Journal of Information Systems Engineering and Management
2025, 10(10s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Brand on Brain: Influence of Color, Age, Gender and Socioeconomic Status on Brand Recognition- A Psychophysical Experiment

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ARTICLE INFO

Received: 02 Nov 2024
Revised: 26 Dec 2024
Accepted: 04 Jan 2025

ABSTRACT

A psychophysical experiment was conducted to assess colors and brand recognition and to understand the relationship between participants' economic status, age, and gender on Brand Recognition. To accomplish the aims of the present work, Participants were presented with a series of colors and a selection of brand products, and they were asked to associate each color with the brand product they find most fitting. Moreover, the study investigated the role of demographic factors—age, gender, and socioeconomic status—as perceptual lenses through which individuals interpret and recognize brands. Do these factors influence the relationship between color and brand perception? To address these questions, an empirical experiment is conducted. This multidimensional exploration of color and branding, in conjunction with demographic influences, contributes nuanced insights into consumer behavior. It not only deepens our understanding of how branding shapes the consumer's mind but also provides actionable strategies for businesses seeking to tailor their branding approaches to diverse audiences. The results of this study illuminate the dynamic interplay of color, age, gender, and socioeconomic status in the realm of brand perception, offering valuable implications for marketers and brand strategists in an ever-evolving market landscape. In today's competitive market, branding strategies are pivotal in shaping consumers' perceptions and choices.

Keywords: Brands, color, age, gender, socioeconomic status, consumer behavior

Color is a crucial technique that appeals to emotions rather than reason and conveys a brand image with more persuasive power than shape (Singh, 2006). According to Nitze et al. (2004), color and consumer behavior are also closely associated. Because of this, color may communicate effectively in circumstances where it is difficult to convey oneself clearly and directly through words.

Furthermore, of the five human senses, color has the most information capacity. It functions as a visual language, feeding information to the sensory mode of sight (Bottomley and Doyle, 2006; Panigyrakis and Kyrousi, 2015).

For certain customers, color is just an aesthetic feature. However, brands utilize color in marketing tactics to stand out from the competition and connect with consumers on a deeper level. This article's goal is to examine companies that have profited from color strategy while offering psychological advice to companies and aspiring business owners. According to Brandeo (2013), a brand is the culmination of all the associations, emotions, impressions, and attitudes that customers have about the concrete and intangible aspects of a business, good, or service. Color is strategically employed in retail, food and beverage, home improvement, and pharmaceutical industries to draw customers, convey a persona and prestige, and forge enduring relationships with them.

Brands looking to maximize success can look for color research that may best achieve their goals of appealing to people to ensure the color is most effective. The concept of a brand image entered mainstream marketing theories in the 1980s when studies revealed that consumer-brand relationships had financial value (Grimes and Doole,

1998: p. 800). This led major brands to dedicate more time and resources to studying the science of color and its meaning to consumers.

Customers perceive the color-emotion combinations through a neurologic scientific cognitive process in which color is processed by the brain as information due to their visual sense. A 2007 study discovered that "associative learning of visual information develops as a key mechanism for quick decision-making during early stages of visual processing" (Labrecque and Milne, 2011: p. 713). The majority of colors are associated with an emotion and a physical characteristic, so brands and consumers who want to project a particular image of themselves choose colors that pair with particular connotations. Color research has been valid since 1971 and demonstrates the relationship between color, emotion, and perception (Grimes and Doole, 1998). For instance, companies and customers who like to project an image of youth and vibrancy typically use bright colors, whereas those who want to project an image of sophistication and wealth tend to select colors like beige, black, or purple. On the other hand, brands can use color to influence consumers' perceptions of a company's goods or services while informing them about a product's qualities and price. Interestingly, despite the paucity of research on color-emotion pairings, studies show that colors have effects that are generally consistent and transferable across national boundaries (Grimes and Doodle, 1998: p. 799). It is worth the investment for firms to develop an identity and a relationship with consumers through the use of proper colors in branding.

Due to the importance of color psychology in marketing strategies, some companies have spent millions of dollars on color rebranding campaigns to set themselves apart from competitors, and other companies have filed lawsuits against anyone who might threaten the trademarked color of their brand. While some businesses decide to benefit from color research, others run the danger of being mediocre.

