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Cultural Differences of Packaging Color on Consumer Perception

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Cultural Differences of Packaging Color on Consumer Perception

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1. Introduction

1.1 Purpose of the research

Evaluating how culture impacts effectiveness in each country and practices in each international company may contribute to a more conscious buying or advertising process. Taking into consideration all of the contamination that is caused by the massive consumption, makes us realize how to buy more responsibly and how companies use our unconscious biases and culture to market and sell their products. That is why we want to analyze the effect of the colors in the packaging on the different cultural perceptions of the product.

Understanding marketing and having access to this information and analysis is a privilege. As David Crystan said, only 85% of the world population knows how to read and write (Unesco, 2015) and 20% understands English. That is why we want to raise awareness and evaluate the existence and importance of marketing, psychology, culture and their impact on product packaging. It is necessary to include ethical practices analyzing the great component that the three of them create.

How different products are marketed through different colors in other cultures might be interpreted differently and they will influence the purchase decision-making.

The hypothesis for this research is: Color has different meanings across cultures and they shape the purchase-decisions differently, depending on each region.

Throughout this paper we are going to cover basic definitions such as marketing, culture, customer perception, packaging and psychology. In the literature review, it will evaluate the meaning of certain colors in various cultures and how companies have been taking advantage of this information. Companies have to adjust their image and adapt to the different cultures they are selling so they can really connect with the customers. We are going to identify the parts of the eye and the physiological effects of the colors, as well as the visible spectrum that allows us to perceive the colors. After that, the different studies and their relevance will be discussed, as well as the importance of methods to get this information

such as surveys, focus groups and AI. Lastly, it will present some suggestions and conclusions about the research conducted.

1.2 Definition of marketing

To start, it is important to understand and address the meaning of marketing, which is a complex but versatile concept. It is usually approached in two ways: “As an independent discipline or as a managerial process” (Kimmel, p.5, 2018).

The interdependent discipline is approached by “The activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offers that have value for customers, clients, partners, and society at large.” (American Marketing Association, 2007) On the other hand, the managerial process meaning of marketing is about “The strategic business function that created value by stimulating, facilitating, and fulfilling customer demand. It does this by building brands, nurturing innovation, developing relationships, creating good customer service, and communicating benefits. By operating customer-centrally, marketing brings the positive return of investment, satisfies shareholders and stakeholders from business and the community, and contributes to positive behaviorism change and a sustainable business future.” (Chartered Institute of Marketing, 2007).

Conducting a literal derivation analysis of the word Marketing, it can be recognized that the first part of the word “market” means go to the market to purchase or sell goods and services (Kimmel, 2018).

The various elements that are used in marketing are called *marketing mix*, which is defined as “The set of marketing tools the firm uses to pursue its marketing objectives in the target market” (Kotler, p.8, 2003) these tools are recognized as the 4P’s.



Figure 1.2: Marketing Mix (4Ps) (Kimmel, 2018. P. 8)

Here are some relevant questions that regard each component. (Kimmel, 2018)

Regarding product:

- What do consumers desire from the product?
- What attributes or benefits are important?
- *How should the products be designed and styled?*
- *How should products be packaged?*
- *What product variations are required?*
- How should the products be differentiated from those of competitors?

In this research, the main focus will be the third, fourth, and fifth question regarding the product.

Regarding price:

- What pricing policies are appropriate?
- What is the best suggested retail price?
- Should price variations be established?
- How do consumers perceive prices?
- How effective are volume discounts and wholesale prices?

For place (distribution):

- How should the products be made available to consumers?
- Where do consumers expect to find the products?

- What distribution channels and distribution centers should be established?
- Where should company plants, factories, and warehouses be located?
- Should the products be available internationally?

For promotion:

- How should the products be advertised?
- Which media should be used for advertising and other promotions?
- What is the relative effectiveness of different promotional methods (advertising, coupons and discounts, personal selling, direct marketing)?
- How can good public relations for the company best be achieved?
- What influence tactics should be used in face-to-face selling?

In this research, the focus is on the product and promotional components, where we are going to evaluate the packaging color and the product design attractiveness and how the perception of each varies from one culture to another.

1.3 Definition of packaging

Packaging is the element that encompasses art and technology of protecting and enclosing products for distribution, sale, storage, and use. In the beginning, the packages were not studied by researchers, they were just invented to protect the product and provide functional benefits, after this was used as a marketing strategy and people started getting attracted by the designs and colors, it started being recognized as a communicational element, rather than just a part of the product component in the marketing mix. (DRASKOVIC, 2007).

The essential functions of a package are to store and protect the product, attract customers in a market full of competitors, and contain all of the information that is included in the product. It should also be convenient for handling the product to the target market. This means that logistics and marketing are so related and necessary in understanding the supply chain and product design because of the materials used and how they will be perceived by the customer. (DRASKOVIC, 2007).

1.4 Definition of Psychology

One way of defining marketing is “psychology applied to business” (Kimmel, p.10, 2018), even though this concept is so simple given the complexity of marketing, there are various ways that marketing based all of their studies in psychology.

This science comprises many subfields, but in this research, I am going to focus on: (Kimmel, 2018).

- Social psychology: studies how individuals’ attitudes, thoughts, emotions, and behaviors affect and are affected by other people and the social environment.
- Cognitive psychology: studies the mental mechanisms that underlie how people make judgments and decisions
- Consumer psychology: studies the application of theoretical psychological approaches to understanding customers.

1.5 Customer perspective

“Customer perspective is defined as the viewpoint or stance that the customer takes after receiving a well-written report, where they are required to take action based on the findings presented to them.” (Bin Azad, 2008). It relates directly to the person’s beliefs, culture, attitudes, and perception of the world. Keeping in mind that a person’s perception varies from one culture to another, the way that they perceive marketing might be different as well. “For example, cultural differences can influence how consumers perceive and respond to marketing messages. In some cultures, direct marketing messages may be perceived as too aggressive or disrespectful, while in others, indirect messages may be viewed as too vague or uninformative.” (Wheeler, 2023). This is so important to keep in mind if a business is trying to sell goods or services in other parts of the world, where the interpretation of their advertising or packaging can be misunderstood.

As some people may confuse the idea of packaging or an advertisement from one culture to another, it could happen the same with the colors that are used in the product and the packaging. Some colors can have a different meaning in one country than in another, and if the marketer is not aware of

this, the repercussions can be catastrophic. “Research shows that ninety-eight languages have words for the same eleven basic colors, however, the meaning of a color may be very different” (Pater, p.75, 2020).

“In a 2018 survey, product packaging design influenced 72% of American consumers’ purchase decisions, while 67% stated that the packaging materials did. This is because packaging is the first thing buyers see while shopping or browsing”. The relationship between product packaging and brand equity is crucial if a brand wants to succeed and stand out from the rest. Still, it is important to recognize that all customers have different perceptions about certain marketing strategies because of previous knowledge, cultures, and ways of thinking (Dillon, 2024).

1.6 Culture.

“It is safe to say that we all belong and are influenced by social groups and thus, everyone is a social animal.” (Kimmel, p.339, 2018). Technology and globalization have unified the global community, and have contributed to expanding knowledge that was once exclusive to certain groups in society. We are now experiencing the influence of a variety of trends worldwide thanks to the internet and social media apps such as TikTok or Instagram. We are all part of a digital and global community, but also part of a social physical community, these scenarios “develop our behaviors within a culture.” (Kimmel, p.339, 2018).

