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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE ROLE OF COLORS USED IN INFOGRAPHIC DESIGN ON VISUAL PERCEPTION

İnfografik Tasarımında Tercih Edilen Renklerin Görsel Algıdaki Rolü

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Abstract

Color, a crucial element in visual communication, plays a decisive role in the perception, readability, and attention-grabbing nature of information in infographic design. This study aims to determine the impact of color choices on visual perception in infographic design. The research was conducted using a survey model, a quantitative research method. The sample consisted of 190 participants (124 women and 66 men) from among students studying in the field of printing technologies and individuals working in the sector in Turkey. Data were collected online through a structured questionnaire developed by the researchers and analyzed using the SPSS 24.0 software package. Frequency, percentage, and chi-square tests were used in the analysis of the data. In conclusion, it was determined that color selection in infographic design is not only an aesthetic element but also plays a critical role in the effective transmission of information, enhancing visual perception, and directing user attention. Accordingly, it was concluded that using appropriate, balanced, and functional colors in infographic design is one of the fundamental factors that increase the success of the design.

Keywords: Infographics, Color, Visual Perception, Graphic Design, Visual Communication.

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Öz

Görsel iletişimde önemli bir unsur olan renk, infografik tasarımında bilginin algılanması, okunabilirliği ve dikkat çekiciliği üzerinde belirleyici bir rol oynamaktadır. Bu çalışma, infografik tasarımında renk tercihlerinin görsel algı üzerindeki etkisini belirlemeyi amaçlamaktadır. Araştırma, nicel araştırma yöntemlerinden tarama modeli kullanılarak gerçekleştirilmiştir. Araştırmanın örneklemini, Türkiye'de basım teknolojileri alanında eğitim gören öğrenciler ile sektörde çalışan bireylerden oluşan 124'ü kadın ve 66'sı erkek olmak üzere toplam 190 katılımcı oluşturmaktadır. Veriler, araştırmacılar tarafından geliştirilen yapılandırılmış bir anket formu aracılığıyla çevrimiçi ortamda toplanmış ve SPSS 24.0 paket programı kullanılarak analiz edilmiştir. Verilerin analizinde frekans, yüzde ve ki-kare testlerinden yararlanılmıştır. Sonuç olarak, infografik tasarımında renk seçiminin yalnızca estetik bir unsur olmadığı, aynı zamanda bilginin etkili aktarımı, görsel algının güçlendirilmesi ve kullanıcı dikkatinin yönlendirilmesi açısından kritik bir rol oynadığı belirlenmiştir. Bu doğrultuda infografik tasarımında hedef kitleye uygun, dengeli ve işlevsel renk kullanımının, tasarımın başarısını artıran temel faktörlerden biri olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: İnfografik, Renk, Görsel Algı, Grafik Tasarım, Görsel Iletişim.

1. wIntroduction

Throughout history, humankind has communicated through shapes and symbols. As Aristotle said, "It is impossible to think without images" (Benson, 1997), infographics are a prime example. Research shows that infographics, used as a visual storytelling tool in the 21st century, facilitate understanding and recall with their striking visuals. It is possible to convey important details to the target audience through infographic designs (Küçük, 2022).

Thanks to advancements in information technology, data is easily accessible, and visual communication, along with data visualization, draws attention to the current and future importance of topics.

Data is one of the most valuable concepts in modern life. The necessity of producing and using personal data and data on a global scale, and consequently the intense flow of information today, makes it crucial that such data is easily understandable and fast for everyone. Therefore, designers need to possess analytical thinking, analysis, hierarchical structure-building, and the ability to effectively use graphics and visuals (Altın, 2018).

1.1. Infographic

Infographics, which consist of visually appealing materials, play a significant role in information presentation and their increasing popularity stems from the use of books, starting from preschool and continuing throughout people's educational lives, based on reading comprehension skills.

Today, infographics are used in various fields of education. With the development of computer technologies, it is known that infographic designers also extensively use graphic design programs in the media or graphic arts fields. With the increasing use of infographics, they are seen to be used

more intensively in the advertising sector and media tools (Yavuz, 2020). Infographics have created an alternative in information transfer due to their organized presentation of information, creation of class-based data, attracting attention with different designs, rapid transfer of text and data, and interaction in different fields. "Infographics are visual tools that make text easier and faster to understand" (Smiciklas, 2012).