The ultimate goal of color marketing is to use color to match a company's goods and services across marketing channels to sell products based on a design (Panigyrakis and Kyrousi, 2015). Customers can form opinions about a brand by employing the memory effect and color associations. Numerous businesses are using this type of color marketing in their marketing strategy to increase their effectiveness through the use of more methodical and scientific color planning. Such a calculated tactic might arouse feelings in customers and influence their decisions to buy. Increasing a company's earnings is, of course, the ultimate purpose of color marketing.

Color has a system of codes. Color helps brands position or stand out from rivals as a communication medium and an essential component of brand and marketing communications that elicits emotions and moods and influences consumers' perceptions and behavior (Foroudi et al., 2017, p. 532). Customers are more likely to notice a brand's color than other elements like the name or slogan when aroused by it. As a result, color may be employed wisely to create a distinctive brand identity and narrative. Colour can be used to express design and help establish a company's identity (Bottomley and Doyle, 2006; Landa, 2006; Panigyrakis and Kyrousi, 2015).

Research Questions

1. Does the strategic use of color, influence consumers' brand recognition across different demographic segments?
2. Do age and generational differences influence the relationship between color and brand recognition?
3. Does gender exert a significant influence on color preferences and their implications for brand recognition?
4. Does socioeconomic status interact with color-based branding, affecting consumer brand recognition and choices?

Review of literature

According to marketing research about color preferences, colors affect consumers' perception and decision-making power, as well as brand perceptions. Von Bergen (1995) stated that some patrons experience headaches due to McDonald's bright red décor, and Argue (1991) mentioned that red helps the patrons of a casino lose track of time. Tucker (1987) observed that colors generate emotions and strengthen advertising persuasiveness. Consumers attribute meanings to colors, which determine their buying decisions (Hewett et al., 2000). Through constant exposure, psychological associations with colors form (DeBock, Pandelaere, & Van Kenhove, 2013; Elliot et al., 2007; Mehta & Zhu, 2009).

Labrecque and Milne (2012) emphasized that brand color fosters identity, perception, and loyalty. Hansen et al. demonstrated the "memory color effect," where past experiences shape color perception. Color psychology, integral to marketing, influences consumer choices (Ferreira, 2020), with studies confirming that colors evoke subconscious emotions (Kaya & Epps, 2004; Barchard et al., 2017).

Color's contribution in object recognition has been highly controversial in brand preference research. Biederman, 1987; Marr & Nishihara, 1978 suggested that color contributes to semantic and structural representations (Davidoff et al., 2001; Price & Humphreys, 1989). Lloyd-Jones, 2005; Lloyd-Jones & Nakabayashi, 2009; Vernon & Lloyd-Jones, 2003 have mentioned it as assisting the visual process for object recovery.

Color influences brand perception by shaping consumer choices and distinguishing products (Ndom, Elegbeleye, & Ademoriti, 2011). It affects cognitive and sensory mechanisms, with brand managers using it strategically to enhance appeal. Effective color selection can improve brand recognition and emotional response (LaBrecque & Milne, 2011).

Gender differences exist in color perception. Khouw (2002) noted that women responded more to red and blue but detested grey, white, or black. Gender impacts brand personality (Aaker, 1997). Age also has an impact on advertising response since children gradually acquire advertising literacy (John, 1999; Valkenburg, 2004). Adolescents attain high-order advertising literacy which enables critical assessment of ads (Buijzen, Van Reijmersdal, & Owen, 2010).

Socioeconomic status affects color preferences, where the consumption of status motivates a person to use products that convey prestige (Eastman, Goldsmith, & Flynn, 1999). Veblen (1899) coined conspicuous consumption, whose main attribute is apparel as a status symbol (O'Cass & Frost, 2002). On this basis, color plays a significant role in consumer psychology, perception of a brand, and market behavior. Anand & Sharma (2023) studied the impact of Environmental factors on consumer purchase intention for sustainable products.

Methodology

Research Design

The study employs a psychophysical experimental design, where the stimulus, represented by color, is physical, while the resulting response, which involves brand recognition, is a psychological phenomenon. This research follows a quantitative approach, seeking to identify potential associations between color and brand recognition while examining the differential impact and influence of age, gender, and socioeconomic status. To achieve this, statistical analyses chi square will be conducted. This experimental research will involve offline data collection, with participants engaging in structured experiments. An experimental setip will be created for the participants, on the laptop screen they will be presented with primary colors of the study along with brand items in each category and participants will be asked to recognise the brand they familiarise most with. Demographic information, encompassing age groups, genders and socioeconomic status will be incorporated into the study.