Regarding the colors in each culture, “there are conflicting theories on whether the cultural meanings of colors can be categorized. Meanings can change over time and depend on the context. The cultural meaning of colors is not set but always changing.” (Pater, p.75, 2020) This sets an accurate vision of our changing world, where the meaning or cultures are constantly changing and marketing or advertisement can take good advantage of this.

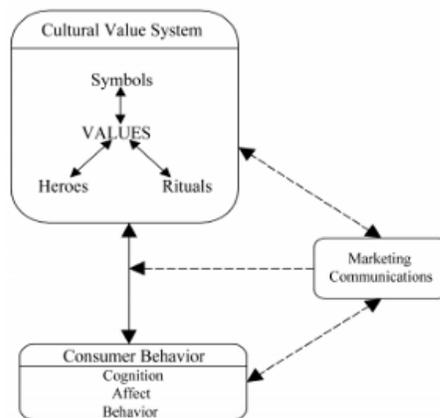


Figure 1.6: The interaction of culture and consumer behavior. (Pater, 2020, p.344, Figure 8.1)

The values of a culture are principles that shape the traditions and behaviors of the people of its community, they are usually depicted by symbols that directly relate to the heroes and rituals, which marketers use to approach their customers and influence them to buy certain products. The three main processes that the figure above, are the pillars that constitute the consumer behavior towards a brand or a product. Cognition means the mental processes in which the customer interprets the information, which can be helpful to a marketer when creating a strategy. Then, the affect means the emotional responses that the customers have toward a marketing communication based on their values and culture. Lastly, the behavior is the actual response or decision the customers make, which is influenced by cognition and affect. (Kimmel, 2018).

2. Conceptual Overview

2.1 Specific Color Meanings in Marketing

There is an established lineament about the colors and what they represent worldwide, but it was created mainly by Americans. Without taking into consideration the cultural

differences of each country, the symbolism and meaning of the main colors used in marketing strategies have a huge impact on how customers perceive the product and brand. (Persuasion Nation, 2024)

For example, red “symbolizes energy, urgency, and passion.”It creates a sense of urgency and excitement. That is why most call-to-action buttons, limited-time offers, and sales are red. It is also an excellent product for food and beverage brands because it is known for making customers hungry. Red can be seen in different brands from Coca-Cola to Target, and from McDonald’s to CNN, because all of these four brands work based on hunger as in Coca-Cola and McDonald’s, or urgency as in CNN. (Alnasuan, p.3, 2016)

Then, there is the color blue, used by industries that require high trust, such as Facebook, JP Morgan, LinkedIn, and Ford. It symbolizes calmness, expertise, reliability, wisdom, and security and that is why the companies that work with high amounts of money and personal information need to be recognized. Depending on the shades, for example, pastel blue is also associated with boy babies in America, but it is mostly used in marketing to transmit trust. (Alnasuan, p.3, 2016)

Regarding the color green, it is associated with nature, wellness, and health. It is used in eco-friendly brands or products that promote well-being, such as Starbucks, which is a place where a customer goes for the experience of calmness, which can also be transmitted to their packaging put on shelves to transmit the same feeling. Other brands that use the green color are Tropicana, and Animal Planet. (Alnasuan, p.4, 2016)

Yellow symbolizes “optimism, attention, and creativity.” The color is also related to the sun, positivity, and happiness. Keeping in mind that this color evokes high energy levels, it encourages mental processes to call out for attention, for example, this color is used in many

highlighters to focus on important information when reading. The companies that most use this color are IKEA, DHL, and Shell. (Alnasuan, p.4, 2016)

“Purple combines the stability of blue and the energy of red, symbolizing luxury, wisdom, and creativity.” It is usually used in high-end brands and products that tend to be sophisticated, this also relates to history keeping in mind that royal societies wore this color to identify themselves from others. That is why high-luxury brands such as Rolex use purple in some of their designs. (Alnasuan, p.4, 2016)

Orange represents fun and adventure and it stimulates youth mainly, that is why brands such as Nickelodeon use this color to encourage creativity, courage, and confidence in its viewers. It is also used in call-to-action buttons because this color encourages taking “the next step,” which relates a lot to its adventurous meaning. Brands such as Firefox and Amazon are based on the orange color. Regarding food, this color has a similar repercussion as the red color, it enhances appetite and attracts customers who want flavored food.(Alnasuan, p.5, 2016)

The last two colors are black and white. Black stands out for its elegance, luxury, and authority. It is a timeless color, which means that it can be used anytime and does not depend on trends, that is why many high-end fashion and beauty brands use this color, but also because they want to project “exclusivity and refinement.” This color can also mean intrigue and mystery, and usually, it is combined with other colors of the wheel so the brand can be more attractive. Some of the brands that use this color are Apple, Chanel, Adidas, Nike, and Dior. On the other hand, white is a color that represents purity, simplicity, and clarity, and it is used to transmit a minimalistic aesthetic. This color is used by beauty brands that want to promote cleanliness or for high-tech companies that highlight efficiency, and innovation. Usually, these two colors are in every brand, in the background, or in some details of the products. (Alnasuan, p.5, 2016)

2.2 Symbolism of colors in each culture

How people respond to colors in each culture has a lot of impact on the marketing strategies that a company implements. For example, the black color represented mourning during the Roman empire, while in Judaism and Christianity, this color is associated with death and evil. In the twentieth century, in Italy and Germany, black represented the color of the fascism in those countries. In the Renaissance, it was worn by the wealthy and nobility in all parts of Europe. (Pater, p. 75, 2017)

The white color is the color of death in China, Korea, and Vietnam. In India, people wear this color after a family member passes away. While, in religions such as Christianity this color is used in rituals to represent chastity, purity, virginity, and peace, this also relates to the bridal colors that are used in the Western culture or to the colors that were used in Europe representing the monarchy. The sign of peace is white, the white dove on a white flag is a synonym of peace and surrender (Pater, p. 76, 2017).

Yellow is a noticeable color from a distance, so it is usually used for high-visibility objects such as traffic signs, road maintenance equipment, and taxis. In China, it represents happiness, culture, glory, wisdom, and harmony and in this country, during the Qing Dynasty, this color was exclusively used by the members of the imperial household. While in the Philippines in 1986 this color was associated with the yellow revolution in which there were a lot of popular and violent demonstrations against the government. In the Catholic church and some flags, yellow symbolizes gold. (Pater, p.76, 2017).

Orange is known in Asia as “saffron” and it is named after the spice, the same one that the divinity Krishna is dressing in Hinduism. In Buddhism, orange is the color for illumination, the color of the robes worn by monks, and the highest state of perfection. The word “comes from

the Sanskrit word for orange tree.” This color is used by prisoners to make them distinctive in case they escape, and it is also used in awareness campaigns to prevent self-injury. Orange was used during the Apartheid in South Africa, in protests in Northern Ireland in the Dutch monarchy (Pater, p.77, 2017).