"The London Underground Map designed by technical draftsman Herry C. Beck in the 1930s (Figure 1) is a fine example of infographic design" (Uyan Dur, 2014).

Figure 1. Infographic example (London Underground)

(Source: https://www.ltmuseum.co.uk/collections/collections-online/maps/item/1992-852)

1.2. Color

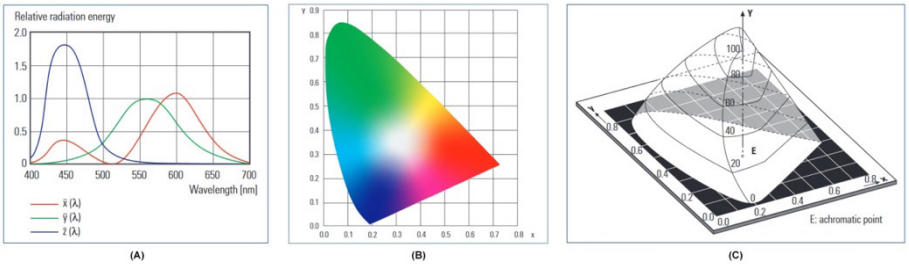
Research shows that colors have different psychological effects. These different effects can depend on gender, age, and cultural background. Furthermore, the emotions a color evokes in people can also vary (Aktekin, Şimşek & Kaplan, 2011). Studies show that when creating a new infographic, logo, or logotype, general design rules should be applied. However, even more important than these basic rules is the use of the right color (Özomay & Özomay, 2021). Therefore, when creating infographic designs, it is necessary to adhere to the basic rule and determine the colors according to the needs of the target audience groups (Ceylan, 2015).

In the 17th century, the English physicist Isaac Newton projected seven colors—red, orange, yellow, green, blue, indigo, and violet—onto a white screen by reflecting a single ray of light, which he called the "solar spectrum," through a prism (Parramon, 1994).

In 1802, the English scientist Thomas Young developed the "trichromatic (three-color) color theory" and put forward the wave theory of light (Per, 2012).

CIE is the abbreviation for the International Commission on Illumination. In 1931, the International Commission on Illumination introduced the standard colorimetric observer and standardized the XYZ values as tristimulus values that can define any color that can be perceived by an average human (observer) (Tkalcic & Tasic, 2003). In human color perception, the CIE L*a*b* color space is related to physiological characteristics (Figure 2) (Sesli & Hayta, 2023).

Figure 2. (A) Standard Color Matching Functions. (B) CIE (x,y,Y)



Chromatic Diagram (CIE Color Space, CIE Color "Triangle"). (C) CIE Color Solid.
(Source: Kipphan, 2001).

1.2.1. Use of Colors

When designing infographics, colors should be determined in accordance with the needs of the target audience (Ceylan, 2015). The principles to consider when using color elements in information design are as follows; colors should be used in a way that emphasizes and complements the message, taking into account their functional properties; they should reflect the psychological effects and meanings they contain (Akpolat & Akgül, 2024). Excessive use can significantly alter color perception and visual quality (Özomay & Özdemir, 2020, Çölük, 2025). Particular attention should be paid to the effect of ambient light in environmental designs. It is also a critical parameter in terms of color stability and surface interaction (Hayta, Oktav, Özomay & Duru, 2022, Adeel, Ozomay, Ozomay & Massadikova, 2025). In digital information designs, color adjustments between screens need to be controlled. User deficiencies and needs are factors to consider when choosing colors (Uyan Dur, 2014, Yan, 2017).

1.2.2. Color Selection and Its Psychological Effects

When choosing colors, a person's gender, age, and environmental conditions are important. Colors affect people in terms of psychology, production and consumption habits, health, and mental and physical characteristics (Sesli, Ozomay, Kandırmaz & Ozcan, 2018).

Psychologically, warm colors with high wavelengths such as yellow, red, and orange, and cool colors with short wavelengths such as blue, purple, and green are used. Warm colors give us a feeling of

closeness, while cool colors give us a feeling of distance. Visually perceived colors are an element that serves aesthetic purposes and has many emotional effects (Kınık & Öztürk, 2017). Some known psychological effects include calming and peaceful blue and green, stimulating and motivating yellow, and creating a feeling of fire and hunger in red (Yalur, 2019).