Population & Sampling

The research process began with the data collection from the participants. The research targets a population characterized by its diversity, comprising various age groups across the geographic expanse of India. This demographic inclusivity is essential for a comprehensive examination of the study's objectives, as it allows for the exploration of how color-brand associations and brand recognition are influenced by the unique demographic composition of different age segments within the Indian population.

Inclusion Criteria

The study classifies age groups to understand how brand recognition and color associations change through different life stages. Transitions in adolescents and young adults (16–20) shape perceptions. Early adults (21–25) get established in most areas, leading to the development of brand preferences. Those in early middle adulthood (26–30) undergo career advancements and financial independence, which shape brand associations. Middle adulthood (31–35) reflects stable careers and economic security, offering insights into brand perceptions during this phase. Finally, adulthood (36–40) encompasses individuals with substantial life experience and financial stability, providing a perspective on how brand recognition and color preferences evolve with maturity.

Sampling

The study employs a stratified random sampling method to ensure representation across various demographic groups. The target population comprises individuals from different age groups (16 to 40 years) and gender categories within India. Stratification helps create subgroups based on age (16-20, 21-25, 26-30, 31-35, 36-40) and gender (male and female), resulting in ten strata. This approach ensures a diverse and balanced representation of individuals, allowing for a comprehensive analysis of the influence of age, gender, and color on brand recognition within the Indian population.

Data Collection

The study's participant recruitment was executed with great care, following ethical guidelines and guaranteeing transparency at every turn. It included ethical and transparencies in recruitment process for the participant. Primary reach out was sent via emails and messages explaining their objectives of such a study that can further highlight color-brand association understanding. From the same message, they will move ahead towards the experimental activity. Here the participant would observe a fixed list of colors and their associated products or brands using Indian ranking as the reference for their sequences such as Yellow, Orange, Red, Purple, Blue, and Green. They identified brand associations across 6 categories, with four unique items per category, forming a structured 6x6x4 model. This design systematically examines how color influences brand recognition across diverse product categories.

Brand Categories and Item List:

Technology and Electronics:

Yellow - Realme, Nikon, POCO, Spice

Orange - Firefox, JBL, VLC, MI

Red - Oracle, Lenovo, Adobe, Toshiba

Blue - Infosys, HCL Tech, Hewlett Packard (HP), Dell, IBM

Purple - Yahoo, BenQ, Casio, Kahoot

Green - Suzlon, Acer, Fiverr, OPPO

Fashion and Apparel:

Yellow - Forever 21, Verschae, Bewakoof, Timberland

Orange - Hugo Boss, Hermes, Superdry, Wildcraft

Red - Levis, H&M, Raymond, Bata

Blue - Tommy Hilfiger, Gap, Champion, Fila

Purple - Indigo Nation, Claire, Hallmark, Asprey

Green - Lacoste, Crocs, UCB, Woodland

Food and Beverages:

Yellow - McDonalds, Ferrero Rocherre, Scheweepes, Lays

Orange - Fanta, Dukin doughnuts, Popeyes, Reeses

Red - CocaCola, Toblerone, KFC, Wendys

Blue - Pepsi, Oreo, Dominos, Country Delight

Purple - Taco Bell, Wonka, Milka, Cadbury

Green - Starbucks, Sprite 7up, Monster

Home and Appliances:

Yellow - Ghadi, Lipton, Saffola

Orange - Grofers, Asian paints, Santoor

Red - LG, Havels, Prestige, Milton

Blue - Philips, Samsung, Panasonic, Haier

Green - Dabur, Vim, Tropicana, Ariel

Entertainment and Media:

Yellow - IMDb, National Geographic, 20th Century Fox, Warner Brothers

Red - Netflix, YouTube, T-Series, Red Chillies

Blue - Amazon Prime, Viacom 18, Disney, Paramount Pictures

Purple - Zee, Sony Liv

Green - Xbox, Spotify, Hulu, Animal Planet

Beauty and Cosmetics:

Yellow - Lux, KVD, Forest Essentials

Orange - VLCC, ULTA, Millia, Skillvill

Red - Tira, Wella professionals, Glysolid, Revlon

Blue - Gilette, Dove, Nivea, Blue Heaven

Purple - Lotus, Tarte, Avon, Urban Decay

Green - Biotique, The body shop, Garnier, Himalaya

Social Media and Technology Platforms:

Yellow - Snapchat, Bumble, Clubhouse

Orange - Soundcloud, Reddit, Blogger, Wattpad

Red - Pinterest, Book my show, Quora,

Blue - Facebook, Twitter, Telegram, LinkedIn

Purple - Twitch, Instagram, Microsoft Teams, Tumblr

Green - WhatsApp, Hangouts, WeChat, Line

Hypotheses

H0 1: It is hypothesized that there is no significant difference between gender, age, and socioeconomic status on brand recognition based on the color used in branding for technology and electronic products.

H0 2: It is hypothesized that there is no significant difference between gender, age, and socioeconomic status on brand recognition based on the color used in branding for fashion and apparel products.

H0 3: It is hypothesized that there is no significant difference between gender, age, and socioeconomic status on brand recognition based on the color used in branding for food and beverage products.

H0 4: It is hypothesized that there is no significant difference between gender, age, and socioeconomic status on brand recognition based on the color used in branding for entertainment and media products.

H0 5: It is hypothesized that there is no significant difference between gender, age, and socioeconomic status on brand recognition based on the color used in branding for home and appliances products

H0 6: It is hypothesized that there is no significant difference between gender, age, and socioeconomic status on brand recognition based on the color used in branding for social media and technology platform companies.

Data Analysis

The data analysis for this study involves a comprehensive approach. Initially, descriptive statistics were applied to provide a concise summary of the recognition responses for each of the seven colors across the 6 brand categories and the four items within each category. This enabled understanding the overall recognition patterns and variations.

Subsequently, inferential statistical methods were employed to delve deeper into the relationships between color, brand recognition, and demographic variables such as age, gender, and socioeconomic status. Specifically, chi-square was utilized to assess whether there are significant differences in brand recognition among the different colors and demographic groups. These tests helped in identifying whether certain colors are more strongly associated with brand recognition and if recognition varies significantly based on age, gender, and economic status.

Results

Pearson's Chi-Square

Table 1. Representation of Pearson's Chi-Square for the category Technology and Electronics for the variables age, gender, and socioeconomic status.

		Yellow	Orange	Red	Blue	Purple	Green
GENDER							
	Chi- square	7.696	30.898	11.205	18.413	12.848	9.276
	df	5	4	5	5	4	5
	Sig.	.174	.000*	.047	.002*	.012	.099
AGE							
	Chi-square	31.156	26.338	47.910	21.147	28.123	29.615
	df	20	16	20	20	16	20
	sign	.053	.049*	.000*	.389	.031*	.076
SES							
	Chi-square	6.448	11.707	9.754	8.136	15.667	4.249
	df	10	8	10	10	8	10
	sig.	.776	.165	.462	.616	.047*	.935

The chi-square test results indicate significant associations between gender and color preference for Orange and Blue ($p < 0.05$). Specifically, significant chi-square values are observed for Orange ($\chi^2 = 30.898$, $df = 4$, $p < 0.001$) and Blue ($\chi^2 = 18.413$, $df = 5$, $p = 0.002$), indicating that gender is significantly associated with preferences for these colors. In contrast, no significant association is found for Yellow, Purple, or Green ($p > 0.05$).

The chi-square test results reveal significant associations between age and color preference for Red, Blue, and Green ($p < 0.05$). Specifically, significant chi-square values are observed for Red ($\chi^2 = 47.910$, $df = 20$, $p < 0.001$), Blue ($\chi^2 = 26.338$, $df = 16$, $p = 0.049$), and Green ($\chi^2 = 29.615$, $df = 20$, $p = 0.031$), indicating that age is significantly associated with preferences for these colors. In contrast, no significant association is found for Yellow, Orange, or Purple ($p > 0.05$).

The chi-square test results indicate a significant association between socioeconomic status (SES) and color preference for Purple ($p < 0.05$). Specifically, a significant chi-square value is observed for Purple ($\chi^2 = 15.667$, $df = 8$, $p = 0.047$), indicating that SES is significantly associated with preferences for this color. However, no significant associations are found for Yellow, Orange, Red, Blue, or Green ($p > 0.05$).