Red is a traditional color in India and Nepal used in bridals. The word red “comes from the Sanskrit word for blood.” It is known that Mars is red and in Greek mythology, Mars was the god of war. It is the oldest symbol of the socialistic flag, and it is associated with communists as well. In China, this color means good luck, and happiness, it is said that it promotes a long life. That is why it is used in Chinese New Year celebrations. “In Japan’s Shinto religion, red is the symbol of life”. While in Russia the word red has the same root in Old Russian as the word “beautiful.” (Pater, p.77, 2017)

Since 1980, green has been the color of nature in many cultures, because it is seen in vegetables, trees, and grass. It is used in environmental organizations and parties specifically in Europe. The word “greenwashing” is used to describe the advertising of companies that use positive environmental practices to cover up environmentally unfriendly activities. It is also the color of Islam, and the prophet Muhammed. Which is why many Islamic flags use the color green. It can be concluded that, in most countries, green is associated with nature, while in Islamic countries it is associated with religion. (Pater, p.77, 2017)

The color blue is described as the best-liked color in all cultures, which is why it became the color for international businesses in 1946 by the United Nations. Blue is the national color of Italy, while the Tuareg of North Africa wear blue turbans as a meaning of divinity in the Quran. “Several languages, like Japanese, Thai, Korean, and Lakota Sioux, use the same word to describe blue and green.” (Pater, p.77, 2017)

Purple is a color used by the Women's Suffrage movement and the color was adopted in the 1970s by the women's liberation movement, while in Thailand, women wear purple in mourning. In Japan, this color is associated with the emperor and aristocracy, while in Western politics, the color purple represents neutrality. In the past Roman times, the Byzantine emperors wore purple because it was a really expensive product because of the process behind the dye. (Pater, p.77, 2017)

Even though in some countries a color may reflect a similar meaning or cultural movements, in most cases the meanings may differ a lot and that is why it is really important for a marketer to know the culture and background of the market they are advertising and the people's perceptions of each color. Even though the company has to be loyal to its images and logos, there can be some variations to have a good performance in other places.

It is also important to keep in mind that the shades of the colors can also influence the perception of the customers. And despite the historical events, the culture is always changing as well as the perceptions of the colors and the opinions of the customers towards a good or service, depending on their experience and the context they are living in. Thanks to globalization it is easier to market a certain product in many different regions, without changing a lot of its traits because the internet has contributed and persuaded decision-making. Still, the company needs to be aware of the customers, respect their beliefs and history, and act accordingly.

2.3 Color's effect in the emotions and in the decision making of a purchase

The statistics say that color is the main influencing factor in purchases for almost 93% of people, and it is the primary reason why 85% of people buy a product. (Harvard Business Review) Humans are social beings, so colors and visual characteristics can play a really important role in their interactions and how they perceive life.

It is necessary to comprehend the basic model of the colors, how to combine these, and find the perfect match and harmony. This is crucial when marketers create advertising, packaging, and products in different regions because as said before, there might be some changes in the way that products are advertised but still, there needs to be a coherent pattern in their designs.

The primary colors are yellow, red, and blue. The secondary colors are the combinations of the primary, which means that these would be purple (red+blue), orange (red+yellow), and green (yellow+blue). Apart from these, the tertiary colors are also the multiple combinations of the secondary colors, which means that are the rest of the colors that we can see in the theory of color.

Even though there are some different opinions about whether white and black are colors, they are rather considered “tones that increase colors. Black is the absence of light, while color is a phenomenon of light.” (Adobe).

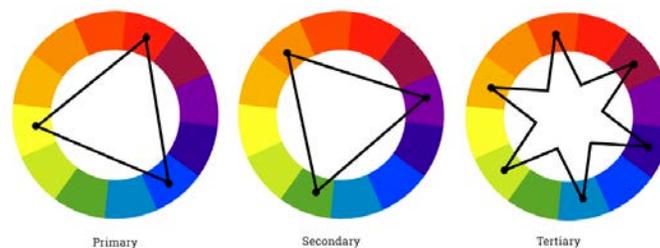


Figure 2.3.1: Groups of colors (Adobe)

For example, Coca-Cola’s main colors are white and red. Their packaging usually includes the name of the brand in white fonts, and the can is red-colored. But in 2023, in China Hong Kong, and Taiwan, there was a really important festival happening around the Lunar New Year, which means the arrival of spring and the beginning of a new year- and for the Chinese, the beginning of the lunisolar calendar, and the company decided to change the design of the cans

and include white rabbits which in the “Chinese market presented a family of six rabbits across three generations on the packaging of Coca-Cola, showing the wonderful reunion moment,” the company used the green color which is the Chinese lucky color, but it does not relate to the colors of the brand. (Swire Coca Cola, 2023). These are some adaptations that Coca-Cola needed to include to attract more customers and relate their products with the Chinese cultures and beliefs. The organization of their shelves also created an impact on the customer perception of the product and it was really attractive for the population in that country.



Figure 2.3.2: Coca Cola’s packaging strategy in Chinese market 2023

This strategy was successful because as Amy Song, Coca-Cola APAC R&D Centre Senior Director said “The emotional connection is what needs to come in for consumers to feel trust and confidence in the brand, whether this is by feeling respect, acceptance, and do on- and this is where culture comes in- as it is what brings human experience into the context of the food and beverages” (Neo, 2023). And that is what Coca-Cola did, they approached a different culture with respect and decided to market their products with empathy to attract the customers and make them feel seen and related to the brand. The Chinese customers felt connected with this strategy and it encouraged them to purchase more of these products, this is seen in the “Asia-Pacific unit case volume expanding 2 percent, especially in China”, during that time of the year. (ZHUOQIONG, 2024)

The brand implemented the same strategy in Vietnam when during the same holiday, Coca-Cola decided to include golden swallows in their cans, which is a color that was never seen in the brand (Swire Coca Cola, 2023). They made these adaptations regarding Vietnamese culture, their beliefs, and the effects of the golden color in this country, which represents happiness, culture, glory, wisdom, and harmony, while the swallows “symbolize all the blessings of the New Year”. (Pater, p.76, 2017).



Figure 2.3.3: Coca Cola’s packaging strategy in Vietnam 2023

Moreover, there is research about the effects of the packaging color of chocolate in Brazil and France conducted by Iuri Baptista, [Dominique Valentin](#), Erick Saldaña, and Jorge Behrens, which showed how the color of the packaging influenced the expectations of the participants. The purpose of the study was to investigate. Two groups of 210 consumers from each country evaluated their predictions regarding the sweetness, bitterness, fruitiness, melting, and liking of the chocolate. The samples of milk and dark chocolate were packaged in seven colors: black, blue, brown, green, red, pink, and yellow. (Baptista et al., 2021) The results were clear, “Black packaging made consumers expect chocolates to be more bitter, pink and yellow packaging made consumers expect chocolates to be sweeter, even though the effects of packaging color were not significantly different between cultures” (Baptista et al., 2021). It would conclude that the differences between the cultures were not significant because of globalization, many

international companies can be located in both countries so when the participants saw a product, they immediately searched for cues that matched previous experiences and tried to anticipate what it is and what are its characteristics (Piqueras-Fizman & Spence, 2015). But, it is precise to say that colors affect customers' perceptions. (Baptista et al., 2021)

2.4 The eye

To analyze the impact of packaging colors on customer behavior, it is important to analyze and recognize the parts of the eye that can identify and read the wavelengths of the color, because as Merriam-Webster says color is “a phenomenon of light (such as red, brown, pink, or gray) or visual perception that enables one to differentiate otherwise identical objects.” (NIH, 2020) It means that color is simply light that is perceived by the brain after being reflected in an object, and it is converted to electrical signals that the brain can identify and perceive.