Colors create various effects on people. Cleanliness, joy, hope, purity, love, and forgiveness are associated with the color white. Regret, nobility, and sentimentality are associated with the color gray. Brown symbolizes old age, comfort, naturalness, friendship, and maturity. Pink represents femininity. Orange is the color of youth, warmth, courage, resilience, and joy. Red represents love, affection, wealth, nobility, excitement, danger, and sin. Green symbolizes youth, inexperience, growth, richness, freshness, and tranquility. Blue is the color of peace, loyalty, depression, gentleness, silence, and conservatism. Purple symbolizes melancholy, drama, seriousness, grandeur, sovereignty, and deceit. Black symbolizes mourning, seriousness, death, sadness, mystery, and delicacy. Yellow is the color of happiness, cowardice, betrayal, reason, illness, hospitality, maturity, abundance, warm days, sunshine, and light (Ambrose & Harris, 2020).

1.2.3. Cultural Meanings

People have expressed the emotions they experience, such as sadness, joy, and excitement, through colors, and these expressions have varied depending on the culture (Özomay & Özomay, 2021). Therefore, colors have been used with different meanings in different cultures. For example, white evokes purity. In the West, white wedding dresses are preferred. In contrast, in Asia, white is an expression of mourning and grief. In Japan, white carnations represent death (Uçar, 2004). In China, white wedding dresses are not preferred because white symbolizes mourning (Akkın, Eğrilmez & Afrashi, 2004). The color black, in many countries, expresses emotions such as mourning, fear, death, and despair (Akkın, Eğrilmez & Afrashi, 2004; Kılınçarslan & Fidan, 2012). In China, black symbolizes winter and the north, while in Ancient Egypt and North Africa, it represents fertility and abundance. Colors are known to have many effects on individuals, such as their thought patterns and cultural environment (Çalışkan, Karadağ & Çalışkan, 2010). The presence of these effects on individuals and the cultures of societies seems like a quite natural process (Çalışkan & Kılıç, 2014).

1.2.4. The Use of Color in Infographics

Infographic design uses visual design elements such as graphics, color, typography, pictograms, and icons instead of text (Sesli, 2024). For a good infographic, the design elements, typography, page layout, color, and visual elements (icons-pictograms) must be designed according to the purpose and target audience. Infographics, when used correctly with design elements, are effective, enjoyable to learn, informative, persuasive, and allow us to access a lot of information in a short time (Köksal, 2021). It is impossible to think about creating an infographic without considering the concept of color. Colors are used to emphasize information for people and societies. When it is desired to highlight points that will attract attention and interest in the design, using bright and contrasting colors is a more appropriate choice (Karataş, 2003).

Infographics are currently seen as a marketing tool. They are used in displaying multiple statistics due to their ease of use and ability to attract attention (Cengizhan, Doğan, Ural, Akar & Cin, 2019). Infographics have gained great importance, especially with the increasing use of social media (Küçük, 2022).

2. Research Method

This study is descriptive survey research based on a quantitative research approach aimed at determining the effect of color preferences in infographic design on visual perception. Survey research methods aim to reveal the current state of attitudes, perceptions, and behaviors of individuals within a specific population (VanderStoep & Johnson, 2009). Accordingly, this research examines the color preferences in infographic design, the reasons for these preferences, and the opinions of students studying in the field of printing technologies and individuals actively working in the sector regarding the effects of colors on visual perception.

A structured questionnaire developed by the researchers was used as a data collection tool. The questionnaire consists of two sections. The first section includes questions to determine the demographic characteristics of the participants, such as gender, age, education level, and type of high school graduated from. The second section contains questions to determine the participants' opinions on color preferences in infographic design, color combination choices, and the effects of colors on readability, attractiveness, and visual perception.

Data were collected using an online survey method. The obtained data were analyzed using the SPSS 24.0 statistical package program. In the analysis of the data, frequency (f) and percentage (%) analyses were first applied to determine the demographic characteristics of the participants and the distribution of their color preferences. In addition, the chi-square test was applied to examine the relationships between participants' color preferences and various variables. The statistical significance level was accepted as $p<0.05$ in the analyses.