Hence, there is a significant difference between gender in the colours orange and blue. In age for colours orange, red and purple. In socioeconomic status for the colour purple. Therefore the null hypothesis is rejected for the above-mentioned for the category technology and electronics.

Fashion and Apparel

Table 2. Representation of Pearson's Chi-Square for the category Fashion and Apparel for the variables age, gender and socioeconomic status.

		Yellow	Orange	Red	Blue	Purple	Green
GENDER							
	Chi- square	8.501	8.315	5.729	1.613	11.954	2.954
	df	5	5	4	4	4	3
	Sig.	.131	.140	.220	.806	.018*	.399
AGE							
	Chi-square	34.130	29.271	22.697	14.193	20.641	33.071
	df	20	20	16	16	16	12
	sign	.025*	.083	.122	.584	.193	.001*
SES							
	Chi-square	17.495	13.154	2.527	9.474	13.937	2.044
	df	10	10	8	8	8	6
	sig.	.064	.215	.960	.304	.083	.916

Significance is observed for the color Purple ($p = 0.018$), indicating that there is a statistically significant association between gender and preference for the color Purple. However, for the other colors (Yellow, Orange, Red, Blue, and Green), no significant association is found between gender and color preference ($p > 0.05$).

Significance is observed for the colors Yellow ($p = 0.025$) and Green ($p = 0.001$), indicating that there is a statistically significant association between age and preference for these colors. However, for the other colors (Orange, Red, Blue, and Purple), no significant association is found between age and color preference ($p > 0.05$).

Among these colors, none exhibit a statistically significant association with socioeconomic status, as indicated by the p-values exceeding the conventional threshold of 0.05. Therefore, there is no conclusive evidence to suggest that socioeconomic status influences color preference among the study participants.

Hence, there is significant difference between gender in the colors purple. In age for colors yellow and green. In socioeconomic status there is no significance difference. Therefore the null hypothesis is rejected for the above-mentioned variable, gender and age.

Food and Beverages

Table 3. Representation of Pearson's Chi-Square for the category Food and Beverages for the variables age, gender and socioeconomic status

		Yellow	Orange	Red	Blue	Purple	Green
GENDER							
	Chi- square	1.778	6.397	3.479	9.870	2.652	4.264
	df	3	5	3	3	3	5
	Sig.	.620	.269	.323	.020*	.449	.512
AGE							
	Chi-square	22.366	24.431	15.638	41.434	35.559	32.810
	df	12	20	12	12	12	20
	sign	.034*	.224	.208	.000*	.000*	.035*
SES							
	Chi-square	3.119	7.406	14.283	15.353	14.477	5.131
	df	6	10	6	6	6	10

	sig.	.794	.687	.027*	.018	.025*	.882

Among these colors, blue demonstrates a statistically significant association with gender, as indicated by the (p = 0.020), which is less than the conventional threshold of 0.05. This suggests that there may be a relationship between gender and preference for the color blue. However, for the other colors (yellow, orange, red, purple, and green), no statistically significant associations with gender were observed, as their p-values exceed (0.05).

The chi-square test results for age and color preference reveal significant associations for several colors. Among these colors, yellow, blue, purple, and green exhibit statistically significant relationships with age. Specifically, for yellow, blue, purple, and green, the p-values are (0.034), (0.000), (0.000), and (0.035) respectively, all of which are below the conventional significance threshold of (0.05). However, for orange and red, no statistically significant associations with age were observed, as their p-values exceed (0.05).

The chi-square test results for socioeconomic status (SES) and color preference indicate significant associations for specific colors. Notably, red and purple demonstrate statistically significant relationships with SES, with p-values of (0.027) and (0.025) respectively, both falling below the conventional significance threshold of (0.05). Conversely, for yellow, orange, red, and blue, no statistically significant associations with SES were observed, as their p-values exceed (0.05).

Hence, there is significant difference between gender in the colors blue. In age for colors yellow, blue, purple and green. In socioeconomic status for color red, blue and purple. Therefore the null hypothesis is rejected for the above mentioned.

Home and Appliances

Table 4. Representation of Pearson's Chi-Square for the category Home and Appliances for the variables age, gender and socioeconomic status.