The eye is such a complex organ that has many parts to work properly. The way the human eye can see is first, thanks to the cornea because the light passes through it, and keeping in mind that the cornea is shaped like a dome, it bends the light and helps the eye to focus. Then, some of the light enters the pupil, a little opening. And then there is the iris, which is the colored part of the eye. This part helps the pupil to control how much light the pupil lets in. After that, the light passes through the lens, where with the cornea, the eye focuses the light on the retina. When the light hits the retina, which is a sensitive layer of tissue at the back of the eye, “special cells called photoreceptors turn the light into electrical signals. These electrical signals travel from the retina through the optic nerve to the brain. Then the brain turns the signals into the images you see”(National Eye Institute, 2022).

Once the signals enter to the brain through the optic chiasm they go to the occipital part of the brain where most of the visual processing happens. As the optic nerve travels to the brain,

some parts of it travel through different branches, meaning that they do not go to the visual cortex, where the brain processes the information. Instead, they go to the pupils, before the nerve fibers go to the visual cortex, there is a pupil reflexion where the eye “automatically adjusts to let more or less light come in.” Then, there is also a process in the ciliary body where the “muscles of this organ adjust the shape of each eye’s lens” where the eye focuses on what it is looking at. Lastly, the nerve fiber also tells the brain that the eye detects light, and this is called the circadian rhythm, which “contributes to several processes like blood pressure, body temperature, and blood sugar.” (Cleveland Clinic) Some of the research that includes neuromarketing analyzes how the colors affect these parts, and based on this information they can make more appealing products and packaging to stimulate the brain.

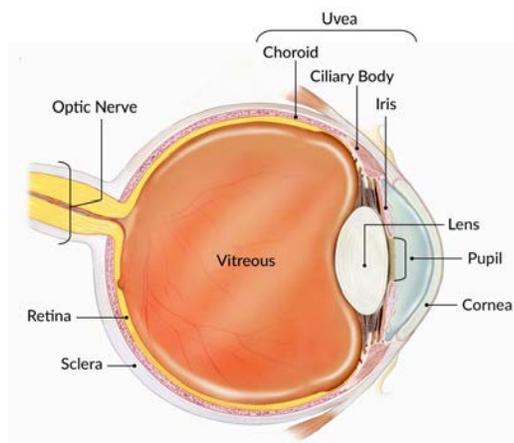


Figure 2.4.1: Eye’s Anatomy (Cleveland Clinic)

It is important to recognize the types and meaning of photoreceptors, which are “cells in the retina that convert light to electrical signs that the brain can identify and interpret. There are two types of photoreceptors, the cones and the rods” (*Photoreceptors* 2017).

The rods are responsible for low light conditions, meaning that they can detect small amounts of light but not colors. This phenomenon is called scotopic vision. They help us for

night vision and there are over 120 millions of these photoreceptors in the retina (*Rods* 2018).

Regarding the cones, they focus on daytime vision, meaning that they can perceive more light in comparison to the rods, and they can identify colors. This phenomenon is called photopic vision.

There are different type of cones, sensitive to short wavelengths or S-cones, which are the photoreceptors that focuses on blue light mainly, then the medium wavelengths or M-cones, which are the ones that focuses on green light, and L-cones or large wavelengths, which are the ones that focuses on red light mainly. There are around 6 million of cones in the retina (*Cones*, 2018).

The rods are responsible for specific and sharp vision while cones are responsible for the peripheral vision (*Cones*, 2018)..

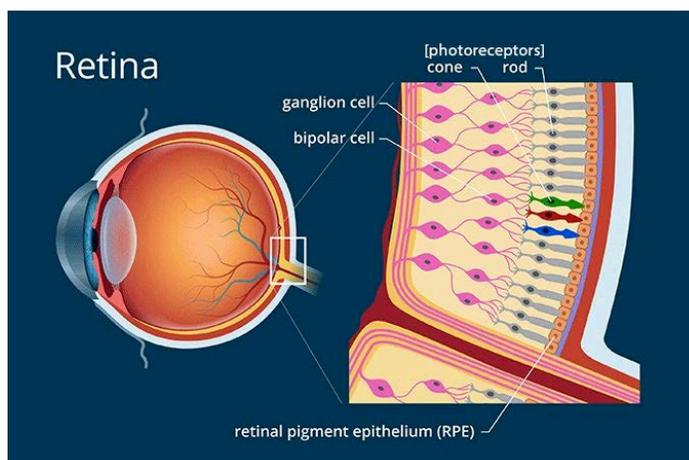


Figure 2.4.2: Retina's morphology (*Cones*, 2018)

The main process of how the brain recognizes a color is when the light is detected by the retina photoreceptors, and different physiological responses happen, that are going to be discussed below.

2.5 The visible spectrum

“The human eye sees color wavelengths ranging roughly from 400 nanometers to 700 nanometers” (Helmenstine, 2024). To begin it is important to understand the following concepts:

- Wavelength: “The distance from the "crest" (top) of one wave to the crest of the next wave is the wavelength”. (Center for Science Education)
- Frequency: The number of waves that pass through a certain point in an amount of time, they are measured in Hertz (Hz).
- Nanometers: Measure of really small distances (nm).

“The frequency of a wave is inversely proportional to its wavelength”, because if a wave is longer, it will take less waves to pass over a certain point during a period of time. (Center for Science Education)

Keeping this in mind, the eye has the ability to capture the reflection of these waves in an object, that is why we can see the colors.

The wavelengths of visible light are:

Color	Frequency
Violet	380-450 nm
Blue	450-495 nm
Green	495-570 nm
Yellow	570-590 nm
Orange	590-620 nm
Red	620-750 nm

Table 2.5: Frequency of the colors

“Violet light has the shortest wavelength, which means it has the highest frequency. Red has the longest wavelength, the shortest frequency” (Helmenstine, 2024). These lights have a huge impact on customer decision making when purchasing a product.

It can be concluded that bright colors have a higher tendency to be seen and produce a better outcome in customers eyes. They tend to attract more people and influence their purchase decision making. That is why most of the brands study their brand colors as well as the colors that will be included in their packaging, so that they can be easily perceived and create a feeling, as well as a physiological response in the person who is interested in buying the product.

2.6 Neuroscience of color.

"It's amazing how colors can truly impact our mood and influence our behavior," says Rachel Goldman PhD. (Cherry, 2024) It is shown that color has a physiological impact in the human body, it can change our moods, the way the body reacts physiologically meaning that the heart rate is altered, as well as the brain activity, for example. These reactions are studied by psychotherapists, doctors, and neuromarketers. Each profession has different approaches to the information obtained by the studies, but during this study the main focus is the relationship the color has over a product and its customer perception, which is directly studied by Neuromarketing.