Through this method, the systematic way in which the colors used in infographic design are evaluated in terms of user perception, attractiveness, readability, and overall visual impact was revealed.

2.1. Population and Sample

The research population consists of students studying in the field of printing technologies in Turkey and individuals actively working in the printing, graphic design, and related sectors. This population aligns with the research objective in that it includes individuals with direct or indirect knowledge and experience in infographic design and color usage.

The research sample was determined using the convenience sampling method. Convenience sampling is based on selecting individuals who are easily accessible to the research and who voluntarily participate. This method is widely used, especially in research where time, cost, and access limitations exist.

A total of 190 people participated in the research. Of these participants, 124 (65.3%) were women and 66 (34.7%) were men. The majority of participants were between 18 and 25 years old, and associate and undergraduate students were predominantly represented. The fact that participants are studying in or actively working in printing technologies, graphic design, and related fields ensures the acquisition of meaningful data relevant to the research objective.

This sample size is considered sufficient for the statistical analysis and interpretation of the relationships between color preferences and visual perception in infographic design.

2.2. Data Collection Technique

In this study, a structured questionnaire developed by the researchers based on a literature review was used as a data collection tool. The questionnaire was prepared by examining previous studies in infographic design, color theory, visual perception, and graphic design, and questions appropriate to the research objective were formulated accordingly.

The questionnaire consists of two sections. The first section includes questions aimed at determining the demographic characteristics of the participants, such as gender, age, education level, and type of high school graduated from. The second section contains multiple-choice and Likert-type questions aimed at determining the participants' color preferences in infographic design, their choices of color combinations, and their opinions on the role of colors in attractiveness, readability, perceptibility, and visual impact.

Data was collected on a voluntary basis using an online survey method. This method allowed for the collection of data from individuals with different educational levels and those actively working in the sector.

2.3. Data Analysis Technique

The data obtained within the scope of the research were analyzed using the SPSS 24.0 (Statistical Package for the Social Sciences) statistical software package. In the first stage of the analysis process, demographic data of the participants and their color preferences in infographic design were analyzed using descriptive statistics with frequency (f) and percentage (%) values. These analyses revealed the general trends of the participants.

In the second stage of the analysis process, the chi-square test was applied to examine the relationships between the participants' color preferences and their evaluations of the infographic design. The chi-square test was used to determine whether the relationship between categorical variables was statistically significant.

In all statistical analyses used in the research, the significance level was accepted as $p<0.05$. The findings are presented in tables and interpreted in line with the purpose of the research.

2.4. Characteristics of the Research Sample

The demographic characteristics of the research sample, including gender, age, education, and type of high school graduated from, are given in Table 1.

Table 1. Distribution of Survey Participants According to Demographic Characteristics Regarding Gender, Age, Education and Type of High School Graduated From

Demographic Characteristics	Choice	Frequency (f)	Percentage (%)	Total (%)
Gender	Woman	124	65,3	100
	Man	66	34,7	
Age	14-17	7	3,7	100
	18-21	113	59,5	
	22-25	48	25,3	
	26-29	8	4,2	
	34-37	4	2,1	
	38-41	2	1,1	
	42-45	3	1,6	
	46-49	1	0,5	
	50 years and older	4	2,1	
Education	High school/Vocational high school	16	8,4	100
	Associate degree	92	48,4	
	Undergraduate	70	36,8	
	Master	8	4,2	
	Doctor's degree	4	2,1	
Type of High School Graduated From	Industrial vocational high school	15	7,9	100
	Anatolian High School	83	43,7	
	Anatolian vocational high school	51	26,8	
	Imam Hatip High School	17	8,9	
	Private high school	8	4,2	
	Fine Arts High School	3	1,6	
	Social sciences high school	2	1,1	
	Other	11	5,8	

Table 1 shows that the majority of participants are women (65.3%). Regarding age distribution, the majority of the sample consists of young adults aged 18-21 (59.5%), followed by the 22-25 age group (25.3%).