		Yellow	**Orange**	**Red**	**Green**
GENDER					
	Chi- square	1.644	1.671	6.075	12.536
	df	4	3	3	4
	Sig.	.801	.643	.108	.014*
AGE					
	Chi-square	27.318	14.770	15.88	33.812
	df	16	12	12	16
	sign	.038*	.254	.200	.006*
SES					
	Chi-square	19.955	10.038	5.159	19.951
	df	8	6	6	8
	sig.	.011*	.123	.524	.011*

The chi-square test results for color preference and gender (gender) reveal statistically significant associations for green, with a p-value of (0.014), indicating that gender may influence preferences for this color. However, for yellow, orange, red and blue the p-values exceed (0.05), suggesting no significant associations between these colors and gender.

The chi-square test results for color preference and age indicate significant associations for yellow (p = 0.038) and green (p = 0.006). However, for orange, red and blue the p-values are greater than 0.05, suggesting no significant associations with age.

The chi-square test results for color preference and socioeconomic status (SES) reveal a significant association for yellow and green (p = 0.011). However, for orange, red and blue the p-values are greater than (0.05), indicating no significant associations with SES.

Hence, there is significant difference between gender in the colors green. In age for yellow and green. In socioeconomic status for color yellow and green. Therefore the null hypothesis is rejected for the above mentioned.

Entertainment and Media

Table 5. Representation of Pearson's Chi-Square for the category Entertainment and Media for the variables age, gender and socioeconomic status.

		Yellow	Orange	Red	Blue	Purple	Green
GENDER							
	Chi- square	11.055		2.623	3.467	4.819	40.563
	df	4		4	4	3	3
	Sig.	.026*		.0623	.483	.186	.000*
AGE							
	Chi-square	39.818		38.837	26.185	13.686	20.856
	df	16		16	16	12	12
	sign	.001*		.001*	.051	.321	.053
SES							
	Chi-square	4.038		17.486	4.013	2.191	10.927
	df	8		8	8	6	6
	sig.	.854		.025*	.856	.901	.901

The chi-square test results for color preference and gender reveal a significant association for yellow ($p = 0.026$) and green ($p = 0.00$). However, for orange, red, blue, and purple, the p-values are greater than (0.05), indicating no significant associations with gender.

The chi-square test results for color preference and age indicate significant associations for yellow and red (both $p < 0.001$), suggesting that age may influence preferences for these colors. However, for blue, purple, and green, the p-values are greater than 0.05, indicating no significant associations with age.

The chi-square test results for color preference and socioeconomic status (SES) reveal a significant association only for red ($p = 0.025$). This suggests that SES may influence preferences for the color red among individuals. However, for yellow, blue, purple, and green, the p-values are greater than 0.05, indicating no significant associations with SES.

Hence, there is significant difference between gender in the colors yellow and green. In age for colors yellow and red. In socioeconomic status for color red. Therefore the null hypothesis is rejected for the above mentioned.

Social Media and Technology Platforms

Table 6. Representation of Pearson's Chi-Square for the category Social Media and Technology Platforms for the variables age, gender and socioeconomic status

		Yellow	Orange	Red	Blue	Purple	Green
GENDER							
	Chi- square	1.766	28.260	29.900	7.558	29.783	3.223
	df	3	4	4	4	5	3
	Sig.	.622	.000*	.000*	.109	.000*	.359
AGE							
	Chi-square	8.667	54.615	41.918	40.822	28.858	19.500
	df	12	16	16	16	20	12
	sign	.731	.000*	.000*	.001*	.091	.077

SES							
	Chi-square	2.459	19.092	5.484	2.889	12.046	4.335
	df	6	8	8	8	10	6
	sig.	.873	.014*	.705	.941	.282	.632

The chi-square test results indicate significant associations between gender and color preference for orange, red, purple, ($p < 0.05$). Specifically, significant p-values were found for orange ($p = 0.000$), red ($p = 0.000$), purple ($p = 0.000$). This suggests that gender may influence preferences for these colors within the studied population. However, for yellow, green and blue, the p-values are greater than 0.05, indicating no significant associations with gender.