Neuromarketing is defined as “the study of how people's brains respond to advertising and other brand-related messages by scientifically monitoring brainwave activity, eye tracking and skin response” (Lutkevich, 2022). There have been many critics against this field of study and how unethical it is to learn about involuntary physiological activity and use this information for commercial purposes. Some people such as Gary Rusten, an anti-marketing activist, say that it can be manipulative because the marketer can use the customer’s fears or “encourage specific neural responses to stimuli” in order to attract them to buy a product, but neuromarketers contend that it is not desirable because they know there is a prior development in the relationship between the customer, the brand, and the product. Other people say that neuromarketing is not a factual

science and it is “not backed by credible neuroscientific claims”, but marketers say that it is just a way to detract from the study. Lastly, it is said that there is not new information, neuromarketing just simply validates the knowledge that marketers have about customers. (Lutkevich, 2022)

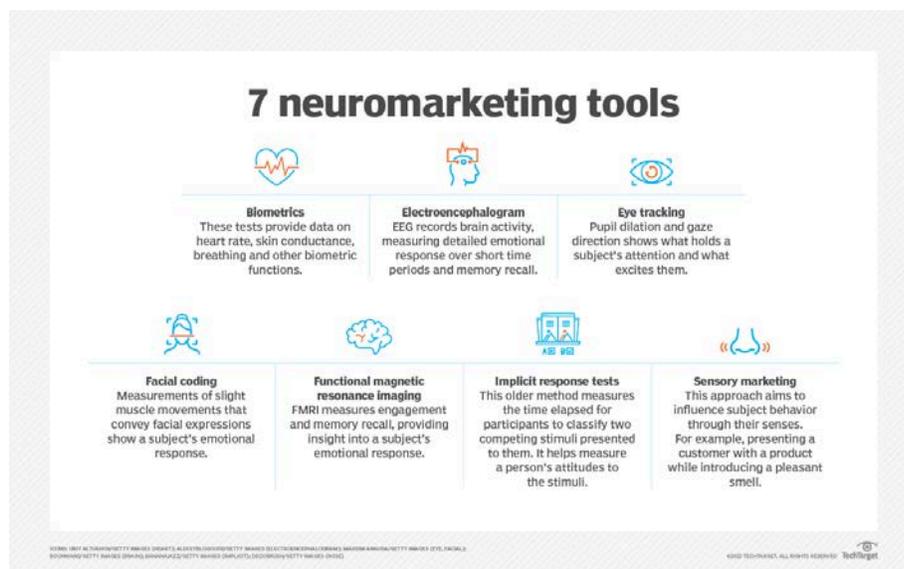


Figure 2.6: Neuromarketing tools (Lutkevich, 2022)

Neuromarketing measures its studies by different techniques and tools, one of them is the fMRI, which is a machine that “tracks the blood flow and the deep in the subcortical regions of the brain” (Lutkevich, 2022). Then, there is the EEG or the electroencephalogram, which is a machine that uses sensors that are put in the head of the participant to track brain activity in really short amounts of time. Regarding cost and effectiveness of these two, “an EEG is less precise than an fMRI, it is generally less expensive. FMRI cost millions of dollars, while EEGs cost tens of thousands.” (Lutkevich, 2022).

There are also other tools to track physiological changes such as eye tracking which is the method that records where a person looks during a certain amount of time, meaning they are interested in the specific point they are looking for. Also, there is the arousal, which is measured

by the physiological reactions and biometric data such as “including heart rate, respiration rate, skin conductivity and pupil dilation”. Lastly, there is facial coding which includes movement of facial expressions, to recognize an emotional response towards a stimulus, and perform a “sentiment analysis” (Lutkevich, 2022).

Regarding the future of neuromarketing, it is a field that has not been studied as deeply as other sciences, because the technological tools are really expensive. As it becomes more accessible many companies will start using it. For example, neuromarketing will be used in contexts in which virtual reality is taking place too. And companies such as Meta and Apple have already been launching their products related to this such as the Apple Vision Pro or Meta Quest, which are products that create “a computer-generated environment with scenes and objects that appear to be real, making the user feel they are immersed in their surroundings”(Corporativa). I would say that we are much closer to the future than we may think and the practices that involve neuromarketing can be really helpful and interesting when evaluating the customers mind and preferences, but this information needs to be handled with ethics and responsibility.

2.6.1 Marketing and culture

“One 2020 study that surveyed the emotional associations of 4,598 people from 30 different countries found that people commonly associate certain colors with specific emotions”. (Abu-Akel, et, 2020). According to the study results were the following.

Color	Meaning	Percentage	Number
Black	Sadness	51%	2345
White	Relief	43%	1977
Red	Love	68%	3127
Blue	Relief	35%	1610
Green	Contentment	39%	1793

Yellow	Joy	52%	2391
Purple	Pleasure	25%	1150
Brown	Disgust	36%	1655
Orange	Joy	44%	2023
Pink	Love	50%	2299

Table 2.6.1: Results Emotional Associations of Colors And Emotions

“The study's researchers suggested that such results indicated that color-emotion associations appear to have universal qualities. These shared meanings may play an essential role in aiding communication” (Abu-Akel, et, 2020). It can be concluded that the physiological responses are the same across cultures, but the feelings towards the colors are shaped by the environment, our experiences and the culture we are used to. This is because the human “searches for cues that match previous experiences and tries to anticipate what it is and what are its characteristics” (Piqueras-Fizsman & Spence, 2015). Even though marketers need to be cautious of it because culture can influence the decision-making on some level.

For example, readers of “Verywell mind” an American magazine whose readers are mostly from the U.S, have suggested that white makes them feel fresh and clean. The color was used to “evoke youth and modernity” based on the advertisements they have seen. Regarding the black color, the readers described it as a powerful, sexy, and mysterious color which is the reason that luxury vehicles have this color. Regarding silver, the color has been recognized as a color of “innovation and modernity” that is why it is the “third most popular vehicle color.” Red is an “attention-getting color” and it is seen for “projecting power, action, and confidence”. Blue is described by the color of stability and safety, the participants said that “driving a blue car might

indicate that you are dependable and trustworthy”. Yellow means to them that you are a happy person and more willing to take risks (Persuasion Nation, 2024).

For an American person, this meaning can be relatable, but for example in India white has the opposite meaning because it is used for mourning and in China, Korea, and Vietnam the color represents death. The same phenomenon happens with red in China. This color means good luck, and happiness, while in the Western countries it represents power and confidence.

Even though there was not much research that has associated color and physiological responses, there are some relations that can be attributed. Some colors, such as red, stimulate the body and the mind to increase the blood pressure, heart and respiratory rate (Alnasuan, p.2, 2016). While the color blue does the opposite, it slows heart rate and blood pressure that is why it is considered a calming color, and it is used in Gerber which is a company leader in the baby food market. Then, the color orange is known to increase the oxygen supply to the brain, stimulating more brain activity as well as the yellow. Pink is known for having a calming effect and sometimes it is used to calm aggression or agitation. Gray is a non-stimulating color. (Alnasuan, p.3, 2016)

It can be concluded that the context in which a person grew up or is in constant contact with certain attributes influence their opinion or reaction towards a color and in this case, product packaging, but deep inside the physiological reactions are the same across cultures, as it is seen before in many experiments. There needs to be a mindful approach about the differences of cultures when creating packaging or an advertisement and respect the others’ beliefs, way of living and way of consuming, but overall humans react similarly to the stimulus that the companies create with the colors of their brand. It is also noticeable that bright colors, and

primary colors specifically have more repercussions in the customer's brain activity rather than dull colors and that is why brands such as McDonald's or Rolex take advantage of bright colors to influence and encourage people to buy their products. These two brands specifically, use colors such as red and yellow that stimulate appetite, and Rolex uses bright purple that communicates luxury.