In terms of education level, approximately half of the participants are associate degree students or graduates (48.4%), while 36.8% hold a bachelor's degree. Examining the type of high school graduated from, Anatolian High School graduates are the most numerous (43.7%), followed by Anatolian Vocational High School graduates (26.8%). These data indicate that the sample is predominantly composed of young people pursuing university-level education.

3. Findings and Discussion

The findings regarding participants' infographic design were presented using frequency and percentage (%) in descriptive analysis.

Table 2. Distribution of Prior Training in Infographic Design

Have you previously received any training related to infographic design?	n (f)	% (%)
Yes	40	21,1
No	150	78,9
Total	190	100

Table 2 shows that 78.9% of the survey participants had not received prior infographic training.

Table 3. Distribution of Preference for Which Three Colors Would Be Chosen in Order of Priority If Color Selection Were Necessary

If you had to choose colors, which three colors would you prioritize?		Frequency	%
Red	First	85	44,7
	Second	38	20
	Third	45	23,7
Blue	First	79	41,6
	Second	62	32,6
	Third	32	16,8
Green	First	48	25,3
	Second	70	36,8
	Third	59	31,1
Yellow	First	42	22,1
	Second	53	27,9
	Third	80	42,1
Purple	First	45	23,7
	Second	52	27,4
	Third	80	42,1
Orange	First	28	14,7
	Second	51	26,8
	Third	88	46,3
Black	First	105	55,3
	Second	33	17,4
	Third	35	18,4
White	First	87	45,8
	Second	42	22,1
	Third	41	21,6

Table 3 shows that 55.3% of participants chose black, 45.8% chose white, and 44.7% chose red as their first choice. 36.8% chose green, 32.6% chose blue, and 27.9% chose yellow as their second choice. For their third choice, 46.3% chose orange, 42.1% chose yellow and purple, and 31.1% chose green. The findings indicate that the majority of participants primarily chose black as their first color, green as their second, and orange as their third.

Table 4. Distribution of Preferred Color Combinations

Which color combinations do you prefer?	Frequency	%
Single color (monochrome)	30	15,8
Similar colors (analog)	65	34,2
Contrasting colors (complementary)	57	30
Three-color combinations (triadic)	34	17,9
Other	4	2,1
Total	190	100

Table 4 shows that 34.2% of participants preferred similar colors, while 30% preferred contrasting or complementary colors.

Table 5. Distribution of Color Preferences for Making an Infographic Eye-Catching and Engaging

What colors do you think should be used to make an infographic eye-catching and engaging?	Frequency	%
Bright and vibrant colors	94	49,5
Bright and vibrant colors, Pastel shades	13	6,8
Bright and vibrant colors; pastel shades; dark and deep colors.	2	1,1
Bright and vibrant colors; Pastel tones; Neutral colors (gray, white, black)	6	3,2
Bright and vibrant colors; Pastel tones; Neutral colors (gray, white, black); Dark and deep colors	2	1,1
Pastel tones; Dark and deep colors	6	3,2
Pastel tones; Neutral colors (gray, white, black)	1	0,5
Pastel tones; Neutral colors (gray, white, black); Dark and deep colors.	1	0,5
Pastel tones	18	9,5
Neutral colors (gray, white	14	7,4
Dark and deep colors	11	5,8
Neutral colors, dark and deep colors	1	0,5
Bright and vibrant colors, Dark and deep colors	11	5,8
Bright and vibrant colors, Neutral colors	9	4,7
Bright and vibrant colors, Neutral colors, Dark and deep colors	1	0,5
Total	190	100

Table 5 shows that, in order for an infographic to be eye-catching and engaging, 49.5% of participants preferred bright and vibrant colors, while 9.5% preferred pastel tones. The findings indicate that bright and vibrant colors were the most frequently chosen.

