodel was built based on the result. (**Figure 1**).

Fashion Identity R&D Via Color, Design and Technology with AI Transformation



Figure-1: Model of the 4 Factors affecting the "Fashion with Identity"

7. CONCLSUION

Through this research, the key factors identified for fashion identity examined are: Color Reflection, Design Intervention. Attention Guidance, Feel from Visual Communication for fashion identity. Through this paper, service organizations and business leaders may re-think the use of color analysis, space design and use of AI to improve business performance and customer engagement for business transformations. This paper serves to enhance the implementation of design and identity related elements in retail space, for example, fashion retail co-brand shop space design and retail shops with coffee shop design for improving customer experiences and building happiness via the use of colors and technology for developing loyal customers attached to spaces of business.

The researchers recognized that content analysis used in this research may have limitations in the availability of texts. In addition, subjective interpretation of the selected texts may also be a limitation. Future research could expand on this study by increasing the number of published literatures for content analysis and conduct a focus group study in conjunction with the analysis toestablished cause and effect relationships and extend on the resulting model.

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26

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27

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