Based on the study "Are You Selling the Right Colour? A Cross-Cultural Review of Colour as a Marketing Cue" conducted by Aslam in 2006, it is known that colors certainly have different meanings and people might give them various interpretations if they are used to certain background or previous information. Color can actually have a huge impact in purchase decisions. It is the first trait that is recognized by customers and can influence their emotions. Based on this study, Aslam recognizes the possible misunderstandings of colors between one culture to another and how this affects the product perception, as well as the importance of adapting the brand to the different cultures, which is a situation that is mostly not followed by the majority of the brands.

2.6.2 Marketing Management Implications

Since the creation of logos for companies, the knowledge of color theory has been very helpful in choosing the colors that represent the brand. After analyzing each meaning into the color and their physiologic effect in humans, it is easier to corroborate why certain brands use the colors they do.

"Results from a 2009 study conducted by Ravi Mehta and Rui Zhu at the University of British Columbia confirmed the impact of red and blue on brain function" (Hughes, 2021), where warm colors such as red stimulate the brain and improve focus, and memory, as well as they

influence in increasing the appetite and the blood pressure. Based on a study about color association in countries such as Japan and Taiwan it was shown that “red increases attention and aggressiveness while blue increases subjective alertness”(Tanei et al., 2020).

That is why we can see that the red color is used in McDonald’s for example, where their main color is red and yellow. Because at first, these bright colors captivate the attention of the customers, and the use of red stimulates the energy and appetite, while the color yellow represents happiness. So there is the perfect combination to attract children or people in general. Keeping in mind that these colors are accepted similarly in every country and have the same meaning across cultures, as well as the same physiological effects in humans. Because “Clinical studies show that the color red influences memory performance by increasing our attentional level and evoking an emotional arousal to the content.” (Hughes, 2021) Analyzing the symbol of a letter “M” also has an influence on the customers because they express the “welcoming nature of the brand.” Even though the brand has not always had this logo, in 1965 McDonald’s started including the arches and the yellow and red colors, which led to a global recognition of the brand meaning that the strategy was successful (Kyamko, 2023).



Figure 2.6.2.1: McDonald’s Logo in 1965



Figure 2.6.2.2: McDonald’s Logo in 1975

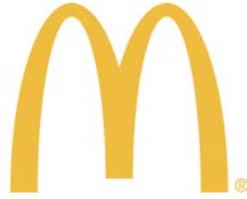


Figure 2.6.2.3: McDonald's Logo in 2024

Even though the brand has changed its logos during the last 50 years, and currently the logo does not include the red color because of the digital-friendly branding trend. The customers keep linking the red color to the brand because of the previous experiences, and specially the colors of their packaging. They are still looking to impact the customers behaviors and physiological responses towards the appetite and the colors' meaning. Sometimes, there are rebranding strategies towards the logo in regards to some specific events, but in general the colors of the packaging are the same all around the world, no matter their culture. McDonald's always try to include red or yellow, or both in every packaging (Kyamko, 2023).



Figure 2.6.2.4: McDonald's Denmark



Figure 2.6.2.5: McDonald's China

Regarding the blue color, it is a color that invokes a state of calm, and when we feel relaxed, we tend to “be more explorative and creative processes flow more naturally.” (Hughes, 2021) This is a process that relates a lot to the growth of the children and their early stages, as interesting as it may be seen, the color blue does the opposite job of the red color because it suppresses the appetite. (Howell, 2023)



Figure 2.6.2.6: Gerber United States



Figure 2.6.2.7: Gerber Poland

Even though the green color is known for natural causes and in China it is related to good luck. The energy drink company “Monster” uses this color in a neon shade to and in a black background around the globe. Below there are two cans one from Colombia and another from France and they look exactly the same.



Figure 2.6.2.8: Monster Colombia



Figure 2.6.2.9: Monster France

Based on a study about color association in energy drinks, it was shown that “a candy bar wrapped in a green label looked healthier than that in a red label”. The study was conducted by analyzing the Japanese and Taiwanese teenagers' perception about energy drinks and it was shown that red and yellow are the best colors to attract both customers. These colors can also be seen in the Monster’s packaging. It was also seen that most of the energy drinks consumers are young people who want to be awake but they do not really evaluate the ingredients of the product itself, they mostly guide their decision based on the colors of the packaging. (Tanei et al., 2020).

When analyzing the orange color in different cultures such as Asia, it was known for being associated with the spice, and basing on its physiological effect it is known for stimulating the brain and increasing the oxygen supply. The meaning can be related to the taste of the product and how customers will perceive it, especially knowing that based on the design of the bag, there are flames referencng to the spiciness of it.



Figure 2.6.2.10: Hot Cheetos United States

Figure 2.6.2.11: Hot Cheetos Egypt

Moreover, after recognizing that there are some adaptations of the brands, as we saw with Coca Cola in China for the New Years Eve mentioned at the beginning of the paper, when brands take advantage of the different cultural events with the intention of attracting more customers and connecting with their audience. The overall packaging of most of the brands have similar designs and colors across the globe and its different cultures, so that they can maintain a harmony and a recognition when a customer sees the brand. Because the physiological response over certain colors has been already studied, and it is accurate to conclude that these are the same disregarding the culture.

3. Methodology

3.1 Methods of study

The way marketers acknowledge customers preferences was mainly through focus groups and surveys, before Artificial Intelligence appeared. Most of the experiments explained in this research paper come from focus groups whose responses are analyzed to drive conclusions. Most of these are qualitative research that looks forward to understanding customer preferences based on their personality, culture, and many cues that affect their perception of the colors, such as memory of previous colors and packaging and how this information is associated in other contexts. The issue with these methods is the biases that people have when answering the questions, or the expectations that might affect the actual result and development of the study, as well as the misunderstanding of the questions that can cause a complete misconception about the message that the participant is trying to communicate regarding the color, packaging, product or brand. Moreover, the oversimplification of the answers regarding their experience when perceiving a color can also affect the experiment and produce simple conclusions rather than elaborated conclusions.

Even though the prices are relatively lower in comparison to technological devices used in AI or eye tracking, it is still expensive and is time-consuming to organize a focus group or a survey because there should be many people that need to be hired for this, as well as any space where research takes place. There has not been a lot of research about this field because it is somehow new, and the importance of this knowledge has become crucial when selling a product because marketers need to know how to attract and connect with customers by persuasive methods that might result in more sales, and in an increase of profit for an organization.

Those methods have been really helpful when finding the foundations of the knowledge that we currently have about color psychology and packaging, but now there needs to be a shift into a more effective and thoughtful study of human perception about colors and packaging through technology, but in a responsible and ethical manner. And neuroscience emergence can contribute with these practices that bring more understanding about customers behaviors.