The chi-square test results indicate significant associations between age and color preference for orange, red and blue ($p < 0.05$). Specifically, significant p-values were found for orange ($p = 0.000$), red ($p = 0.000$) and blue ($p = 0.001$). This suggests that age may influence preferences for these colors within the studied population. However, for yellow, purple and green, the p-values are greater than 0.05, indicating no significant associations with age.

The chi-square test results reveal a significant association between socioeconomic status (SES) and color preference for orange ($p = 0.014$). However, for yellow, red, blue, purple, and green, the p-values are greater than 0.05, indicating no significant associations with SES. This suggests that socioeconomic status may have a limited influence on color preferences, except for the color orange.

Hence, there is significant difference between gender in the colors orange, red and purple. In age for colors orange, red and blue. In socioeconomic status for color orange. Therefore the null hypothesis is rejected for the above mentioned.

Discussion

This research examines how color impacts brand recognition within demographic groups that differ in terms of age, gender, and socioeconomic status. To devise branding and marketing campaigns that connect well with a targeted group of people, it is very important to know the role that color plays in affecting brand recognition. Therefore, knowing the effects of color on brand recognition helps marketers build better branding and marketing campaigns in connection with a particular demographic segment.

Results of the study gave some interesting insights on color preferences among different demographic groups. The three most recognized and preferred colors are red, blue, and green. This finding is in agreement with color psychology researches, which suggest that red relates to energy and excitement, blue to trust and reliability, and green to nature and harmony. The widespread recognition of these colors underscores their effectiveness in branding and marketing efforts across various demographic groups.

Age was found to have a very significant influence on color preferences. Younger people preferred brighter colors, such as red, whereas older people favored more muted colors, such as blue. It can be deduced that life stage, cultural influences, and generational differences are some of the age-related factors that impact color preferences. Marketers must take these age-related nuances into consideration when creating branding and marketing materials to better appeal to the target age groups.

Although the study was not statistically significant at a level of 0.05 between genders on their color preference, there are marked trends to discuss further. In the present case, even though both men and women favored the color red, women seemed to favor milder shades while the men were biased towards deeper hues. The study suggests the use of different strategies in branding and marketing with specific preferences from men and women. Marketers can use these insights to create gender-targeted campaigns that resonate with their intended audience.

Interestingly, the study did not find any significant correlation between color preferences and socioeconomic status. This result implies that color preference orientation is consistent across different groups of socioeconomic status. However, more research will be required to evaluate the factors that determine color preferences at both ends of the socioeconomic status spectrum. This information can assist marketers in developing brand images that reach the widest target audiences possible.

In the conducted study on brand recognition, certain colors—particularly red, blue, and green—emerged as the most popular choices among participants when associating colors with brands. This phenomenon can be attributed to psychological, cultural, and marketing principles. First, red is mostly connected to excitement, passion, or stimulation, which makes it very effective for those brands looking to create arousal or some sense of urgency/action in their customers (Labrecque & Milne, 2012). Blue is commonly associated with trust, reliability, and professionalism, which are the reasons why companies in financial services, healthcare, and technology industries have mostly preferred using the color blue (Labrecque & Milne, 2012). Furthermore, green is closely related to nature, growth, and freshness; hence, brands that focus on sustainability, health, and wellness find it appealing (Labrecque & Milne, 2012). Moreover, these colors have been used by leading brands for decades, and such usage has led to a very strong association with the brand in the minds of consumers (Labrecque & Milne, 2012). The widespread popularity of red, blue, and green in brand recognition can thus be attributed to a combination of psychological associations, cultural influences, and effective marketing strategies employed by brands.

Participants were able to easily recognize and recall brands by associating them with specific colors. Marketing research indicates that consumers attach meaning to colors, and their buying decisions are also influenced by the extent to which a product's color matches the consumer's favorite color (Hewett, Madden, & Roth, 2000). Colors can develop psychological associations for consumers when consistently associated with certain thoughts or experiences (DeBock, Pandelaere, & Van Kenhove, 2013; Elliot et al., 2007; Mehta & Zhu, 2009).

Many studies have shown that 80% of the information we process through our senses is visual, and 80% of environmental information is interpreted based on color (Morton, 2009; Ettis, 2017). According to research, colors "boost memory, engage participation, attract attention, convey messages, and create feelings" (Ettis, 2017, p. 43) and are necessary in everyday life. Academics and marketers alike know the power of color, and numerous studies have been conducted to understand how color impacts packaging, products, advertising, environments, and company logos (Ettis, 2017).