Table 6. Participation Levels Regarding the Characteristics of an Infographic

		Frequency	%
I think infographics pique curiosity thanks to their diverse designs.	I absolutely agree	2	1,1
	I agree	3	1,6
	I disagree	71	37,4
	I absolutely disagree	114	60
I think colors have an impact on readability in an infographic.	I absolutely agree	128	67,4
	I agree	59	31,1
	I disagree	2	1,1
	I absolutely disagree	1	0,5
I think data is conveyed quickly in an infographic.	I absolutely agree	81	42,6
	I agree	95	50
	I disagree	12	6,3
	I absolutely disagree	2	1,1
I believe that infographic color perception can vary across different cultures.	I absolutely agree	104	54,7
	I agree	69	36,3
	I disagree	15	7,9
	I absolutely disagree	2	1,1
I believe infographics enhance the effectiveness of information dissemination.	I absolutely agree	91	47,9
	I agree	80	42,1
	I disagree	15	7,9
	I absolutely disagree	4	2,1
I think using too many colors in an infographic creates complexity.	I absolutely agree	80	42,1
	I agree	69	36,3
	I disagree	31	16,3
	I absolutely disagree	10	5,3
I think using too many colors in an infographic can be boring.	I absolutely agree	56	29,5
	I agree	59	31,1
	I disagree	51	26,8
	I absolutely disagree	24	12,6
When designing an infographic, I choose colors based on specific criteria.	I absolutely agree	116	61,1
	I agree	65	34,2
	I disagree	8	4,2
	I absolutely disagree	1	0,5

Table 6 shows that 37.4% of participants disagreed with the statement that infographics arouse curiosity through different designs, and 60% strongly disagreed. Overall, 97.4% of participants disagreed with this statement.

Regarding the statement, "I think colors in an infographic have an effect on readability," 67.4% strongly agreed, and 31.1% agreed. The overall findings show that 98.5% agreed with the statement that infographics arouse curiosity through different designs.

Furthermore, 50% agreed with the statement that "Data is conveyed quickly in infographics," and 42.6% strongly agreed. Overall, 92.6% agreed with the statement, "I think data is conveyed quickly in infographics."

The study found that 54.7% of participants strongly agreed with the statement, "I think infographic color perception can vary across different cultures," while 36.3% agreed. When the findings are examined, it is seen that 91% believe that infographic color perception varies across different cultures.

Regarding the statement, "I think infographic color perception can vary across different cultures," 47.9% of participants strongly agreed, and 42.1% agreed. The findings indicate that the majority of participants agreed with the statement, "I think infographic color perception can vary across different cultures."

The study found that 42.1% of participants strongly agreed with the statement, "I think using too many colors in an infographic creates complexity," while 36.3% agreed. When the findings were examined, it was determined that 78.4% of participants agreed with the idea that using too many colors creates complexity.

Regarding the statement, "I think using too many colors in an infographic is boring," 31.1% of participants agreed, and 29.5% strongly agreed. When the findings are examined, it is seen that 60.6% agreed with the statement, while 39.4% disagreed.

Regarding the statement, "When designing an infographic, I choose colors according to certain criteria," 61.1% of participants strongly agreed, and 34.2% agreed. When the findings are examined, it is seen that the majority agreed with the statement, "When designing an infographic, I choose colors according to certain criteria."

Table 7. Distribution of Preferred Colors for Making an Infographic Eye-Catching and Engaging

What do you think is the most important factor in infographic color selection?	Frequency	%
Visuals	82	43,2
Contents	55	28,9
Target group	51	26,8
Legibility	1	0,5
Functional suitability and comprehensibility	1	0,5
Total	190	100

Table 7 shows that 43.2% believe visual appeal is the most important factor in infographic color selection. 28.9% consider content a significant factor, while 26.8% believe the target audience is the most important factor.

Table 8. Distribution of Preferences Regarding Which Types of Infographics Require More Careful and Meticulous Color Selection

In which types of infographics do you think colors should be chosen more carefully and thoughtfully?	Frequency	%
Educational materials	20	10,5
Financial and economic infographics	20	10,5
Marketing and advertising infographics	62	32,6
Health and medical infographics	84	44,4
Social media infographics	4	2
Total	190	100

Table 8 shows that 44.4% of the participants in the study thought that colors should be chosen more carefully and thoughtfully in health and medical infographics, while 32.6% thought the same for marketing and advertising infographics.

Table 9. Distribution of Preferences for Which Colors Are More Effective in Digital Infographics

Which colors do you think are most effective in digital infographics?	Frequency	%
Bright and vibrant colors	126	66,3
Pastel tones	31	16,3
Neutral colors	12	6,3
Dark and deep colors	18	9,5
Other	3	1,6
Total	190	100

Table 9 shows that 66.3% stated that bright and vibrant colors are more effective in digital infographics, while 16.3% stated that pastel tones are more effective.