3.2 AI for Predicting Color Trends Across Cultures

The use of Artificial Intelligence has been increasing in the last years for predictive purposes. It is mainly used in fashion in regards to which colors will be trending, which types of clothes need to be commercialized, etc. These trends are directly associated with the current economy, global movements, and cultural differences. For example, brighter colors are used when the economy is at a high good level, while dark colors are used when the economy is experiencing some recession or is low. That is why we can conclude that the preferences of colors are always changing and AI can be used to identify these patterns and help brands innovate their color packaging for current or new products.

This technology is used by Pantone, the global leader of coloring to forecast the colors that will be trending in the next few years in each culture. Keeping in mind that we live in a globalized community, these colors tend to be used world wide, but there could be some changes in regards to the cultural movements, politics, and economy of each country.

The AI predicting tools recompile data from social media, surveys, previous researches and consumer reports, as well as global forces such as economy, environmental and political trends, and then analyze them through Natural Processing Language (NPL) which is a “machine learning technology that gives computers the ability to interpret, manipulate, and comprehend human language” (*What is NLP? - natural language processing explained - AWS*). For example, through this tool companies and marketers can identify how the customer feels toward a certain color based on their culture, by “analyzing the sentiment or intent of the message”, in this case the colors that are in the packaging. The differential between this kind of technology and the traditional surveys or focus groups methods is the effectiveness of the processes. A lot of information can be extracted in a more objective way.

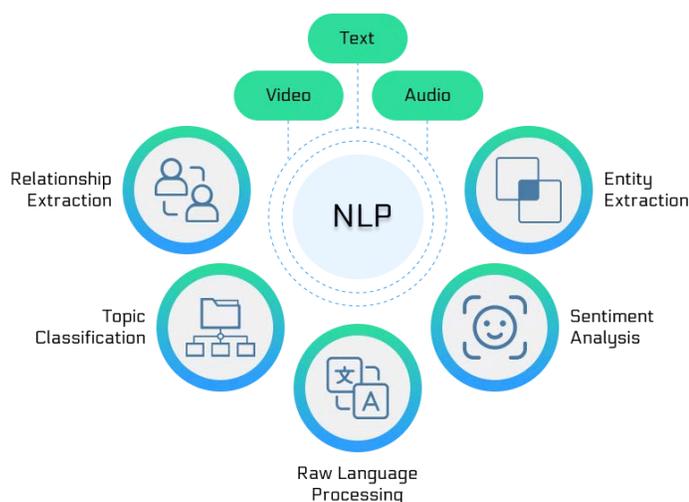


Figure 3.2: Natural Language Processing (AWS)

After that, AI methods use vision algorithms to compare the product packaging and the information that was analyzed by the NLP, and these can help marketers with the predictions keeping in mind the responses and the products that are currently being marketed. Artificial Intelligence is a really interesting tool that can accelerate processes with high accuracy because it is already coded with the meanings of the colors in each culture so it is unusual to get inappropriate responses regarding them when creating a product packaging. For example, they can guide the construction of a product packaging in a real-time manner keeping in mind the changing trends and the cultural shifts that the world is experiencing due to globalization and social media.

3.3 AI-Powered Personalization for Global Consumers

Listening to customers, their purchase experience and preferences is really helpful when personalizing their packaging. With AI personalization tools marketers know which is the customer profile and their behaviors when buying, keeping an eye on these features can benefit customers experience and their relatedness to the brand. Also, for fostering long and strong relationships between the brand and the customer, it is important to focus on their preferences and background.

These AI personalization tools help companies to understand and target their specific market in a more concise way, and actually customers expect this , “over three-quarters (76%) get frustrated when this doesn’t happen” (Lee, 2024). Customers want to be heard and marketed in ways that they find interesting. That is why “9 out of 10 companies are looking for AI personalization” because of the connection it creates.

These tools can be used through online platforms or in person strategies, for example in the shelves of a market where many packaging are located. By selling in person and using this last

strategy, colors can be a really important factor why customers end up buying so there are many tools such as AI Powered Chatbots that help marketers find the necessary information before creating and launching a packaging.

Regarding neuromarketing, there are many companies (such as imotions or Tobii) and tools that are using AI to give more valuable insights. Some of these tools are eye tracking, EEG, facial coding, biometrics and others.

Other important information to address when talking about Artificial Intelligence, are its ethics. Currently, there is not a global standard created to regulate the use of these tools but there is an international standard that 19 countries are now implementing. It is called “Recommendations on the ethics of Artificial Intelligence” and was created in November 2021.(Unesco) There is still a need to create a global standard for the other countries that are not part of Unesco, this should include regulations about privacy, consent, good use, and accountability.

To understand these concepts better it is necessary to explain them priorly. Firstly, privacy means keeping the information collected safe from cyberattacks or other risks. Secondly, consent talks about the informed, voluntary, and clear approval of being part of the research. Thirdly, good use is related to the democratic values meaning that a participant is free to leave the experiment if they want to and there should not be any problem. It also relates to using these tools in favor of humanity. Lastly, accountability refers to being responsible. Companies or organizations using these technologies need to be responsible if there is any mistake or error in the machine or in the study itself.

Creating a global standard that protects all users in every country is really important to make an impact in the perception of the use of AI and take advantage of these.

3.3 Eye Tracking

Eye tracking “measures eye position, eye movement, and pupil size to detect zones in which the user has a particular interest at a specific time”(Gonzalez Sanchez, 2017). This makes the studies related to color preferences much accurate and less biased. The main part of the eye being analyzed is the pupil diameter which changes whenever there is an emotional arousal, for example “it gets larger when viewing emotional arousal pictures, regardless of whether these were pleasant or unpleasant” (Gonzalez Sanchez, 2017).

The most popular method is using infrared light, which is reflected from the eye and sensed by a camera. “The changes and the reflections of the eyes are extracted to analyze eye rotation.” This results to be a fundamental tool because of their relatively low price and the noninvasive procedures.

There are three types of eye tracking. The first one is the screen based eye tracking that consists in the use of a device that tracks the movements of the pupil and the eye blinks, which finally helps researchers to identify when or how long is the participant looking at. In business the screen based eye tracking is used to optimize marketing strategies such as branding, color packaging, etc. The second one is eye tracking glasses which are “wearable devices that analyze the gaze and they can reveal information about emotion, attention, and cognition.” (imotions, 2022) In business this type of eye tracking is used to understand how customers perceive and respond to real-life products, advertisements, or packaging. Then the third type is the VR eye tracking that basically encompasses the two previous types to get more accurate results, and a headset is used. This is a really innovative tool and based on the nature of the headsets, it can also be used to understand how customers interact with digital interfaces. (imotions, 2022)

The way eye tracking works is guided by two techniques. The first one is called Pupil Center which is when the infrared light reflects into the central point of the pupil and this will help to determine where the person is looking at. Then, there is the Corneal Reflection which is the comparison of the movements of the cornea and the pupil, to identify with more precision where the person is looking at. These two techniques are called “PCCR”. (imotions, 2019)

The metrics used for eye tracking are the fixations, which is the point that attracts the customer the most. Then, there are the saccades which are the rapid movements between the fixations or areas that were most attractive to the participant. This can indicate that the brain changes the focus areas. The scanpaths are the sequences of the fixations and the saccades, which help researchers to understand how the visual process works as well as to identify the attractiveness of the packaging or product. (imotions, 2019)

The results are portrayed by gaze heatmaps that are the map of the place or product analyzed colored by different colors. If a part of this map is colored by brighter colors, such as red or orange it means that this part called out more the attention of the participant, while the parts represented by cooler colors such as green or blue are the parts that were less attractive to the participant. (imotions, 2019)

Thanks to the commercialized use that this type of technology has begun to be introduced in the market, there is a higher acceptance than in the past. For example, during the first weekend of the release of the Apple Vision pro, around 160.000 and 180.000 glasses were bought (Kelly, 2024). And this product has the same technology used for eye tracking, which helps me to conclude that the idea of inserting these types of technologies into societies is being more acceptable in comparison to the past. If this type of products are commercialized for

entertainment, it should also be used to meet the customers needs and preferences when selecting a product based on the packaging colors.