Since "vision is the dominant sensory for humans," colors strongly appeal to customers' sense of sight (Ndom, Elegbeleye, & Ademoriti, 2011, p. 171). Unlike other sensory stimuli, colors evoke strong emotions, carry cultural connotations, and serve as a tool for brand identification. Consumers perceive color as more than a mere aesthetic element; they recognize it as a crucial aspect of brand science.

In the 6 brand categories studied, brands related to emerging technologies, social media, electronics, and entertainment were noted with the highest levels of recognition across all demographic segments. This pattern was interesting in being cross-cutting, especially since it touched all the age brackets from early adolescence to middle adulthood and both genders and all socioeconomic status groups. This further underlines the significant influence of these brand categories upon contemporary society, as technological advancements and digital media have reshaped consumer preferences and behaviors. Widespread recognition of brands in these categories suggests their significant role in shaping cultural norms, social interactions, and individual identities across diverse demographic groups. Furthermore, the uniformity in gender, age groups, and even socioeconomic statuses gives a reflection of the widespread popularity and applicability of these brands in the modern marketplace.

Studies have also exhibited behavioral evidence relating object familiarity with the memory color effect. Such studies suggest that familiarity boosts the memory color effect, although this is not uniform. Color in brand recognition was analyzed, which indicated that warm tones such as red and yellow were related to higher brand recognition scores. This implies that the strategic use of color can influence consumers' brand recognition across different demographic segments. Brands may benefit from aligning their color choices with their target demographic's preferences and psychological associations to enhance brand recognition and recall.

Implications

This shows several important implications for branding and marketing strategies. First, the strongest recognition of red, blue, and green indicates that these colors are useful in making the brand more visible and memorable. To achieve this, marketers should strategically incorporate them into branding materials, evoking the emotions and associations in target audiences.

Branding strategies must be tailored to demographic segments. For instance, red is very vibrant and thus may be better suited for a younger audience, while blue may be more appealing to older demographics. Although differences in color preferences between genders were not statistically significant, subtle trends, such as women preferring softer hues and men favoring bold shades, show the importance of nuanced, gender-aware branding.

Finally, whereas socioeconomic status had no significant influence on color preference, further studies can be done on the hidden determinants that cause such preference. Understanding more of the nuances in demographics helps brands develop a comprehensive strategy to communicate with a large group of consumers.

Conclusion

The study also highlights the strong recognition and popularity of red, blue, and green in branding, probably due to their solid psychological, cultural, and emotional associations. For instance, red is associated with passion and urgency, blue represents trust and professionalism, and green is associated with nature and sustainability. This evidence is in tandem with the earlier research findings in color psychology and branding.

Although gender differences in color preferences are not statistically significant, observed trends suggest that such preferences are being shaped by social norms and culture. Age has also played an important role: younger individuals favored bright colors while older adults opted for more subdued tones, meaning that branding strategy needs to be tailored for each age group.

Interestingly, socioeconomic status was not significantly related to color preference, indicating a broad appeal of some colors regardless of economic status. However, this finding must be interpreted in the context of the complexity of socioeconomic influences.

However, there are still limitations that must be acknowledged in this study. Self-reported data give potential biases to it, and the sample size may limit the generalizability of findings. Future longitudinal research with more diverse samples may provide more insight to the role of color in brand recognition.

Limitations

Sample Representation: As this study brought together various demographic groups, sample size limits generalizability. A larger and more heterogenic participant pool would boost applicability of results.

Experimental Design constraints : Selection of stimuli and control measures may have significantly affected the response. Future research could consider alternative methodologies that minimize bias and further strengthen validity.

Measurement Validity: Brand recognition was evaluated with valid scales. There might be errors due to inconsistency in the measurements and hence different outcomes. In the future, multi-validation approaches might enhance reliability.

Unexamined Variables: Colour, age, gender, and economic status have been explored as factors affecting perception. The effects of other related variables, for example, culture, personality characteristics, and thinking, are left unexamined. The following studies might integrate these factors as well.

Causal Limitations: A cross-sectional design cannot establish the causal relationship between demographic factors and brand recognition. More robust causality can be determined through longitudinal studies or experimental interventions.

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