Table 10. Distribution of Preferences Regarding Which Colors Are More Effective in Printed Infographics

Which colors do you think are most effective in printed infographics?	Frequency	%
Bright and vibrant colors	123	64,7
Pastel tones	32	16,8
Neutral colors	14	7,4
Dark and deep colors	18	9,5
Other	3	1,6
Total	190	100

Table 10 shows that 64.7% of participants believe bright and vibrant colors are more effective in printed infographics, 16.8% believe pastel tones are more effective, and 9.5% believe dark and deep colors are more effective.

Table 11. Distribution of How Effective Colors Are in the Success of an Infographic

How effective do you think color is in the success of an infographic?	Frequency	%
Very effective	104	54,7
Effective	68	35,8
Moderately effective.	13	6,8
Less effective	4	2,1
Not effective at all	1	0,5
Total	190	100

Table 11 shows that when asked "How effective do you think colors are in the success of an infographic?", 54.7% of participants answered that they are very effective, and 35.8% answered that they are effective. When the findings are examined, it is seen that 90.5% believe that colors are effective in the success of an infographic.

4. Discussion and Conclusion

This research examines the role of color choices in infographic design on visual perception, based on the opinions of students studying in the field of printing technologies and individuals working in the sector. The findings reveal that colors have a significant impact on the success, readability, attractiveness, and visual perception of infographic design.

According to the research results, the vast majority of participants (90.5%) stated that colors are effective or very effective in the success of an infographic. This result shows that colors are not only an aesthetic element in visual communication but also a fundamental design component that supports information transfer. This finding is consistent with the views of Ambrose and Harris (2020) and Smiciklas (2012), who stated that colors are an important element that guides perception and increases the effectiveness of the message in visual communication.

The fact that 98.5% of the participants stated that colors in infographics are effective on readability shows that the use of color plays a critical role in the perceptibility of information. The correct use of colors contributes to the creation of visual hierarchy, the highlighting of important information, and the directing of users' attention. This supports the findings of Kınık and Öztürk (2017) that the use of color in typographic design increases readability.

Furthermore, the study determined that the most preferred colors among participants were black, white, and red. The high contrast of black and white, their improved readability, and professional appearance can be considered the primary reasons for these preferences. Red was preferred because it creates a striking and powerful visual impact. This aligns with literature indicating that warm colors are more effective in attracting attention and directing perception (Yalur, 2019).

In terms of color combinations, it was determined that a large majority of participants preferred analog (34.2%) and complementary (30%) color combinations. This result shows that visual harmony and contrast are important together in infographic design. Analog colors provide visual integrity, while complementary colors create contrast and increase attractiveness. This situation reveals that both aesthetic harmony and visual emphasis elements should be used together in an effective infographic design.

According to the research findings, 66.3% of the participants stated that bright and vibrant colors are more effective in digital infographics and 64.7% in printed infographics. This result shows that bright colors play an important role in attracting user attention and enhancing visual perception. It can be said that vibrant colors are perceived more effectively, especially in digital environments, due to screen brightness and light diffusion.

The findings show that 78.4% of participants stated that using too many colors in infographics creates complexity, highlighting the importance of balance and moderation in color use. Excessive color use can cause visual clutter, making information perception difficult and distracting the user. This indicates that colors should be used consciously and controllably in infographic design.

Furthermore, the fact that 91% of participants stated that color perception can vary according to cultural differences reveals that the cultural characteristics of the target audience should be considered in color use. This result shows that colors are not only a physiological but also a cultural and psychological element of perception.

Overall, this research reveals that the use of color in infographic design plays a critical role in terms of visual perception, attention-grabbing, readability, and information transfer. The correct choice of colors enhances the aesthetic value of infographics and makes information transfer more effective and understandable. In particular, using balanced and contrasting color combinations that are appropriate for the target audience directly affects the success of infographic design.

In conclusion, colors in infographic design should be considered not only as an aesthetic element but also as a functional and communicative tool. Designers should consider factors such as target audience, content type, readability, and visual perception when choosing colors to contribute to the creation of more effective and successful infographic designs.

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