Keeping in mind that even though culture might not be a stable and accurate standard when analyzing the customers preferences in product packaging, the use of AI or Eye tracking can help much more with this analysis because it can draw more specific conclusions based on the gaze of real time participants in a study. These types of studies based on the sentiment of people can actually make a huge impact in marketing decisions. For example, it may be concluded that a person who sees a red packaging might be more emotionally aroused in comparison to a person who sees a black packaging because as these colors tend to stimulate more the eye and the brain and as a consequence, the pupil will dilate and the eye tracking technology could perceive it.

4. Limitations and Suggestions

Based on the information analyzed throughout the paper, there are limitations in almost every topic because of the complexity of the human being, and the tools used. First of all, the information that was analyzed about the cultural meaning of the colors can be changed in the next few years because of a phenomenon called cultural shift, in which people adapt and change perspectives about the colors and their preferences which can affect the packaging that is being marketed.

The opinions towards the use of AI is also a limitation that occurs because some people think that these new technologies are too intrusive, so there are many privacy concerns about it, making it hard to include participants in this type of research, as well as permits. Even though there are many devices that people use on a daily basis that work with Artificial Intelligence, there needs to be an agreement of the information that they will get and how this information is going to be used. Also, there needs to be a collective understanding about the purpose of these

tools, acknowledging that these are invented to contribute with human work, not against our jobs or ourselves, and that unfortunately the world is changing continuously so many different technologies will be used whether some people disagree about them.

It is really important to create a global standard of Artificial Intelligence, as well as a neuromarketing one that helps participants to be safe. These standards must address privacy, consent, and accountability issues. The organizations that use these tools need to be responsible for the information extracted, as well as for the study and the regulation of the machines used. This will consequently help users to trust more in these experiments and the results and learn more about the methodology.

Also, the expensive research that is conducted nowadays using surveys and focus groups can represent a big limitation in the advancement of this field, resulting in a decrease of knowledge when facing these difficulties. The huge amount of money, organization, and permits can mean a disruption in a more exhaustive study of human perception in marketing. Even though AI at the beginning might seem really expensive, there are many companies such as Tobii or iMotions that can deliver really good service and products with the necessary training for the use of these.

The costs of AI methods are really high because of the equipment needed, as well as the need of people with expertise and knowledge about this technology to guide the experiment. There needs to be a more collaborative environment that helps the study of this field. But based on recent statistics, different emerging methods such as eye tracking are cheaper but still pretty accurate.

Lastly, there are the many ethical dilemmas around neuromarketing and it means a big limitation that needs to be taken care of because some people fear the use of the knowledge from

this science. The knowledge gained from these experiments with human feelings, sentiments and personalities should guide brands on how to approach the customer in a more effective way, without wasting a lot of time, prototypes, and money. Instead, AI can simply give the marketers guidance on how to construct an accurate product without increasing the waste and overconsumption. Keeping in mind that in the making of a product, a marketer or designer can make up to 10 prototypes, the use of AI can significantly impact the waste of this prior process.

It is suggested to invest more in Artificial Intelligence devices, which can give marketers valuable insights about the future and current trends. Taking advantage of the rapid growth of these tools that high-tech companies such as Apple or Amazon are developing, neuromarketing and the study of the consumers when making purchase decisions can be really beneficial to the businesses. AI can really work with marketers that are willing to get to know more the customers, their preferences, their culture, and their personality, in order to sell them products and packaging that really resonates with their identity, rather than simply continuing with the colors of the brand.

Another limitation of the research is that the color associations might change because of many different factors such as trends, globalization, and historical events. So there should be a continual study of these elements so companies can identify the interests of the customers and provide packaging that meet with these criteria and colors that attract them. It is necessary to say that the use of AI will impact a lot of these studies because after analyzing that language is a strong barrier that affect the customer perception because not all colors can be expressed in all cultures (ie. In Vietnam blue and green are expressed with the same word) there can be a big change in those results.

5. Conclusion and Implications

Based on the information given throughout this paper, it can be concluded that brands do not create their packaging based on the cultural approach of different colors, but on their universal meanings and their physiological impact. There needs to be a coherence in the brand awareness and the brand colors in any part of the world, that is why packaging colors do not change in each culture. Even though each brand has its own identity, there are some situations where they take advantage of the cultural differences and create their own marketing strategy. For example in New Years Eve, Halloween, Christmas, etc where they used other colors to connect with their audience.

Moreover, after analyzing the information of this paper I can conclude that my hypothesis is false because the customer perception of colors in the packaging does not differ from culture to culture. The customer perception is universal for some colors. But this is really important to be analyzed continuously because thanks to globalization, current trends, and historical events these associations might change. That is why it is recommended to use AI powered technologies such as eye-tracking to analyze the perceptions and impact customers with the product packaging.

Even though the colors may have different meanings in each culture, it is concluded that physiological responses of colors are globally similar. Color preferences change over time, but the way the body responds to those changes has been quite similar throughout history. That is why companies need to have some standards that prevent the color preferences from being so volatile that it will create overproduction that will at the end generate a lot of waste, after trying to adapt the packaging to every trend and every customer around the world.

After analyzing the influence of the colors in certain cultures, it is realized that every effect has its its psychological previous analysis, the colors of a packaging are already deeply studied and the marketers have already studied their target market to make this decision, but it

should be considered that there should be spaces to keep listening to the customers and their different preferences through time and cultures.

It can conclude that the colors in packaging are much more effective in food and beverages products. They tend to call out more the attention of customers, that is why it is seen that these products use brighter colors, and they tend to lead the market in regards to colors in the packaging.

Lastly, what is vital to understand, is that Artificial Intelligence has come to stay, because of their effectiveness and the easy use of these tools. Even though it is important to address their regulation concerns, these tools can actually be very beneficial to organizations that are looking to better understand their customers and analyze their purchase decisions.

To conclude, there is a huge world of knowledge behind colors and their use in marketing, which is really beneficial to explore with ethics and responsibility to work towards a better environment which listens to customers and creates the brand with them, despite their culture but also creating a meaningful impact in them. With the help of AI and neuromarketing tools this field will be more studied and many more findings will become available, and these will consequently benefit companies to sell their products or services easier and in a more efficient manner.

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